

84TH CONGRESS }  
2d Session }

SENATE

REPORT  
No. 2629

LIBRARY  
JUL 3 1956  
DEFENSE ESSENTIALITY AND  
FOREIGN ECONOMIC POLICY

CASE STUDY: WATCH INDUSTRY AND  
PRECISION SKILLS

---

REPORT

OF THE

JOINT ECONOMIC COMMITTEE  
CONGRESS OF THE UNITED STATES



JULY 18 (legislative day, JULY 16), 1956.—Ordered to be printed

---

UNITED STATES  
GOVERNMENT PRINTING OFFICE  
WASHINGTON : 1956

99

JOINT ECONOMIC COMMITTEE

(Created pursuant to sec. 5 (a) of Public Law 304, 79th Cong.)

PAUL H. DOUGLAS, Senator from Illinois, *Chairman*

WRIGHT PATMAN, Representative from Texas, *Vice Chairman*

SENATE

JOHN SPARKMAN, Alabama  
J. WILLIAM FULBRIGHT, Arkansas  
JOSEPH C. O'MAHOONEY, Wyoming  
RALPH E. FLANDERS, Vermont  
ARTHUR V. WATKINS, Utah  
BARRY GOLDWATER, Arizona

HOUSE OF REPRESENTATIVES

RICHARD BOLLING, Missouri  
WILBUR D. MILLS, Arkansas  
AUGUSTINE B. KELLEY, Pennsylvania  
JESSE P. WOLCOTT, Michigan  
HENRY O. TALLE, Iowa  
THOMAS B. CURTIS, Missouri

GROVER W. ENSLEY, *Executive Director*

JOHN W. LEHMAN, *Clerk*

---

SUBCOMMITTEE ON FOREIGN ECONOMIC POLICY

RICHARD BOLLING, Missouri, *Chairman*

PAUL H. DOUGLAS, Illinois

HENRY O. TALLE, Iowa

J. WILLIAM FULBRIGHT, Arkansas

RALPH E. FLANDERS, Vermont

CHARLES S. SHELDON II, *Economist*

# CONTENTS

	Page
I. Reasons for the study.....	1
A. Previous study of the subcommittee.....	1
B. New prominence to ODM.....	2
C. The watch case.....	2
D. Arrangement of the report.....	3
II. Criteria for defense essentiality.....	4
A. The nature of possible wars.....	4
B. Definition of national security.....	4
C. The mobilization base.....	7
D. Manpower skills.....	9
E. Guides to selecting criteria.....	10
III. Watches as a case study.....	11
A. Arguments for essentiality offered by domestic jeweled-lever watch manufacturing proponents.....	11
(1) Essentiality already established.....	11
(2) Patriotic, not commercial, interests dominate.....	12
(3) Wars can be long.....	12
(4) Pool of skills.....	12
(5) Need for watches in war.....	13
(6) Timing mechanisms important in war.....	14
(7) Military production of watch industry.....	14
(8) Low wages cause difficulty.....	14
(9) Swiss watch exports unimportant.....	15
(10) The Swiss watch cartel.....	15
(11) Upjeweling and adjustments.....	16
B. Argument against essentiality offered by importers of watches and their supporters.....	18
(1) Inconsistency in requirements.....	18
(2) Availability of other producers.....	19
(3) Limited need for more watches.....	20
(4) Technological change in watches.....	21
(5) All industries essential in war.....	22
(6) Military subsidies.....	22
(7) Repercussions from restrictions.....	23
(8) Trade restrictions limited help.....	23
(9) Alternatives to trade restrictions.....	24
(10) Attack on American business.....	25
(11) Swiss technical superiority.....	25
(12) Prosperity of American watch industry.....	26
C. Observations about watches.....	26
(1) Significance of jewel bearings.....	26
(2) Watch costs and prices.....	27
(3) Statistical assessments.....	27
IV. Conclusions and recommendations.....	28
A. General:	
(1) National security is worldwide.....	28
(2) Mobilization thinking must be flexible.....	28
(3) We must judge priorities and degrees of essentiality.....	28
(4) Forces in being rather than conversion of industry afford a stronger defense.....	28
(5) Thermonuclear war cannot be prepared for by traditional mobilization thinking.....	28
(6) Peripheral wars also require forces in being and for- eign allies.....	28
(7) Economic cooperation as well as military defense is important to national security.....	29

## IV. Conclusions and recommendations—Continued

	Page
A. General—Continued	
(8) Economic strength requires aggressive development of modern technology.....	29
(9) Critical manpower skills can be met best by long-term measures to increase ability to meet new needs.....	29
(10) Relative degrees of essentiality must be judged.....	29
(11) We cannot freeze industrial capacity or manpower and best serve national defense.....	29
(12) Several courses are open to aid the few industries which may need assistance for them to serve defense.....	29
(13) We need consistent, positive policies for our foreign relations and national security.....	30
(14) ODM is now best prepared to fight World War II rather than new greater challenges.....	30
(15) The system of industry application for defense essentiality relief requires great caution in use....	30
B. Watches:	
(1) Restricting watch imports is not necessarily the desirable course.....	30
(2) Watches are unlikely to be manufactured in a major war.....	31
(3) Watch requirements in war will be filled from stock piles, requisitions, or imports.....	31
(4) Microprecision skills are not unique to watch companies.....	31
(5) Protection of the watch industry will not guarantee its health.....	31
(6) Trade restrictions on watches will hurt national security.....	31
(7) The Swiss watch cartel problem has little relevance to defense essentiality.....	31
(8) Undue emphasis on jewel counts is not in the public interest.....	31
(9) The 1954 watch industry decisions were backed by little acceptable evidence of necessity.....	31
(10) The 4,000 jeweled-lever watch employment figure is not realistic in measuring defense needs.....	32
(11) Jewel bearing requirements have been exaggerated..	32
Additional comment by Senator Flanders.....	32
Additional comment by Representative Talle.....	32

## DEFENSE ESSENTIALITY AND FOREIGN ECONOMIC POLICY

### CASE STUDY: WATCH INDUSTRY AND PRECISION SKILLS

---

JULY 18 (legislative day, JULY 16), 1956.—Ordered to be printed

---

Mr. DOUGLAS, from the Joint Economic Committee, submitted the following

## R E P O R T

The following report of the Joint Economic Committee was prepared and approved unanimously by the Subcommittee on Foreign Economic Policy composed of Representative Bolling (chairman), Senators Douglas, Fulbright, and Flanders, and Representative Talle. The findings and recommendations presented are based upon the subcommittee's hearings and study of defense essentiality, using the watch industry as a case study. The report of the subcommittee was approved for transmission to the Congress by the full committee on July 18, 1956, and will be given further consideration during the coming months in connection with preparation for the committee's report on the 1957 Economic Report of the President. Some members of the full committee who are not on the subcommittee wish to point out that while they have approved the transmission of the report to the Congress they do not necessarily agree with all the conclusions of the report.

### I. REASONS FOR THE STUDY

The Subcommittee on Foreign Economic Policy was created pursuant to the authority contained in the March 14, 1955 report of the Joint Committee on the Economic Report (pp. 4 and 5). It held hearings in November 1955, reviewing a wide range of considerations affecting our foreign economic policy. During the course of those hearings, limited attention was given to the argument that trade

restrictions may be required for reasons of national defense. The testimony received on this subject was in part so contradictory that the ensuing report of the Joint Committee to the Congress on January 5, 1956, stated (p. 28):

It is also evident that much greater study is required of the very concept of the mobilization base. There is question whether the present tests of defense essentiality reflect realistically the changing nature of war. \* \* \* Differences of opinion among witnesses make clear that further study of these problems is required in the light of new conditions.

The recommendation of the report was (p. 31):

Further study is required of the whole concept of defense essentiality if it is not to dominate over other necessary factors in trade policy. Not only should impartial criteria be discovered, but the whole concept of the mobilization base in the light of evolving military strategy should be reviewed.

It is important to state the general finding of the subcommittee to the effect (p. 28):

There is a valid argument in favor of trade restrictions to aid national defense, but the case requires careful qualification.

This makes clear that the problem was regarded by the subcommittee with an open mind combined with a degree of skepticism toward some of the arguments which had been presented up to that time.

The Congress in 1955 made a part of the Trade Agreements Act a section 7 which provided the Office of Defense Mobilization with the authority to advise the President to take such steps as are necessary to modify trade policy as the national defense may require. It is not within the purview of this subcommittee to make a specific study of that piece of legislation. But the law did provide a new rationale whereby some industries, denied other forms of relief from foreign competition, might advance a "national defense" argument as the next resort to the solution of their problems.

The Office of Defense Mobilization to the present time has taken few overt steps to change trade rules. On April 5, 1956, that office announced that it was starting a study, as its first under the authority of the Trade Agreements Act, on the domestic watch and clock industry, with the initial phase of that study limited to the jeweled lever segment of the watch industry. By early May 1956, as many industries had applied to the Office of Defense Mobilization for relief from foreign competition on the grounds of defense essentiality as there were pending applications before the Tariff Commission for relief under the escape clause.

The combination of these events and the continuing interest of the subcommittee made clear the desirability of a study of the defense essentiality arguments being advanced. Previous governmental decisions regarding the watch industry have given rise to such controversy that it seemed a timely and valuable industry to select as a case study.

Accordingly, letters of inquiry on the analytical approach used by

various agencies of the Federal Government in studying defense essentiality were sent out, and public hearings were held in the period of June 4 through June 8, 1956, to explore general concepts and the details of microprecision manufacture so important to modern warfare. The Director of the Office of Defense Mobilization appeared before the subcommittee to interpret the views and procedures of the executive branch of the Government in meeting mobilization base problems.

This report summarizes the highlights of those hearings, to bring into as sharp focus as possible the contrasting views of various witnesses, to identify what questions still remain, and the points which it was possible to resolve. This summary of the latter points should not be construed as a prejudging of any actions which the Tariff Commission, the Office of Defense Mobilization, and other parts of the executive branch of the Government, or the Congress may take in the future, for it has not been possible to resolve all doubts in so short an inquiry. But it is our hope that our painstaking review of a considerable body of evidence will ease the difficulties of the several agencies which will have occasion to study our published record of the hearings for the light which they throw on problems of defense essentiality and foreign-economic policy. As Dr. Arthur S. Flemming, Director of the Office of Defense Mobilization, stated:

\* \* \* I feel that the committee is to be congratulated on developing plans for a hearing of this kind. I am confident that the testimony that has been presented to this committee will be of real help to us in considering various matters that we will be called upon to consider in this area.

The report which follows accordingly concerns itself with an analysis of changing world conditions, the implications for military strategy, and the problems of choosing the right economic environment for the protection of national security. Having offered these observations based on expert testimony, the general principles which emerge are tested against the problems associated with the watch industry. Choosing a specific industry illustrates that general principles can be used in a particular case, but that they are easily obscured in the complexities and irrelevancies which inevitably are associated with any concrete example surrounded by historical antecedents and by strong pressure interests. It is not always easy to identify the national interest.

We have deliberately included in the discussion major points brought forth by witnesses who felt their views should appear in the record even though many of these points relate to side issues and other battles than those of defense essentiality. Their inclusion will suggest the atmosphere within which responsible executive and congressional agencies must make their decisions for the national good.

As persuasive as some of these subsidiary arguments may be to the reader, we will make every effort to keep these points in proper perspective to the whole subject. No directly interested party will be satisfied with our treatment of their favorite views, but we hope others will find this report instructive.

## II. CRITERIA FOR DEFENSE ESSENTIALITY

## A. THE NATURE OF POSSIBLE WARS

Although it can be hoped that the terrible costs to human welfare which wars bring can be avoided, ordinary prudence requires that all nations including our own consider the range of potential threats and their implications for national security. It is clear that no one can read the future with accuracy, nor prepare to meet every possible contingency. National strategy, first having in mind basic objectives, therefore, consists of assessing various potential threats and the responses which should be made considering the relative probability of the threats, their relative seriousness to national survival, and the relative costs, broadly conceived, to our national resources and well-being in meeting these challenges.

For purposes of convenience, and symptomatic of the range of economic requirements and policy determinations which may be called for, we can identify (without reference to the likelihood of each occurring) the following alternative conditions of national existence in the modern world:

(a) Stable conditions with no likelihood of war as we have known it because of a widespread desire for peace and the means for international guaranties of such peace, including a foolproof system for inspection against danger of surprise attack.

(b) No military war, but intensified efforts by competing states or blocs of states to obtain economic, political, and ideological advantage through such means as expanding trade relations, providing foreign aid and investment, and the stimulating of nationalistic ambitions in third countries. Subversion and propaganda efforts are additional devices.

(c) Elements of (b), plus civil strife and other localized wars which may represent an economic and social drain, but do not call for use of full-scale mobilization or major weapons.

(d) The peripheral war which is still limited geographically, but which requires a fairly heavy commitment of men and materiel, and which may or may not include tactical use of nuclear weapons.

(e) General war which engulfs much of the world but which for some reason does not include significant use of nuclear weapons or toxic warfare against the main industrial centers of the contending big powers.

(f) Virtually unlimited war with such combinations of thermo-nuclear, radiological, chemical, and biological attack as seem worth attempting by the contending forces.

Finally, it should be noted, the logistics requirements and economic consequences of several of the foregoing conditions can vary considerably with the geographic areas of the world involved, the identities of the combatants and neutrals, and the scale of operations.

## B. DEFINITION OF NATIONAL SECURITY

National security refers to the basic survival of the people of the country and their important institutions. Broadly conceived, we tend to include not only physical existence in the absolute sense but we are also concerned with our spiritual well-being, social welfare, economic prosperity, national sensibilities and such personal comfort as may be important to us.



The national security can be viewed as defended by two general approaches: the first often labeled "continental defense," and the second, "international cooperation." There was a time when the former might have been considered seriously, because there was a possibility of making this continent impregnable against major attack, and commitments to allies were thought merely an added burden. In any case, if we did become involved in foreign wars, our homeland could become the "arsenal of democracy." In fact, of course, nearly all of our wars have involved close relations with other nations for material and moral support.

Now we have frankly and openly adopted the course of international cooperation, both in peace and war, because no other route is offered to us. There is no longer a choice, for changing conditions have made it sheer necessity. Our own vital interests extend into many parts of the world, and the fate of other nations in any case ultimately will affect our own, if they fall under the control of ruthless and ambitious rivals. Outlying bases and allies are necessary in a mutually supporting effort to warn against sudden attack and to stage most effectively any massive counterblow. These same needs for world links are present to guard against and to wage peripheral wars as well as general conflicts. And clearly, if the cold war has turned toward intensified economic competition rather than immediate warfare with military weapons, many international ties are equally crucial.

Let us examine in greater detail elements of concern in defending the nation, whether viewed from the popular though incomplete and impractical continental defense, fortress America, viewpoint, or from the broader view of international cooperation. For clearly, the security of the United States and of other nations willing to live in harmony is of the greatest importance to all of us, and is of the highest concern to this subcommittee. Consistent recognition of the realities of the choices of strategy open to us in turn will have profound effects on the decisions taken to protect the national security.

The national security is defended by the elemental factors of geographic conditions and man-taken measures of protection such as air-warning, internal policing, and various intelligence operations, plus more positive military preparations when force has to be used as an instrument of policy. Oceans, Arctic wastes, and mountain ranges are a part of our geographic defense together with such important facilities as air and naval bases in parts of the world remote from our shores. Similarly, internal policing to maintain law and order must be supplemented by worldwide flows of intelligence information to anticipate and nip in the bud many difficulties before they become unmanageable. Our positive military preparations even in a period of intercontinental bombers and missiles are predicated upon having allies.

Protection of national security is based upon long-term and short-term factors, both of which are important. In a world of rapid technological development and political surprise, the relative importance of different elements is subject to considerable change, and requires constant review. Thus our geographic position and resources may seem to be relatively fixed, but even their roles clearly change. The formerly impassable Arctic has become an air bridge, and rare materials

found in remote parts of the earth have assumed a new importance in advanced technology.

Our industry, commerce, and financial system are even more dynamic, and their growing complexity is both a strength and a weakness. The comparative level of technology and availability of manpower skills in competing countries are increasingly important factors in national security. In the short run, it is forces in being which count, but equally important is the long-run assessment of where we are going in our abilities to create the instruments of military power and of peaceful influence. Our political and social institutions are added important elements in national security as are our national spirit and our cultural heritage. Clearly where it is possible to quantify, the absolute levels and the rates of change of these natural and human resources are important to national security; in any event we must consider the adaptability of all tangible and intangible factors which affect our security.

We have said national security relies upon weapons and forces in being, and upon the industrial and manpower base required for logistic support. But true, too, national survival may depend upon many additional elements. As one example, firm roots in American traditions of liberty and individual worth, and a developed, mature philosophy toward life on the part of our people may be one safeguard against destruction of our institutions by subversion or simple neglect. Another example may be found in measures to stimulate the spirit of hope and progress in other countries, through growing economic relations and cultural interchanges, so that the countries whose governments are predicated on individual freedom and worth may develop a feeling of unity sufficient to offset the danger of piecemeal surrender to totalitarianism through loss of hope. We need to encourage economic and cultural relationships with other powers so that their territories, airbases, resources, and manpower do not come under the control of military rivals, and do remain available to the cause of freedom. This would be true either to stave off thermonuclear war or to prevent or win a peripheral war. (No contestant would win a thermonuclear war, even though it could be lost.)

It seems particularly important to repeat and to emphasize that national security is broader than continental defense and military force. Isolation might have been considered once but now almost every policy must be judged in light of our interdependence with the rest of the world for resources, markets, technical advances, and finally for sufficient understanding and good will to refrain from mutual annihilation through weapons of unparalleled danger to the continuance of life on the planet.

Indeed it is this broader view of national security which must prevail under the conditions of the modern world that is the justification for the Subcommittee on Foreign Economic Policy making such a study as this. Continental isolation either in peace or war will not work, and this is the balance of judgment which carried us to lend-lease, World War II, the United Nations, the Marshall plan, Greek and Turkish aid, NATO, the Korean war, and the many other programs of the last several administrations. In general there has been bipartisan support for the thesis that a vigorous and growing world economy, with a strong community of interest among nations, represents the best opportunity for the world to avoid war and for this

community of nations to be equal to winning wars against aggressor states when they start wars.

### C. THE MOBILIZATION BASE

It is a part of national prudence, while hoping for the best, to be prepared for the worst. This is a responsibility of any government which is not to flirt recklessly with national disaster. Some of the measures are immediate in applicability. Others are longer range in nature. Radar and sky watcher warning systems and strategic air forces capable of dealing strong retaliatory blows are obvious immediate necessities. Of longer range importance are measures to keep our total national productive capacity high, as well as able to produce at the time required and in the quantities needed items incorporating the most advanced technology. This objective requires adequate absolute levels and good growth rates in industry, effective research and development, and a fresh flow of manpower highly educated and trained for military and essential civilian activities. With these general principles there can be little disagreement.

The mobilization base concept is not new, but received serious attention at the time of World War I because we were so poorly prepared then by readiness and experience to turn ourselves into an arsenal of production for the Allied cause. In the years that followed, preparedness thinking was carried on by a few specialists until the outbreak of World War II once again made our productive might, located safely across the oceans from the main areas of combat, the factor which turned the tide against the Axis and brought victory. In both of those wars, this country was late to join, and had the opportunity to convert its industry. In the second of the wars, our tools of control and allocation were more highly developed.

It was natural that the experience of these two wars should encourage defense preparations based upon mobilization plans which on signal would allow selected industries to change to the production of military goods, and that logistic planning should become a highly developed science. This study and foresightedness is commendable as far as it goes, but it is not fully adequate to the needs of today. The changes which are occurring are partly technological and partly world political.

Any mobilization base concept must be given constant review if it is to keep pace with changing world conditions and national needs. Clearly, the classes of international existence identified in this report call for different economic prescriptions to meet each one, and it would be the height of foolhardiness to risk destruction of the Nation by simply picking either 1 or 2 possible emergencies, and tailoring all mobilization plans to meeting those limited cases. The obvious answer would seem to be that we must marshal our resources to meet any eventuality. This of course implies that we shall have the time to convert our peacetime industry to the production of war goods, an increasingly unlikely situation. But let us assume this is still possible. Restricting the discussion for the moment to primarily industrial capital and manpower requirements, one can conceive of an attempt to direct resources so that we have a base to meet all possible eventualities.

However, even the strongest nation on earth is limited in its ability to organize itself against all eventualities. We have had to limit

our forces in being to the point where the individual branches of the armed services must compete for limited resources of men and materials. Every aircraft designed must make compromises among the factors of speed, range, maneuverability, armaments, navigation equipment, armor, ease of construction and repair. We want to give our crews every advantage, but we forego some improvements. This does not mean that the human crew is regarded as less important than economy. On the contrary, for each potential use for an aircraft, the design represents that compromise which will give the best chance for the plane to accomplish its mission and bring the crew home. An all-purpose, all-protective aircraft could become so heavy as never to leave the ground. The mobilization base concept also must involve compromises. The economy of the Nation, in a sense, does have to be all-purpose, but if it is to be viable, it must be based upon a sound rationale of the tasks to be carried out and the means for accomplishing them. This implies a system of relatives and the necessity for decision making to establish priorities, based not alone on probabilities but upon the seriousness of the consequences of miscalculation.

Consideration of plans for a mobilization base cannot be foregone just because there are conditions under which it might not be important. But it does not follow either that a mobilization base tailored after the pattern of World War II and the Korean conflict can be accepted uncritically. The probability that in a major war the big powers would use nuclear weapons is very great, and cannot be compared with failure to use stocks of poison gas in World War II. No one has found a clear way to distinguish between military and civilian targets in an all-out effort, and no power has the technology yet to blunt a determined nuclear attack sufficiently to save that country's national identity. This is why many students of the problem believe our economic and industrial effort must be based upon a threefold approach, not one of which is the traditional mobilization base concept. One part must be to keep our industrial system so strong, flexible, and expanding that it can help win the economic-political world battle without resort to arms, except as policing actions occasionally put minor demands upon our production. A second part must be to build our forces in being to such a state of readiness as to act as an effective deterrent until workable international controls are accepted. The final part should be a more realistic facing of the immensity of the survival task if unwanted general war should arrive.

Some authorities have hopefully suggested that even if thermonuclear war should arrive, that first destructive phase in which we might easily lose half our population and two-thirds of our industry would still be followed by a "phase two," in which traditional mobilization base planning has a role as we would rebuild our forces to carry a long, conventional war to enemy shores. It is very hard to accept this view as either a fair interpretation of military strategy as it would evolve after thermonuclear attack, or that any industrial preplanning would be able to anticipate postattack needs adequately. The real task for any country which has been exposed to such attack would be to try to save some small part of human civilization for those who survived both the initial attack and the chaos following in the wake of such a breakdown of community services and economic and social life.

## D. MANPOWER SKILLS

Perhaps the greatest asset of any nation is its people. No resources, no location automatically give productivity or military defensive strength, particularly as transportation overcomes previous barriers to movement. Numbers of people are important if the labor force is to be capable of manning a diverse and specialized interdependent economic system, and if the military forces are to have their personnel requirements filled. In a military contest between major powers, their absolute population levels, their population pyramids, and their net reproduction rate trends are of significance.

But of overriding significance are the qualities of the people. Their aspirations and their steadfastness are important, together with their native intelligence and their physical fitness. So, too, is leadership, whatever form of government and social organization is adopted. Our interest now, however, centers on the acquired skills of the work force of the population. This is a paramount consideration in an age so dependent upon advanced technology and in which this revolution is proceeding at breakneck pace.

Requirements for skills can be viewed in short-run and long-run terms. In the short run, we must have the pilots and the radar technicians to fill military billets. We must have the production workers with their background of experience and training to perform the current manufacturing and transporting work the economy requires. Recruitment for immediate needs depends upon the availability of people with experience for the more difficult jobs and with good aptitudes for the jobs which take less training.

The long-run meeting of manpower needs is both more difficult and requires a greater ability to foresee complicated relationships among policies. The most critical of the manpower skills are ones which require the greatest foresight to provide. They require the acquisition of a wide range of basic skills and knowledge. Without minimizing the importance of humanistic education, which is important to the preservation of our institutions and our traditions, we must in this context center our attention on scientific and engineering skills. They are the key to continued technological progress, and technological progress may very well determine our national survival. Clearly, we cannot create good scientists or pursue basic research on a crash basis and expect optimum results therefrom. Only long-range programs starting early in the school career, guided by good teachers and supported by proper equipment, are going to yield adequate results. So, too, must basic research be supported without regard to shifting international relations or economic conditions at home. Finally, in the applied field, there must be opportunity for teams of scientific, engineering, and toolmaking talent to work together and to develop capabilities for meeting fresh challenges brought by rapidly evolving technical requirements.

The Joint Economic Committee has studied the problems of automation, and has found that automation is an extension of processes long underway in our industrial society. The newer aspects of automation not only are accelerating productivity in industry, they are also changing manpower requirements qualitatively. Now more than ever, the scientist and the engineer, and the highly skilled tool and die maker are the controlling factors in attaining production goals for advanced military hardware items and essential civilian products.

The rapid obsolescence of existing weapons and equipment, and the great variety of challenges we face all emphasize that no pool of skilled workers can be frozen in a stockpile and then necessarily satisfy the highest priority of national needs. The constant development of versatility and the expanding capability to meet fresh challenges are of greater importance.

This suggests that the business and social environment in which skilled workers find themselves may be important to maintaining and expanding both numbers and skills, as well as providing incentives for performance at a very high level. Our system looks to competition and the desire for material and social well-being as the means for attaining these ends, rather than either compulsion or complacency. We do not threaten people with penal servitude for failure to reach production goals, but neither do we get best results from those largely sheltered from competition. This is parallel to the situation where an industry feeling some pressure from rivals is more likely to be progressive than one which has a guaranteed market. Scientists and engineers are encouraged to work by individual financial incentives, and these should not be neglected. But these professions also require the status and general level of rewards which will insure that some of our best potential talent will elect work in sciences and engineering, and that the highest grade of graduates are available for teaching staffs. We must see that those of high ability have the opportunity as well as the incentive to acquire the training the country needs.

#### E. GUIDES TO SELECTING CRITERIA

In the preceding subsections of this report there has been brief analysis of the meaning of national security, of the nature of war, of the mobilization base, of manpower skills. Perhaps most of the points made find general acceptability in this country. But general principles need implementation, and then specific and very complex issues must be faced and resolved. This requires both understanding and a machinery for decisionmaking. The understanding must come to the general public and the Congress as well as to those officials of the executive branch who control the particulars of individual situations. Everyone concerned must appreciate the importance of a well-thought-out program of long-run building of national abilities both in industrial capacity and in manpower skills. Everyone concerned must appreciate that policy is based upon balancing requirements, that each choice made will have consequences favorable and unfavorable. The plea for any single program of military or industrial strength cannot be judged alone on its individual merits, but must likewise take into account a very broad range of short-run and long-run repercussions. This is not easy, and usually the repercussions are difficult to identify, which does not in the least minimize their importance.

When this understanding has been reached, probably the most difficult part of the job is done. What remains is to create a machinery for cataloging our requirements and our facilities, and to have adequate statistical and analytical tools in Government and in business for assessing policy alternatives and implementing those selected. The intangible factors should not be neglected. A decision based upon resource accounting alone might not take into account suffi-

ciently dynamic consequences at home or important relations abroad. And certainly policies related to national security, mobilization, and defense essentiality must be coordinated at the very highest levels of Government. Every department must be working from the same premises if the actions of all are to fit into a meaningful pattern.

It seems very clear that there have been obvious conflicts in previous considerations of the problems of foreign economic policy and of national security. There have been conflicting priorities and means used for making policies effective. This is a type of difficulty which must be resolved, for too much is at stake to allow these differences. It is our view that these conflicts can be settled if a proper understanding is attained of the issues. In the watch industry which we have taken as a case study, it is clear that a narrow view of the mobilization base and the broad objectives of foreign economic policy have clashed, and this study is designed to minimize that danger in the future for both that industry and similar ones which will cause dispute as their individual situations are reviewed.

This subcommittee is convinced that a meaningful pattern very definitely must extend beyond any narrow continental defense concept of the industrial mobilization base. National security has broad international aspects both in time of peace if useful trade among nations is to stave off war, and in time of war, if our strategy is not to fight alone, but with allies to share the responsibility for our collective security. Any lingering doubts that we are all involved as a part of the human race must surely have been dispelled by Army testimony in June 1956 that thermonuclear attack on the Soviet Union could result in heavy casualties in Western Europe or the Far East from the fallout. Preserving national security in this kind of world requires the very broadest consideration of all aspects of particular policies.

In effect, as particular industries ask for special treatment in the name of national defense, we must ask ourselves these questions:

(a) How unique and essential is this industry to our military strength and are their skills in short supply?

(b) Will trade restrictions actually help the industry to keep its skills and does its civilian production aid our defense, or is it seeking a rationale for its own commercial advantage?

(c) What repercussions will such restrictions have in other industries; will fresh burdens be thrown on them?

(d) What alternative approaches to preserving the capacity of a critical industry have been sought and weighed?

(e) Finally, and not least, what will be the repercussions generally on our allies and on other friendly countries whose prosperity is also important to our national security?

### III. WATCHES AS A CASE STUDY

#### A. ARGUMENTS FOR ESSENTIALITY OFFERED BY DOMESTIC JEWEL-LEVER WATCH MANUFACTURING PROPONENTS

(1) *Essentiality of the American watch industry has been well established and does not need further review.* Domestic producer representatives placed in the record copies of selected previous governmental decisions which leave the impression of unanimity of opinion that the watch industry is essential to national defense because of

its production of horological devices and of precision military equipment. Constant reopening of the question is upsetting to the industry. The view was voiced that the Congress cannot establish defense essentiality criteria, and such matters should be left to the executive branch of the Government.

*Subcommittee commentary.*—Continued controversy surrounding watches clearly shows this is not a closed matter. We would be neglectful of our responsibilities not to seek an understanding of what is meant by defense essentiality, how it is applied, and what the consequences are of such applications. Congress cannot act intelligently on the wide range of matters delegated to it by the people unless it studies major problems as well as delegating authority to the executive branch.

Other congressional studies have taken a limited view of the problems of the watch industry in keeping with their responsibilities. At no other time has a committee brought together the economics, foreign relations, and preparedness aspects of the industry in a comprehensive study.

The preceding section of this report emphasizes that needs do change, and that constant review of mobilization base priorities is required.

(2) *The interest of the domestic producers of watches in restricting watch imports is primarily patriotic, not commercial.* The combination of defense contracts, other manufacturing, and importation of Swiss watches is sufficient to keep these domestic companies in healthy financial condition. This establishes their present concern with defense essentiality as genuinely patriotic. But the importers with their interest in increased trade are willing to sacrifice the national security. Trade should not dominate over security.

*Subcommittee commentary.*—We were left with the impression that both domestic manufacturers and importers have an equal concern for the welfare of the United States. Differences of views on both sides seemed compounded of sincere interest in national security which can be advanced in alternate ways, and of commercial considerations which also may be quite respectable. Trade and national security are not necessarily exclusive alternatives, and indeed the preceding section of this report establishes their vital connection.

(3) *Even with the H-bomb, a war could last many, many years.* Nearly all past wars have lasted longer than people expected they would at the time. This emphasizes the importance of the mobilization base and the watch industry as a part of that base.

*Subcommittee commentary.*—It is not safe to conclude that history always repeats itself. For example, never before has the survival of life on the planet been threatened by weapons of unparalleled destructiveness. Our views on the mobilization base have been presented in the preceding section of this report.

(4) *The watch industry provides a pool of critical skills for defense.* For approximately 200 years the essential characteristics and design of watches have changed very little. They have been made by skilled craftsmen, with many of the production secrets remaining something carefully guarded, to be passed on from father to son. But gradually greater reliance has been placed upon machine production, once the proper design for a particular model and its tools for close tolerance work have been attained. By progressive stages, machine production



has carried watch manufacture closer to what is popularly called automation. Some of the assembly line jobs can be learned fairly quickly by those who show aptitude for the close work entailed. Supervisory, tool adjustment, and related skilled jobs, however, may require several years to acquire, and a handful of most critical jobs in a watch factory are occupied by those with more than a decade of experience. If a new watch plant is to be successful in less than a decade, it requires under today's technology people of long experience in watch production to do the overall designing and coordinating of production for a complete watch. Watch spokesmen claim no other industry can match these microprecision abilities in mass production.

*Subcommittee commentary.*—There is no doubt that some of the skills of key personnel in a watch factory take years to acquire, but probably not as great a proportion of jobs are truly critical as the domestic producers imply, and job training times can be reduced, if the experience of other industries has any relevance. Most skills are presently acquired by the slow accumulation of experience rather than through carefully organized and intensive instruction by modern techniques. The experience of one watch firm in establishing a branch plant is a case in point. In any event, we recognize that a modern watch factory which takes advantage of the latest production techniques and which is energetic in research and development represents desirable production capacity both for making horological devices and for making other precision items in a national emergency. We are not convinced, however, that such factories are the sole repository of precision skills in industry.

(5) *Watches are needed in war.* We live in an age in which we are governed by time. In transportation, in all military tactical operations, and in most production processes, accurate time is of key importance to the efficient functioning both of our organizations and our machinery and vehicles. Broadly conceived, timing devices include more than wrist watches and clocks: they include a great variety of special mechanisms which rely upon horological principles. The military forces have provided estimated requirements for a variety of watches and clocks, based upon certain assumptions as to the kinds of emergencies we may face. The Commerce Department also has provided estimates on essential civilian uses for watches, such as for civil defense, nurses and doctors, and production workers in factories and mines. Clearly the efficient functioning of our economy in peace and war depends upon a large number of watches and clocks with sufficient accuracy in some uses as to insure close coordination of separate operations. This is particularly true in aviation, railroading, front-line fighting, and naval operations. The British, French, and Soviet Governments recognize the importance of watchmaking by their special efforts to expand their home industries. Furthermore, the industry must produce at a certain level to exceed the break-even point, regardless of the size of critical needs.

*Subcommittee commentary.*—There is no denying our increasing dependence in peace and war upon timing devices. Particularly in fixed installations, electric clocks are supplying many services formerly provided by mechanical clocks, and for some purposes, electronic radiations, as in the use of loran for navigational information, can replace some previous requirements for mechanical timepieces. The Department of Defense feels that there was some overissue of watches

of a higher quality than actually required in World War II, and it now estimates sharply reduced requirements in a possible 3-year war. Foreign governments' decisions to create horological industries are compounded of several elements in addition to defense needs. How we are to fill our needs for watches is discussed later in the report.

(6) *The possibility of jamming electronic fuzes by ECM (electronic countermeasures) makes especially vital the place of the mechanical time fuze which is based upon horological principles of construction.* Proximity fuzes and radar-guided missiles both have been shown vulnerable to a variety of electronic emissions. Therefore clockwork movements for timing and missile inertial guidance are important if ammunition and missiles are to reach the intended destinations and to perform as programmed.

*Subcommittee commentary.*—This is not disputed, but it should be noted that our relative dependence upon electronics of all kinds is growing, and we cannot afford to neglect these versatile potentialities, either. This report has emphasized the speed and variety of technological changes, and new breakthroughs at any point may alter the importance of specific products, so that our whole industrial structure must be prepared to exploit changes.

(7) *The watch industry is an important source for military end items which require precision and skill.* The microprecision skills of the watch industry have found an important place in the production of military component items which require close tolerance work on small pieces. Typical is the work on aircraft instruments, mechanical time fuzes, rear-fitting safety devices, electronic proximity fuzes, guidance components in missiles, and small gyros for a variety of other military purposes. Some watch manufacturing tools are convertible to turning out nonhorological devices, and clearly a skilled work force both on the production line and in the collection of toolmakers, tool designers, and engineers is an important asset for these other tasks, if they are called upon to turn to this work. Some watch manufacturers contend that only watch manufacturers can produce the types of military components assigned to their companies if the job is to be done with precision and speed, in large volume, and at low cost.

*Subcommittee commentary.*—Watch companies have made notable contributions to national defense production as have many other companies. They should be particularly well fitted to produce several types of microprecision items, particularly of a horological nature. But there is considerable evidence that other companies can produce microprecision items in quantity too, and that their contributions have been equally important to defense. The Department of Defense reported there is no fuze component which is produced exclusively by jeweled-lever watch companies, and only a small part of the total fuze program is currently programmed for mobilization assignment to that segment of the industry. The research and development activities of watch companies in the military field are of growing importance and need the same encouragement given similar efforts elsewhere in the economy. It is not clear that watch production as such is making a large direct contribution to the military research; their research divisions tend to be separately organized and staffed.

(8) *It is the wage differential between Switzerland and the United States which makes it impossible for the American watch manufacturing industry to compete with imports, not any technological lag.* One United

States producer who also operates a factory in Switzerland contended that comparing production methods in his two plants, a clear commercial advantage lay with the Swiss plant because of lower wages in Switzerland.

*Subcommittee commentary.*—All trade is based upon a difference in costs, and absolute comparisons of efficiency are neither practical nor helpful from a national policy point of view. Our reasoning was developed in our report on foreign economic policy of January 1956. This is not to deny that the domestic watch producers do not find Swiss price competition very keen. But this is not in itself a reason for ending this trade until we have found a higher consideration than price competition, namely defense essentiality, should give reason for interfering with the private business system. Despite lower Swiss costs, American manufactured watches are able to compete in some foreign markets.

(9) *Swiss watch exports to the United States are a relatively small part of the Swiss national income, and consequently little harm would be done to that country if the United States takes measures to protect the domestic industry.* In any case, because Switzerland is determinedly neutral, we have little occasion to worry about the repercussions of our policies in Switzerland. The scare talk that higher duties on watches will hurt United States export sales to Switzerland is not based on facts.

*Subcommittee commentary.*—There is no doubt that Switzerland is likely to remain a neutral. It is also true that the Swiss are a democratic people, and this is a time when such values are especially important. Our only commentary on the effect of reduced imports of watches is to refer to the foreign economic policy report of this subcommittee made in January 1956. Any reduction in imports (dollar expenditures) is likely to have repercussions on exports (dollar receipts), and the burden of trade restrictions is likely to fall upon our export industries.

(10) *The Swiss watch cartel poses a threat to the American manufacturers, and hence harms an essential industry.* American producers of watches contend it is the purpose of the Swiss manufacturers to destroy all foreign production of watches to create a complete monopoly for themselves. If this is the case, and they are successful, the dependence of at least the non-Soviet world upon this tiny neutral country remote from our shores could be a very critical matter. It would take many years to reestablish a jeweled-lever watch industry based on conventional designs. During a war of limited duration it would be almost impossible. A neutral Switzerland would be under no obligation to supply us, and if it were either surrounded or overrun, that production capacity would be lost to us.

The cartel might approach its goal of market domination by several means. It might sell in this country at dumping prices below the regular level elsewhere. Alternatively, it might sell at prices related to production costs appropriately marked up at retail level, but because of the efficiency of the Swiss industry and the translation of costs, including wages, at prevailing exchange rates, they would underprice their American rivals. The cartel could of course try to maintain its prices at artificially high levels, and the Department of Justice has charged it with restrictive practices designed to accomplish this. The cartel has been charged, too, with using its organized

ingenuity to find tax avoidance routes around the protection of the American tariff, and these will be discussed in the next subsection of this report. Finally, the cartel is charged with attempts to limit the export from Switzerland of their specialized know-how in the form of plans, machinery, engineers, and skilled workers. All of these possibilities and actualities, the domestic producers charge, represent threats to American security.

*Subcommittee commentary.*—There is no real evidence that the Swiss have attempted to sell in their most important market at a dumping price and consequently there has been no move to assess antidumping penalties against watch imports. If the Swiss have held their watch prices to artificially high levels, this affords an umbrella of protection to American producers with higher costs. If the Swiss are able to undersell American producers on the basis of efficiency in production, sales acumen, and price advantage brought by exchange rate translations, it is hard to see why this by itself makes the cartel harmful to this country, for these are not factors related to the cartel form of organization. Swiss cartel attempts to limit the export of technical know-how and machinery are more serious charges if the United States industry is less efficient than the Swiss and needs Swiss innovations in order to catch up.

This country does not like the cartel form of organization, but can not dictate to the Swiss in this matter. Many Americans believe that cartels tend to limit production, raise prices, and become backward in product improvement and cost savings. Considering Swiss preeminence in horology, it would be difficult to prove the general complaint in this instance.

We agree that the fate of the American watch industry should be determined by its ability to meet fair competition and by the needs of our people for specialized essential products not available elsewhere. Maneuvers of a foreign organization operating through restrictive practices should not be allowed to determine the fate of American watch production. On the other hand, no convincing evidence to substantiate charges against the Swiss of cartel interference with our defense were presented, and the attempt of domestic watch producers to make this topic the central one of the entire hearings is judged to have had little relevance to the real problems of defense essentiality.

(11) *Watch upjeweling in this country and the importing of quality watches marked "unadjusted" are two means used by importers to avoid taxes levied on imported watches for the purpose of protecting an essential American industry.* The domestic producers of watches feel that the Congress intended that watches of high jewel counts and exceptional precision be made in this country, and for that reason extra duties are imposed on watches which are "adjusted" for accuracy, and a very high duty on all watches with more than 17 jewels is assessed, irrespective of other features. Watch importers on a small scale now, but perhaps potentially on a much larger scale, convert some imported watches to a higher jewel count or add imported self-winding subassemblies to watches which are imported as 17-jewel watches in running order. The domestic producers also contend that modern watch construction methods create watches which no longer need individual adjustment, but are still the equivalent of "adjusted" watches within congressional intent, and they contend therefore that an indeterminate number of adjustment fees should be assessed against these watches upon importation.

*Subcommittee commentary.*—This would seem to be another matter not particularly germane to the problems of defense essentiality. It is not within the province of this subcommittee to pass on pending bills related to either of these technical matters. Only to the extent that these tax avoidance measures, if they deserve that label, threaten American security can they even be discussed.

Whether upjeweling is, as the domestic producers claim, a way around the law or, as the importers insist, the normal right of any concern to remanufacture after importation is not for us to say. It does seem as if some of the difficulties are an outgrowth of the curious 1930 decision that watches of more than 17 jewels require markedly different tariff treatment, and of the new consumer preference for high jewel counts which has been fostered by high power advertising and by the desire for special features. We found in our investigations no technical reason for drawing this arbitrary distinction.

Similar complexities surround the relation between the congressional intentions on watch adjustments expressed in 1930 and the situation today when advancing technology has made it possible to build a watch which no longer needs as much manipulation for it to keep good time under varied conditions.

If domestic watch manufacturers are convinced that their industry needs protection from foreign competition, their several attacks on importers are consistent with that objective, however diverse the reasons offered. Already they have won the withdrawal of tariff concessions through the escape-clause action of 1954, and have found the results from their point of view did not go far enough to restrict imports. If they can win a processing tax on upjeweled watches, and an indeterminate number of adjustment fees on watches which do not need the type adjustments made in 1930 but which have similar accuracy, they hope to strengthen their market position compared to their importer rivals. Since there seems no opportunity to prove that the cartel has dumped watches here, even though Swiss watches compete in price, they can be pleased to see the cartel attacked for holding up prices and for limiting foreign watchmaking activities of Swiss manufacturers even though these restrictions help much of our domestic watch industry. Now section 7 of the Trade Agreements Act of 1955 offers the opportunity to add a variety of restrictions if the Office of Defense Mobilization and the President can be convinced that national security requires these.

Certainly our watch tariff problems could be simplified if we applied an ad valorem duty on all watches, regardless of jewel count and form of construction or adjustment, perhaps setting absolute lower and upper limits to this ad valorem rate. Such a tariff would not vary so much in its protective effect with changes in price levels, and by setting at least a minimum rate, the work of customs appraisers would be greatly simplified. This would save us from controversies over the present rules, and attention could be refocused on the main issue of whether the industry does or does not need protection, and whether if required this should be done through the tariff or by other means. However, as a practical matter, this is not the time to amend the 1930 Tariff Act.

## B. ARGUMENTS AGAINST ESSENTIALITY OFFERED BY IMPORTERS OF WATCHES AND THEIR SUPPORTERS

(1) *Government findings on watch requirements have been inconsistent and inadequately supported by clear-cut criteria.* The escape clause action was supposed to be based upon the faltering commercial position of the industry, but the President seems to have been influenced by the report on defense essentiality of the industry made by the Interdepartmental Committee on the Jeweled-Watch Industry of the Office of Defense Mobilization in the spring of 1954. There are good reasons for being troubled by the logic or lack of logic on the part of that committee in arriving at its decision.

The Department of Defense made a very complete study of military requirements for watches and other products of a military nature produced in part by the jeweled-lever watch companies. The Department of Defense concluded that the need for jeweled-lever watches in any future 3-year war would be nominal, and that if it were necessary, sufficient watches could be stockpiled in advance. This report was not made public until almost a year later, even though the original report was prepared in a way which would have allowed its declassification at the time.

In contrast, the Department of Commerce concluded in its study made for the Office of Defense Mobilization that annual production of at least 3 million movements was required to meet the very minimum of essential civilian needs in wartime. This, it should be remembered, does not refer to direct military requirements. The Department based its estimate on the apparent shortages and inconveniences of World War II, and then scaled upward the estimates on new requirements to match the growth of population and economic activity. It is curious that the Department of Commerce minimum has been exceeded only 2 years in our history.

The Interdepartmental Committee on the Jeweled-Watch Industry seems to have rejected much of what was concluded by the Department of Defense report, but accepted in scaled-down form the Department of Commerce estimates. The Committee finally supported the figure of 2 million movements a year.

This movements figure seems at best a very crude measure without any particular inquiry into the composition of the work force required, the number of watch designs to be produced, the number of companies to be supported, all of which would have a bearing on the preservation of critical skills. In fact, it looks like a compromise figure, roughly equal to the Department of Commerce estimate cut in half and added to the Department of Defense estimate. Now if the Department of Commerce was correct, it was wrong for the Committee to compromise on a lower figure, simply to get agreement. On the other hand, the Department of Commerce presented no evidence that its findings were anything more than a scaling up of purported watch requirements of World War II and the Korean emergency periods. There was no evidence of an analytical process to show whether the production of 3 million watches a year in war would have a deleterious effect on other essential production. If the skills of the jeweled-lever watch industry are so great, it would seem likely that as in previous emergencies, their abilities would be too important to use in manufacturing watches instead of fuzes, gyros, relays, and many other important devices.

While the details of the Department of Defense study were still kept from the public, that same spring of 1954, the new Assistant Secretary of Defense for Supply and Logistics testified that the jeweled-lever watch industry was essential. When the study was finally made public, long after the escape-clause action, it was hard to reconcile the declassified study and the public statement, despite the assurances of the Secretary of Defense that the position of the Department had not changed.

There is left a strong suspicion that the decision of the Interdepartmental Committee was dominated by domestic commercial considerations rather than either defense needs or foreign policy effects.

*Subcommittee commentary.*—Careful reading of the Department of Defense report on watches of 1954 and the press release of the Secretary of Defense in 1955 makes it hard to accept that the Department has not shifted its position. The report stated, “\* \* \* no special or preferential treatment for the [jeweled-lever watch] industry is necessary.” The press release of a year later stated these words meant the jeweled-lever watch industry is equally as essential as the pin-lever industry, both of which are important.

Considering that watches are likely once again to have a low priority for manufacture in light of the reserve already available in stores and private possession and the need for all precision skills in the country for making more critical military items, it would seem better for the Interdepartmental Committee to have studied that aspect of the problem more completely. Then it would be possible to explore whether watch production in peacetime is necessary to preserve a pool of skills needed in war to make devices other than watches. It would be desirable to study whether singling out the watch industry for special treatment would do more to advance the general level of precision skills available in the country than would more general efforts in research and education and training. Certainly it is important to inquire whether special treatment of the watch industry is likely to harm other critical industries in the United States.

(2) *Other producers are equally capable of performing microprecision manufacture essential to defense.* Only the jeweled-lever watch producers in this country are prepared to produce jeweled-lever watches, and it would take many years to start from scratch to manufacture conventional jeweled-lever watches if those plants did not exist. But when one reviews the uniqueness of their skills for doing close tolerance work on small items in general, the evidence is that an increasing number of other firms are also capable simply because there are increasing demands for such products both in time of peace and in time of war. The four jeweled-lever watch companies do not begin to have the space, the machinery, the production line personnel, the skilled toolmakers, or the engineers to carry the total burden of such microprecision manufacture for the Nation. Nor did they ever have in any past period capacity equal to meet needs of today's magnitude. Even if they could be so equipped, the country could not afford to concentrate strategic and vital production to that degree in a few vulnerable plants of a single industry. The Department of Defense has made clear that it does not regard the abilities of the jeweled-lever watch industry in defense production as unique, even though the industry has valuable capacity. No major military production component is made exclusively by the jeweled-lever watch industry, and only a small propor-

tion of total fuze and rear-fitting safety device orders are programed in the future for production by the jeweled-lever watch industry.

Importer spokesmen noted that although evidence was produced for the record which showed that companies other than jeweled-watch producers had production difficulties which in some instances were overcome with help from these watch companies, this was not the whole story. Once new firms mastered unfamiliar production problems, many of them did very well. There was evidence offered, too, that in some instances, the domestic watch companies have been underbid and outdone on defense work by other domestic firms, including plants operated by importers of watches who were able to do well without the benefit of simultaneous domestic production of jeweled-lever watches. Nor did the watch companies volunteer for the record any information about some of their own previous production difficulties and rejection problems while trying to master new products, even of a horological nature. A labor witness did allude to watch company difficulties in producing ships' chronometers, but there was no elaboration in the hearings. What it comes down to is that today the demands for accuracy, speed, and large volume production are very great, and the best of firms are hard pressed to meet requirements.

Also striking is the changing nature of defense needs. Not only have our methods of production moved toward automatic production within tolerances beyond the capability of the individual skilled worker to meet, but the rapid obsolescence of military equipment is presenting fresh challenges. Typical today is growth of miniaturized electronic equipment used in bombs, shells, missiles, and aircraft. In this work, many newcomers and companies outside the horological industry will have important contributions to make to microprecision manufacture. Twenty years ago, it was uncommon for microprecision work to be required outside the horological industry. By World War II, the picture had begun to change, and since that time each passing year is markedly in the direction of such skills becoming more and more widespread.

*Subcommittee commentary.*—During the hearings, a representative of the jeweled-lever watch industry conceded equal importance to defense for the pin-lever watch and clock industry. The pin-lever industry, according to evidence in the record, like everyone else, seems to have had its share of production triumphs and failures.

We do not want to minimize the importance of microprecision skills in manufacture required for defense purposes. Watch companies have a long tradition of experience in this field, and undoubtedly can do some operations better than their rivals. But at the same time they cannot do everything better, and can be more than matched in a number of vital fields. Emerging technology will pose very great challenges on all manufacturers, whether they are watch companies or clock companies, or outside the horological industry. Some will do well, while others will have production difficulties. Many of the existing engineering and toolmaking teams will continue to be invaluable, but newcomers will be needed, too. Some of their results, if the past is any guide, will give the established concerns a good run for their money.

(3) *There is only a limited need for more watches in war.* A labor representative at the hearings contended that fuze production was the



least important work of the jeweled-lever watch industry, that fundamentally the basis for preservation of the industry was the production of jeweled-lever watches. Obviously, accurate timepieces are essential in many military operations, and the jeweled-lever watch companies are undoubtedly the concerns best able to make such products, although the importance of pin-lever watch production should not be minimized. But the importer representatives questioned whether watches are needed in the quantities implied by domestic watch manufacturers. Granted for the moment that they are, there should be enough watches in the hands of jewelers and in the possession of the public that could be requisitioned to meet any foreseeable needs for watches even in a war lasting several years. Probably enough ships' chronometers are already in storage by the Navy to meet those needs, too. There is a further question of relative priorities. Granted that watches are important to the conduct of war and essential civilian operations, it does not follow that we can afford to manufacture them in wartime. Probably most watch company facilities would be required to fulfill higher priority needs, just as was true during World War II. Swiss production might again be available as it was in that war, because no limited war would be likely to cut off that country. The Swiss are likely to be cut off only in the kind of grand holocaust which would leave in doubt any mobilization plan.

*Subcommittee commentary.*—It is the ability of the jeweled watch companies to do fuze and other defense work which leads us to suspect that most of their capacity in an all-out emergency would be diverted from watch production. This ability, of course, is shared with other good firms in this country. It would seem that some of the requirements for watches in time of war have not been based on any real assessment of relative priorities as urged in an earlier section of this report. Air navigation requires high accuracy in instruments, but nurses will harm few patients if they use pin-lever watches and electric wall clocks for taking pulses and timing medication. We were impressed by some of the pin-lever watches shown at the hearings. Many of them would provide a sufficient degree of accuracy for most purposes, and are enough cheaper to manufacture that even if they wear out after a few years, their purchase price approximates the cost of cleaning a good jeweled watch, let alone purchasing the jeweled-lever one initially.

(4) *Technical changes in watches will outmode some present concepts of their essentiality.* As has been pointed out, for about two centuries, watches have been altered very little in design, except to make them smaller and thinner and more stylish. Manufacture has changed, and is changing through standardization of parts and automated production. Self-winding watches have been made in Switzerland since 1880, and one American company now makes such watches. Calendar and other special-feature watches are not new, but are of growing popularity. Improvements in pin-lever watches in this country and in Switzerland are opening up new markets of considerable size which are only partly competitive with American jeweled watch production.

Of considerable interest for the future are the potentialities for revolutionary changes in watch design. These changes may be such that much of present watch technology will be of limited significance to the competitive position of different watch companies. Electronic firms

not now engaged in watch production may very well have the advantage in the production of new devices of this type. Already one watch company in this country has announced an electric watch, and the witness from another wore an electric watch to the hearings. Testimony from an importer at the hearings suggested the time is not far distant when electric watches may in turn be replaced by purely electronic watches bearing no relation to the present watch mechanisms except to tell time.

Such products are not yet a marketing reality, but there is little reason to doubt that in a few years they will be. When that time comes, any estimates in the watch industry on the size of facilities, and manpower pools required for defense will clearly have to be reviewed. It suggests that the defense contribution of the watch companies which is real is concerned with the production of military end items, not watches. These defense skills should be considered on their own merits, together with similar skills of nonhorological companies which may be judged worth preserving. But the traditional way of producing watches may prove in time of less importance than is true today.

*Subcommittee commentary.*—It is premature to judge what the specific effect on the watch industry will be of technological changes which are now under development and may come in the future. Certainly these possibilities stress again the importance of versatile and high caliber engineering and tool and diemaking talent. We must be sure that governmental policies encourage this versatility and do not freeze our capacity in processes which will become outmoded.

(5) *All industries become essential in a major war effort.* Any maximum logistic effort will require all the machinery, skill, and experience which can be converted to saving the Nation. Shortages of such talent will be general. It follows that if the defense essentiality argument is to be allowed any one industry as an excuse to interfere with legitimate peacetime trade, so too may all other industries make pleas for protection. If such grants were to become commonplace, we would retreat rapidly into expensive autarky and an unworkable isolation. The pleas of individual industries cannot be taken too seriously because they lack any common set of criteria, and view their own contributions in a parochial way.

*Subcommittee commentary.*—There is the danger in some quarters that because all industries are essential in war, any and all pleas for trade restrictions might be entertained uncritically. We would not go so far as to believe any part of the Government would be so naive. We need impartial criteria which may help us to find genuine differences in the degree of essentiality on which policy determinations can be made and which will protect the national interest. Every industry feels itself essential to defense because it knows that its facilities would be employed in an all-out emergency. But there must be selectivity on the part of Government in identifying the more critical, bottleneck industries for special treatment, if we are not to abandon the system of market-price allocation of resources (free enterprise) for a centrally controlled and planned society (totalitarianism). The responsibility for substituting bureaucratic judgment for market forces cannot be taken lightly, and defense considerations must be truly overriding.

(6) *A practical test of defense essentiality might be found in the willingness of the Department of Defense and the armed services to*

carry the costs of certain industries, including watches, as part of their military budgets in the form of direct subsidies. There is no reason why consumers should have to pay a high price for watches to support a so-called essential watch industry. Further, if watch industry research on guided-missile components is essential, the costs of such development work should be a part of the military budget, not obscured as part of a minimum base concept of skilled watch workers maintained through trade restrictions. We do not ask duck hunters to subsidize an ammunition program or the owners of television sets to pay the costs of the DEW line radar screen.

*Subcommittee commentary.*—It is quite likely that fewer military figures would come forward to volunteer that their organizations pay subsidy money for making civilian watches in order to maintain a mobilization base than now come forward with generalized endorsements of essentiality. This may not be the whole answer to the problem, as implementation might prove difficult in some respects, and more study is required. However it is paid, special treatment for an essential industry does have its cost, and if the purpose is to aid defense, it is a defense expense.

(7) *Fresh restrictions on importation of watches justified on the basis of defense essentiality may have repercussions which are overlooked or disregarded by those advocating this approach to solution of domestic watch industry problems.* Most obvious is that a reduction in the value of imports requires adjustments in the balance of payments. Swiss purchasing power is reduced, and will be evident in lower purchases either from the United States or in third countries which deprived of dollar exchange will themselves have to cut purchases from this country. To sustain the level of exports might require a heavier burden of foreign aid to offset dollar earnings lost here. It is the multilateral balance, not just Swiss trade with this country, which is affected.

Secondly, fresh trade restrictions can be followed by reprisals, and it matters little whether these are considered vindictive or merely adjustments to a new situation. There is danger of starting a new vicious circle of mounting controls which could be very damaging to the goal of strengthened economic relations with friendly countries.

*Subcommittee commentary.*—These points are easy to accept in principle but harder to prove statistically in particular instances because of the complexities of economic and political relations. But we would go a step further. Whether individual acts seem to be justified or not within the limits of consideration reviewing authorities have used, we sense from worldwide editorial comment, travel, and discussion, a cumulative harmful effect which cannot be measured in quantitative form by any regular review process. Our Government's actions on watches, bicycles, and procurement of generators for public power dams have been viewed apprehensively by all our friends abroad even when they were not directly affected by the decisions taken. Aid for the domestic industries concerned may be required, but if it is, a much more determined effort must be made in the future to avoid measures which can only bring comfort to unfriendly rivals.

(8) *Restrictions on imports taken to aid the domestic watch industry will not have the effects hoped for, at the same time that they make trouble for us in our foreign relations and add an unnecessary burden on other home industries and consumers.* The 1954 decision to raise the duty

on imported watches did not solve the problems of the domestic watch industry, nor is there any reason to suppose that further duty hikes or other restrictions on imports would be beneficial. Consumers will not buy expensive domestic watches which lack advanced features in sufficient quantities to sustain a growing American jeweled-watch industry. For the person who owns a quality domestic watch in good working order, and who wants to buy a new watch with self-winding or calendar or other special features, the chances are good that such a Swiss purchase is not competitive with domestic watch products. There are several consequences which follow from these import restrictions, existing and proposed. In very expensive watches the watch movement is a small part of the price anyway, and duty changes will not affect their market appreciably, or if they do, they are such a small part of the total market as not to affect the general prosperity of the domestic producers. In cheaper watches, the market would simply be lost. Many people unable or unwilling to buy an imported watch at a low price for gift purposes will buy products other than watches, or will buy services, to meet their gift needs. The choice in a gift is not always between a \$20 imported watch and a \$35 domestic watch, but more often between the \$20 watch and a bracelet, or a short train trip, or a chemistry set. Furthermore the growth of foreign travel by Americans is becoming so great that there are a very large proportion of people able to buy directly or through a friend a watch purchased outside the United States tariff jurisdiction. Smuggling of watches is not difficult either, and a high duty gives increased incentive for tourists and transportation company personnel to bring back watches for resale in this country.

*Subcommittee commentary.*—Certainly past restrictions on watch imports have not increased the share of the market held by domestic watch producers, and a heavier tariff burden on the higher jewel count watches may have been a factor in the shift to the importation in larger quantities of cheaper watches causing some difficulties for domestic pin-lever watch manufacturers. This is arguable, but still is indicative of the complicated results of implementing defense essentiality measures. Both a witness from the jeweled-lever watch industry and the Department of Defense concede that pin-lever watch producers are equally essential to defense. So we note that any increase in duties has the tendency to shift a burden to other parts of the economy, parts which may not previously have needed protection. But with their position made precarious, they may be forced to ask for protection, too. If wholesale adoption of such policies were to be the rule, it would be an admission of a policy of virtually complete self-sufficiency which is not in the national interest. Therefore all changes in rates should look beyond the immediate product affected to these other industries. Whether smuggling becomes more of a problem or whether watches are brought back by tourists not only from Switzerland but even from nearby Canada and Mexico, it is probable that many Swiss watches will continue to reach the United States.

(9) *There are several alternatives to trade restrictions which would offer more long run hope for improvement of the position of the American watch manufacturing industry.* Perhaps most important would be a concerted drive to increase horological knowledge in this country. Although watch repairing is taught, there is no university which offers work in the horological sciences, in contrast to Switzerland

where numerous institutions carry on both training and research. The United States industry has been dependent upon Switzerland for many of its tools and technicians and skilled workers, as well as for jewels which are used in watch manufacture.

American actions to restrict Swiss trade in watches increases Swiss reluctance to allow the export of their machinery and technicians not only related to watches but in other advanced fields of technology and engineering as well.

There is the real danger that the American industry, if it feels it will be protected from progressive rivalry abroad, will grow complacent and have even less incentive for keeping up with the Swiss who are the acknowledged leaders in advancing watch technology. American producers might come to expect with each Swiss advance, that they could return to our Government for further protection.

*Subcommittee commentary.*—The watch companies are now in the process of expanding their military research activities. It might be desirable for them to make more comprehensive plans for horological research as well, if they feel that watch production is an important part of their defense contribution. Swiss cooperation could be important to this effort, and would be more likely to be forthcoming if the present feuding could be ended.

(10) *The real attack by the American producers of watches is not so much upon the Swiss as upon other American businesses.* The importers imply this when they point out that only about 15 percent of the selling price of an imported watch goes to pay for the Swiss movement. The amount paid in taxes to our Government is in excess of the price of the movement. The greater part of the price is spent for the total of delivery charges, taxes, the case, the strap, and various markups by dealers and retailers.

*Subcommittee commentary.*—This is a minor point, although the small place of the cost of the movement in the retail price of a watch is worth noting. In general though, whether most of the price goes to other Americans or to the Swiss is not particularly germane to the defense essentiality discussion, and should not have too much bearing on trade policy. The subcommittee's discussion of the balance of payments in its January 1956 report makes clear that dollars spent abroad tend to be as useful to the domestic economy as do dollars spent at home, and in fact, if the reason for buying abroad is based on international division of labor, our well-being under peaceful conditions is enhanced. In passing, we note the 15 percent estimate probably understates the typical Swiss share.

(11) *The real basis of Swiss competition is in the superior technology and marketing abilities of that watch industry, not low wages of Swiss workers.* Much of the American industry seems to have stagnated, and concentrated its efforts on winning new trade restrictions or putting research money into defense items rather than better watches. In contrast, the Swiss have made horology a major technical science, establishing many institutes and courses of study devoted to improvement of watches. Most of the major innovations in watch design and in watch production methods have come from the Swiss. Because their workers are among the highest paid in Europe, it is not proper to credit their price advantage to low wages. The Swiss also have tried to market products which people want. They have developed a large new market in low-priced watches which American jeweled-lever

watch companies do not seem interested in developing. They have also developed very expensive watches with advanced features that the public wants and American producers have not been willing to build into their products.

*Subcommittee commentary.*—Neither the domestic producer view that Swiss labor is cheap compared with ours, nor the importer view that this Swiss labor is the highest paid in Europe can be taken as especially pertinent to the decision on essentiality.

More to the point of competitive relations is whether the Swiss turn out products which consumers in this country want and cannot obtain at home either at so low a price or at any price. From an economic point of view there is no reason why our people should not be allowed to buy what they want. It should be noted, of course, that neither the "escape clause" nor the "defense essentiality clause" have any reference to the consumer interest. Escape-clause actions put the interest of the producer ahead of the consumer, and defense essentiality asks the consumer to carry a part of the burden of national defense in higher prices or less desired products.

The subcommittee established its views on comparative wage rates in its January 1956 report on foreign economic policy. It recognized further that a case can be made for the escape clause, but that its use can have undesirable consequences. It is establishing its position on defense essentiality with this report.

(12) *The American jeweled-lever watch industry is prosperous despite its complaints about watch imports, and therefore is not threatened with extinction.* Most if not all of the domestic watch companies have shown a general upward trend in earnings and assets. The company which has had the most difficulties could not blame those troubles on imports, and feels it has made progress in overcoming those other difficulties now. The domestic watch companies may be having trouble meeting Swiss competition in watches simply because they are so busy diversifying their efforts and spreading top management thin over military research and various other outside activities. All of the domestic jeweled-lever watch companies are also engaged in marketing imported watches under their own labels and some sell additionally under the labels of subsidiary companies.

*Subcommittee commentary.*—Both the importers and the domestic producers seem to be agreed that the American companies will keep their corporate identities and be able to make money. The domestic companies claim they face serious threats from Swiss competition because their share of the market has declined. The importers tried to establish that although watch sales fluctuate, the domestic companies have not lost ground in absolute terms, and that share of the market is a test open to several interpretations, of which the domestic companies have not picked the correct one. Prosperity of watch companies of course may not guarantee their ability to do defense essential work.

#### C. OBSERVATIONS ABOUT WATCHES AND THE WATCH INDUSTRY

##### (1) *The significance of jewel bearings in watches*

Although the facts are not new, the hearings did develop some information about watches which are not common knowledge to the public. The importance of very high jewel counts has been exag-

gerated in the advertising of some watch producers. A finely machined watch is quite likely to have a considerable number of jeweled bearings, which help to maintain the initial performance of the watch. But beyond 15 or 17, in a conventional watch, added jewels have little significance. The remaining points at which they might be placed are not those at which great friction is encountered. And some very poor watches may also have high jewel counts so that this count is not a guaranty of quality. In fact, added jewels, particularly in small watches, may detract from their time-keeping qualities. In any case jewels cost from 2 to 5 cents each and hardly can be much of a factor in the price of a watch.

(2) *Relation of costs of watches to their retail pricing*

The retail pricing of watches bears little relation to the cost or the quality of the movement. Watches with identical movements and with cases and straps that cost substantially the same sell at markedly different prices. This makes it difficult to understand the precise effect on sales of a change in the tariff, unless the tariff rate is prohibitive. This suggests that some importers probably will stay in business short of a prohibitive tariff or embargo, and that the domestic industry cannot expect guaranteed sales through hikes in the tariff, prohibitive or otherwise.

(3) *Statistical assessments of the watch industry and imports*

There is great difficulty in drawing firm conclusions from the statistical claims of either watch importers or American watch producers as to how the market is divided between them and what the effects of various tariff changes have been.

While there is no complete statistical proof that tariff hikes have hurt Swiss sales in this country, still the test of logic would suggest that such increases in duty have cut into the profits of importers and that because the demand for watches has some elasticity, there must have been some cutback in quantity sold, other things being equal. The drop which did occur in sales after the President raised the tariff could have been related to a need to cut inventories in the recession of that year, or might have been a reaction from overordering in anticipation of the escape-clause action, but logic would suggest the longer range effect of the duty in any case would be adverse.

On the other hand, it is not any clearer from the statistics that raising the tariff in 1954 resulted in improvements in the sales of the domestic companies, although they could argue that they would have been in poorer position but for the hike. Improving business conditions in 1955 probably would have brought some boost in sales anyway. Whether it was the tariff or happenstance, the increased importation of pin-lever and Roskopf movements occurred as 17-jewel watches fell. These results again suggest that higher duties on watches for adjustments, and a processing tax for upjeweling would make no measurable contribution to the strength of the domestic jeweled-lever watch industry to aid national defense.

So long as there are several overlapping and only partially competitive markets for watches and no set of existing statistics are capable of measuring the exact components of these markets, it will be possible for the importers and the domestic producers of watches to disagree as to the state of the market, and neither group of claims can be disproven, even though they come to conflicting conclusions. The

statistical significance of comparisons on share of market are important, though, for they bear on the question of purported Swiss domination. By selecting appropriate series, it is possible to demonstrate either that the Swiss have about 85 percent of the market for jeweled watches, or that they have less than 50 percent of this market (by excluding (a) special feature watches which consumers want and domestic manufacturers are unwilling to make, and (b) cheap watches which may contain some jewels but which in fact in quality and price should be grouped with domestic pin-lever watches, and are non-competitive with either domestic or imported quality watches).

#### IV. CONCLUSIONS AND RECOMMENDATIONS

##### A. GENERAL

1. National security depends upon many factors, not the least of which is a community of economically healthy nations devoted to living in harmony and tied together by mutually beneficial trade.

2. Mobilization thinking must encompass the possibility of many types of wars; each class of possible emergency puts different demands upon the economy. Mobilization thinking must go far beyond outmoded ideas of continental defense to encompass our worldwide interests. Furthermore, it must be adapted to the changing effects of burgeoning technology and shifting international relations.

3. Resources are not great enough to allow for preparations to meet every eventuality; therefore, it is incumbent upon us to allocate our limited resources to meet the highest priority demands based not only on the likelihood of certain events taking place, but also on the seriousness of these events. This suggests different degrees of essentiality for industries in accordance with the priority of their roles.

4. It is safest to assume that never again will we have time to convert our industry over a period of years from a peaceful orientation to a military one; friendly forces in being and supplies ready for use where they will be needed throughout the world should dominate our readiness planning.

5. Thermonuclear war would destroy civilization and possibly mankind everywhere. It must be avoided; but until acceptable controls are available, our primary economic defense effort must include (a) immediate readiness to fight such a war as a deterrent to its ever being needed, (b) survival measures of shelters, food, medical supplies, microfilmed libraries, self-contained power sources, and other steps to save human life and civilization if such a war should come despite our best efforts to avoid it, (c) worldwide containment measures, both economic and military, positive as well as negative, to minimize the loss of our strength through attrition by totalitarian forces which ultimately might encourage resort to a total war of annihilation against us.

6. Wars short of thermonuclear annihilation can best be prepared for and prevented by keeping strong striking forces of naval and airborne units capable of reaching the scene of any peripheral outbreak soon enough to bring it under control before the conflict spreads into general war. Economic support of this effort implies current production and stockpiling of material needed rather than massive conversion of industry; it also implies allies and available overseas bases.



7. If our major effort includes a building of economic as well as military containment measures, the need for using weapons may not arise on any large scale; but such an economic effort implies closer trade relations with other countries free of mutual suspicions of attempts to export depressions or to insulate noncompetitive industries from progressive rivals.

8. The economic strength of our Nation both for peace and war requires continued capital investment in modern plants drawing increasingly upon the new techniques of automation, and backed up by substantial work in basic sciences plus applied research and development.

9. Even more critical is the need for a continuing and growing supply of skilled manpower capable of meeting these new requirements. Wise manpower policies must raise the basic level of skills by proper long-term methods with a minimum use of short-term makeshift solutions which in the future will prove the more costly. We must see that those able to master these skills receive their basic training in proper schools with the best of instructors, providing both a good grounding in key subjects and also a breadth of understanding in and beyond their fields of specialization. This is because adaptable engineering and toolmaking talent now counts for more than slowly acquired production-line skills.

10. National economic and industrial policy must include a system for judging relative degrees of priority and essentiality in those fields where public decisions dominate resource allocation. In the private economy, we rely upon the price mechanism to make these choices as a reflection of consumer interests. In military affairs, pricing devices encourage efficiency but do not answer directly the major strategic questions which require conscious judgment.

11. Freezing neither industrial capacity nor skilled manpower in set patterns is a wise approach to insuring national security even in the narrow sense of continental defense in an age of accelerated technological change.

12. In the very limited number of cases where the balanced assessment of all factors reveals a few industries need special treatment in the name of defense and if these are industries whose manipulation would have international repercussions, the alternative means to aid these industries should be weighed carefully in each individual case.

(a) Tariff increases, direct and indirect, should be eschewed for the burden they throw on other industries, on consumers, and on foreign trade essential to our system of world alliances, and for the reduced incentive to the domestic industry to increase its efficiency or improve its products.

(b) Quotas have the same disadvantages as tariffs plus the additional difficulties of rigidity in application and favoritism in assigning shares.

(c) Subsidies have many of the same effects as tariffs but are likely to throw a smaller burden on consumers and to require budget controls to provide for an annual review of their costs. This latter feature is a useful one.

(d) Stockpiling of durable items not subject to obsolescence but difficult to manufacture or to import in time of war represents a solution to some situations. But just as the tariff should not be used to hide a military cost, neither should military stockpiling hide a depressed industry relief cost.

(e) Standby facilities have a limited role: existing facilities which cannot be put to current alternate use might be preserved if there is some prospect of their being needed in an emergency; but in industries which depend mostly on a high level of active skills, standby is not a helpful solution.

(f) Expanded research and development is something which should be undertaken without regard to temporary shifts in the cold war; only a sustained effort over many years can reap the full benefits of such an approach.

13. Since our involvement in World War II, this country has been committed to a policy of participation in world affairs as the only possible one for a great power in an age of interdependence and of rapid communication over all distances. This requires a foreign policy which frankly and consistently recognizes these realities, and which builds national security not on an outmoded and unworkable continental defense, but rather works actively to prevent war and unrest anywhere in the world, and if war comes works to keep it as far from our shores as possible. This requires our consistent application of principles designed to encourage economic growth and progress throughout all the like-minded nations of the world; whereas a timorous and inconsistent policy with principle sacrificed to temporary expediency will weaken true national security.

14. It is both encouraging and ominous that the Office of Defense Mobilization has announced that the mobilization base is stronger than at any time in our past and that studies for fighting a war which will not touch our shores are virtually complete, but that study of the effects of attack on this country is still in an early stage. This can be paraphrased to mean that we are in better shape to fight the last war than ever before, and this is a charge which has been made against governments and military leaders many times in the past. That such studies have been completed on one kind of war is commendable, but we are disturbed that defense preparations still lag for other classes of emergencies.

15. If the Office of Defense Mobilization were capable of assessing all mobilization requirements speedily and accurately, there would be no necessity for industries to make individual applications to that agency for relief under section 7 of the Trade Agreements Act of 1955, for the ODM already has the authority under that same section to recommend to the President restrictions to meet these needs spontaneously. However, there is something to be said for maintaining an avenue for redress and petition where it is suspected that mobilization decisions are not being made in accordance with recognizable, uniform criteria by the Office of Defense Mobilization and its interdepartmental committees. There is, on the other hand, the real danger that once the way is shown, trade restrictions in the name of defense will really be manifestations of commercial advantage made sacrosanct against criticisms by the aura of patriotic need, even though the real effect is to weaken national security.

#### B. WATCHES

1. Watches can be made best by firms experienced in their production, and horological devices are widely used in military operations, but finding the best role for watch manufacturing companies and pro-

viding timing devices for the military services do not necessarily bring us to recommending restrictions on importation of watches. Importation can stimulate the ingenuity and efficiency of the watch industry.

2. Watches are not likely to be produced in this country in any war in which Switzerland is cut off from us. Under such circumstances it is likely then that factories in both countries would be destroyed; or, if they were not, certainly our plants would have higher priority assignments to fulfill than the production of watches.

3. Failure to produce watches in wartime is unlikely to cripple us because watch requirements of the military forces even in a 3-year war have been markedly reduced below World War II standards, and essential civilian requirements, even if they are as high as the Department of Commerce claims, could be met by importation from Switzerland or alternatively by requisition from private citizens.

4. Although the concerns that make jeweled-lever watches have almost a unique ability to manufacture quality watches in a short period of time, their greatest contribution is to the general pool of managerial, engineering, and production-line skills in the manufacture of micro-precision military end products; this skill is valuable, but it is not unique, for an increasing number of other concerns are showing an ability to work to equally close or closer tolerances, and to develop complex weapons systems employing such components.

5. Protection of the watch industry by trade restrictions in the name of defense is unwarranted because first, it will not be effective in preserving the domestic industry, and second, it represents an undue burden on other industries as well as consumers. The burden on other industries and on the trade of the free world will detract from national security.

6. Attempts to restrict watch imports whether it is done directly by raising duties or indirectly by reinterpreting upjeweling and adjustment rules and by attacking the cartel are likely to have undesirable side effects on our worldwide trade relations and hence on national security far beyond any narrow gain in domestic watch production.

7. Judgments of American interest in the Swiss watch cartel should be in terms of whether it provides our consumers with products at lower prices and of better quality than would home or other foreign producers; we have no valid reason for dictating the form of internal business organizations in a foreign country.

8. Undue emphasis in advertising and in legislation on high watch jewel counts ignores the nominal cost of jewels and small additional benefit if any which jewels in excess of 17 confer to the maintenance of accuracy of a watch; the consequence is complication and controversy in the administration and enforcement of trade rules as well as misleading the public.

9. The 1954 decisions on watches by the Department of Commerce, the Interdepartmental Committee of the Office of Defense Mobilization, and of the President were not accompanied by completely developed analysis of defense essentiality. The industry appears to have been studied in isolation from other industries and any set of recognizable criteria. We urge that new decisions taken this year be supported in the public record with a full analysis of why the decision is taken, regardless of whether that decision is to call for more or less restriction of the watch imports.

10. We do not believe it is correct to emphasize the present figure of 4,000 workers engaged in producing jeweled watches as the measure of essential skills which are being preserved. In the first place, this reveals no fixed percentage of the critical skills requiring long training within the industry; and secondly, it ignores all the thousands of workers employed by watch companies who are doing defense work today. These latter workers are more obviously contributing to defense and maintaining defense skills than those concerned primarily with routine work on conventional watches for the commercial luxury trade. Our goal should be to expand skills, not to restrict trade, for the latter, negative policy will not contribute positively to American strength or world security essential to us.

11. Two-thirds of the large requirement for jewel bearings is occasioned by the number needed to manufacture 2 million watch movements a year. If the watch-movement figure can be questioned as a wartime necessity, then too, the need for jewel bearings may be grossly exaggerated.

Additional comment by Senator Flanders:

On the whole I conceive the preceding paragraphs to express reasonable conclusions drawn from the testimony. There are, however, additional conclusions which could only have been reached by the visits made to actual watch-making plants. Of these, the most pertinent seems to me to be the unique skills of the mechanics and technicians on whom the watch industry depends.

In no other industry are to be found mechanics who can build machinery of such small size and precision as is required for the making of watch parts. In no other industry can be found toolmakers who can produce the microscopic cutters, taps, etc., that are fitted into these machines.

The essentiality of such skills will, I believe, become more evident as the months go by. The replacement of the big vacuum tubes by the little transistors, the replacement of large electrical relays by the tiny cartridge type, are leading to more and more compactness in the control mechanisms which are entering into so many phases of defense work. The watchmaking industry is our nursery for these skills. From this standpoint, I conceive it to be an industry essential to the full development of defense equipment.

For many years past I have been disturbed about the lack of enterprise in an industry which 50 years ago led the world in the commercial production of accurate timepieces. In the last 50 years, however, by lack of enterprise it has surrendered this leadership. In my judgment its essentiality alone entitles it to consideration.

While there are general considerations applying to essentiality, yet the case of each product and of each industry must still be considered on its own merits.

Additional comment by Representative Talle:

I feel constrained to comment on a few aspects of the report.

It is somewhat difficult to comprehend the timorous and despairing conclusion reached by the report in its considera-

tion of the mobilization base. The report states that it is difficult to accept the conclusion that an attack on this country would be followed by a "phase two," in which traditional mobilization base planning would have a role, i. e., we would be rebuilding our economy and our forces to carry on the war with the enemy. The entire approach of the report seems to be that we should do everything to deter or prevent a war. But, if such war should come and if we should be attacked, we should forget what we are fighting for and against whom we are fighting. This is so, the report continues, because if we were attacked we would have to devote all our efforts to try to save some small part of human civilization for those who survive. Presumably those who survive would surrender unconditionally to the enemy.

I would like to point out that when Dr. Flemming testified before this subcommittee he did not in any way disagree with the subcommittee's conclusion that our first efforts after an attack would be devoted to survival efforts. He stated:

"Under such circumstances we must be prepared, during the period immediately following the attack, to provide the resources which would be essential for survival and rehabilitation."

However, at that point, he did not throw in the towel and recommend that we reconcile ourselves to defeat. On the contrary, he continued: "and then, during the second phase, we must be prepared to resume our production of military end items."

Referring to these two "phases" he stated:

"These will not be sharply defined phases.

"(1) For example, during the first phase we should be in a position where, for whatever period of time that phase may last, we can complete the production of at least a few essential military end items—items that might represent the difference between success and failure in that first phase.

"(2) And certainly, whenever the second phase starts, we will still be engaged in survival and rehabilitation activities.

"(3) Nevertheless, primary emphasis during the first phase must of necessity be placed on survival and rehabilitation.

"Each of these phases would require both facilities, equipment, materials, and services in being and the capacity to produce more of them."

In other words, we must have a mobilization base for survival and rehabilitation activities and for the second phase of a war. It is not "either or"—it is "both and." Any other approach is essentially defeatist.

As the subcommittee well knows, the Office of Defense Mobilization acts in cooperation with interdepartmental committees both at the staff and policy levels. All the resources of the Government are put to work in producing data on which judgments are based. Surely it must be apparent that the conclusions of the Office of Defense Mobilization should be given very careful consideration.

I am also pleased to point out that the record shows that the Office of Defense Mobilization has not only concluded

that there will be a second phase, but that also it has undertaken several programs to solve problems associated with it which in its words are "incredibly more complicated and less subject to accurate prediction."

I would like to state that in my opinion it would be extremely harmful for and detrimental to the defense of this country if our mobilization base planning were to be predicated on the watered-down concept described in the subcommittee report.

In its conclusion No. 14, the subcommittee states that it is both encouraging and ominous that the Office of Defense Mobilization has announced that the mobilization base is stronger than at any time in our past and that studies for fighting a war which will not touch our shores are virtually complete, but that study of the effects of attack on this country is still in an early stage. It concludes that it is disturbed that these latter defense preparations still lag.

The Office of Defense Mobilization is to be highly commended for the extensive program of expansion and stockpiling which has been undertaken during the past few years under its direction. That our mobilization base is stronger than at any time in our past should be a matter of reassurance to all of us.

Considering the tremendous day-to-day changes which have taken place in the development of nuclear weapons and the relatively short time in which it has been possible to plan and prepare for attacks of this type on this country, the progress and advances in mobilization planning which have been made in this area have been notable.

To test the adequacy of peacetime planning for mobilization, and to provide a training program for the executive reserve, the ODM has been developing mobilization readiness exercises or war games.

In June 1954 an initial test was conducted in connection with the Federal Civil Defense Administration's nationwide Operation Alert 1954. The second test was conducted in November 1954. It was designed as a command post exercise where some 25 to 30 key mobilization agencies tested relocation and communications facilities for 6 hours.

During Operation Alert 1955, the third in this series of exercises was held. Spanning a 3-day period, June 15-17, Operation Alert 1955 was conducted with considerable success. Several thousand key officials and employees relocated during the test.

In April 1956 it conducted a test of a readiness plan, involving mobilization without an attack on this country. This test was conducted in cooperation with all the departments and agencies of the Government primarily concerned and provided a firm basis whereby the agencies can continue to review their programs in the light of common assumptions.

Operation Alert 1956, scheduled to begin July 20, 1956, will be a continuation of this program on a more extensive scale to test our most advanced plans in this area.

In those parts of the report dealing with the case study on the watch industry the subcommittee has reached several

conclusions the firmness of which is entirely inconsistent with its own admonitions as to how the relative merits of domestic defense essentiality and foreign trade should be weighed. The report states flatly that trade restrictions on watches in the name of defense are unwarranted and that such restrictions damage national security by hindering our foreign trade and imposing burdens on other domestic industries. In the light of the subcommittee's own advice that mobilization needs and defense essentiality must necessarily be subjects of constant review and that the effects of imports on both foreign trade and the mobilization base must be currently weighed by the high level officials responsible for the conduct of those programs, the decisiveness and simplicity with which we settle the complicated watch question are likely to raise some questions about the soundness of our overall recommendations.

It appears that the 1954 opinion of the ODM's Advisory Committee on the Watch Industry with respect to the necessity for preserving manpower skills was reached, after careful study and consideration of the various national objectives involved, by high level officials of the Departments of State, Defense, Treasury, Commerce, and Labor and the Office of Defense Mobilization—the kind of forum that we have recommended for such purposes. No evidence received by the subcommittee from representatives of these agencies has indicated any change in that finding. Our only Government witness, Mr. Flemming of the Office of Defense Mobilization, was not queried on the past activities of the executive branch on this point. For this subcommittee, without receiving testimony from those agencies, to reach a flat conclusion that that finding was then and is now in error puts this subcommittee in a questionable position.

ODM's Advisory Committee on the Watch Industry is a continuing body charged with the responsibility for current reviews of the effect of imports on the industry from the viewpoint of national defense. Such a review is now in progress so that before long we should have for our consideration the latest facts and defense findings on this complicated subject. The representation on that committee would seem to insure that the results of that study will represent a careful assessment of the various national security considerations for which the departments of the executive branch are responsible. Under these circumstances I believe it is extremely unwise, both from the viewpoint of our own interests and those of the public, to include in our report determinations as to the defense essentiality of the watch industry.

91

**CONFLICTING OFFICIAL VIEWS ON  
MONETARY POLICY: APRIL 1956**

---

---

**HEARING**

BEFORE THE

**SUBCOMMITTEE ON ECONOMIC STABILIZATION**

OF THE

**JOINT COMMITTEE ON THE ECONOMIC REPORT**

**CONGRESS OF THE UNITED STATES**

**EIGHTY-FOURTH CONGRESS**

**SECOND SESSION**

PURSUANT TO

**Sec. 5 (a) of Public Law 304**

(79th Congress)

—————  
JUNE 12, 1956  
—————

Printed for the use of the Joint Committee on the Economic Report



UNITED STATES  
GOVERNMENT PRINTING OFFICE  
WASHINGTON : 1956



19

JOINT COMMITTEE ON THE ECONOMIC REPORT

(Created pursuant to sec. 5 (a) of Public Law 304, 79th Cong.)

PAUL H. DOUGLAS, Senator from Illinois, *Chairman*

WRIGHT PATMAN, Representative from Texas, *Vice Chairman*

SENATE

JOHN SPARKMAN, Alabama  
J. WILLIAM FULBRIGHT, Arkansas  
JOSEPH C. O'MAHONEY, Wyoming  
RALPH E. FLANDERS, Vermont  
ARTHUR V. WATKINS, Utah  
BARRY GOLDWATER, Arizona

HOUSE OF REPRESENTATIVES

RICHARD BOLLING, Missouri  
WILBUR D. MILLS, Arkansas  
AUGUSTINE B. KELLEY, Pennsylvania  
JESSE P. WOLCOTT, Michigan  
HENRY O. TALLE, Iowa  
THOMAS B. CURTIS, Missouri

GROVER W. ENSLEY, *Executive Director*

JOHN W. LEHMAN, *Clerk*

---

SUBCOMMITTEE ON ECONOMIC STABILIZATION

WRIGHT PATMAN, Texas, *Chairman*

JOSEPH C. O'MAHONEY, Wyoming  
ARTHUR V. WATKINS, Utah

AUGUSTINE B. KELLEY, Pennsylvania  
JESSE P. WOLCOTT, Michigan

WILLIAM H. MOORE, *Economist*

## CONTENTS

	Page
Statement of—	
Patman, Representative Wright, chairman of subcommittee-----	1
Humphrey, George M., Secretary of the Treasury-----	7
Martin, William McC., chairman, Board of Governors of the Federal Reserve System-----	24
Other material:	
Tighter Money: The Backstage Drama, Newsweek, April 23, 1956----	51
President Backs Federal Reserve, New York Times, April 26, 1956--	55
The Politics of Tight Money, Business Week, May 5, 1956-----	52
Sharing Responsibility, Business Week, May 26, 1956-----	54
Monetary Controls: The Theory Lags, Business Week, June 2, 1956---	54
The Economic Situation and Outlook, Memorandum, Staff, Joint Committee on the Economic Report, April 18, 1956-----	57
Index -----	61

## CONFLICTING OFFICIAL VIEWS ON MONETARY POLICY: APRIL 1956

TUESDAY, JUNE 12, 1956

CONGRESS OF THE UNITED STATES,  
SUBCOMMITTEE ON ECONOMIC STABILIZATION,  
JOINT COMMITTEE ON THE ECONOMIC REPORT,  
*Washington, D. C.*

The subcommittee met, at 10 a. m., in room P-38, United States Capitol Building, Washington, D. C.

Present: Representative Wright Patman, chairman, presiding.

Also present: Grover W. Ensley, executive director; William H. Moore, staff economist, and John W. Lehman, clerk.

The CHAIRMAN. The subcommittee will be in order.

The Joint Economic Committee and its Subcommittee on Economic Stabilization have a continuing responsibility to watch carefully the workings of monetary policy, since it is one of our chief instruments for advancing the objectives of stabilization and growth, as called for by the Employment Act of 1946.

Moreover, as I have said in releasing the correspondence which is the subject matter of this morning's hearing, the workings of monetary policy, through its effect upon interest rates and the availability of credit, intimately affect the lives and fortunes of every business, every homeowner, every farmer, and every citizen.

As is generally known, the Reserve System authorities on April 13 again took steps to raise the rediscount rate. Within a few days thereafter, stories began to appear in the press, with indications that the step had been taken contrary to the judgment and wishes of various Cabinet members, specifically Secretaries Humphrey, Mitchell, and Weeks, and Dr. Arthur Burns, Chairman of the Council of Economic Advisers.

For the purpose of getting the record clear as to precisely what had taken place, I wrote to these officials, along with Chairman Martin, of the Board of Governors. For some reasons which I hope will be clearer after this morning's hearing, the replies we received from Chairman Martin, of the Board of Governors, and from the Secretary of the Treasury fell short of being wholly responsive to the few simple, direct questions which we had asked respecting this particular incident.

Had these replies been more responsive, there would have been little need for this morning's hearing. The occasion for this hearing is consequently the desire of the subcommittee to obtain orally the record which the correspondence failed to achieve.

As I have previously indicated, it is our hope that the hearing this morning can be confined as far as possible to the several specific ques-

tions propounded in my letter of May 10. The intention is that this brief hearing at this time can avoid, so far as possible, going into the merits and economic consequences of the action taken in raising the discount rate and otherwise pursuing a tight money policy over the past year or more.

I think it is only fair to say that these substantive aspects and the pros and cons of the tight money policy, including this April 13 action, are subjects which are clearly within the investigative powers of the Congress, since the Reserve System itself is an instrument to which Congress has seen fit to delegate a portion of the powers explicitly assigned to Congress under the Constitution. The authorities of the Reserve System must accept the responsibility for their action under this delegation and, I must say, I have no reason to feel that they want or try to shirk that responsibility.

That responsibility, however, cannot and ought not to be shared with others in the executive branch. Nor ought the responsibility of an agent be allowed to become diffused by the action of a principal too constantly looking over the agent's shoulder. This is not to suggest that in due course an accounting for stewardship is not to be expected and insisted upon from an agent such as the Reserve Board and Open Market Committee are. The time and place for that accounting will come later after we have more evidence as to the wisdom and foresight demonstrated by the System in continuing the tight money policy by its April 13 action.

Since the proceedings this morning are directed primarily at providing a clear public record as to the consultations, views, and differences of opinion which have been the subject of so much recent press comment, I would like to include at this point the memorandum which was sent to members of the Joint Economic Committee on May 23, transmitting the correspondence in question.

Without objection, that will be included.

(The memorandum and letters referred to follow :)

[For release morning of May 23, 1956]

CONGRESS OF THE UNITED STATES

JOINT COMMITTEE ON THE ECONOMIC REPORT

MEMORANDUM

To: Members of the Joint Committee on the Economic Report.

From: Representative Wright Patman, chairman, Subcommittee on Economic Stabilization.

Subject: Correspondence respecting recent monetary developments.

The workings of monetary policy, through its effect upon interest rates and the availability of credit, intimately affect the lives and fortunes of every business, every homeowner, every farmer, every citizen.

It is not surprising, therefore, that many people are disturbed by widespread press stories and whisperings of conflicting opinions at responsible and official levels concerning the wisdom of the recent action of the Federal Reserve System in raising the rediscount rate.

On May 10, I accordingly advised members of the Subcommittee on Economic Stabilization that I was writing the Chairman of the Federal Reserve Board and various members of the executive department, for the sole purpose of getting the record clear precisely as to what lies behind these press stories. The inquiry was not intended to question the judgment of the action itself, the internal procedures of the System, nor the propriety of outside consultation, but merely to learn something of the conditions under which the action was taken. The questions were specific and sought nothing more than simple, factual replies.

I am disappointed, therefore, and I may say, vexed at the unresponsiveness of the replies which have been received from the very agencies which should be most interested in providing a clear public record. The general professions of mutual respect and best wishes for each other contained in the letters from the Secretary of the Treasury and the Chairman of the Board of Governors are only too obviously intended to avoid answering the 3 or 4 simple, easy-to-answer questions concerning the specific incident which has aroused recent public concern. From the marked similarity in the two replies one might almost infer that the vaunted pattern of consultation applies to the problems of dealing with congressional mail, as well as to policy matters. The evasiveness of Secretary Humphrey's letter is all the more remarkable since, when questioned 2 days later before the Senate Finance Committee, he admitted: "If it had been my responsibility I would not have made this last move."

A reading of the questions and the replies is the best evidence of this avoidance. For that reason it seems appropriate that the full text of the exchange of correspondence be released to speak for itself.

Certainly the hope expressed in the letters to the agencies, namely, that by their replies the necessity for public hearings could be avoided, is given no encouragement or support by the unresponsive answers. A date for hearings will be set in due course.

CONGRESS OF THE UNITED STATES,  
JOINT COMMITTEE ON THE ECONOMIC REPORT,  
May 10, 1956.

HON. WILLIAM McC. MARTIN, JR.,  
*Chairman, Board of Governors of the Federal Reserve System,  
Washington, D. C.*

DEAR MR. CHAIRMAN: You are no doubt aware of the press stories which have appeared in recent days indicating exceptions taken by various members of the Cabinet, specifically Secretaries Humphrey, Mitchell, and Weeks, together with Dr. Arthur F. Burns, Chairman of the Council of Economic Advisers, to the recent action of the Reserve System in raising the rediscount rate.

While it is perhaps too early to judge the merits of the conflicting viewpoints, and it is not my intention in this letter to pursue the arguments for and against the prevailing restrictive money policy, I am deeply concerned about the forces, governmental as well as other, to which the Board is subjected in the performance of its duties. The record which has given rise to these press comments should be made accurate and clear.

Preparatory to consideration of the matter by our Subcommittee on Economic Stabilization, as chairman I am writing to the several administration officials and to yourself. I would like to have your answers some time next week to the following questions:

1. Is it a fact, to your knowledge, that the decision of the Board of Governors went against the wishes of administration advisers? If so, whom?
2. What communications and representations from executive department officials or their subordinates did the Board have before it at the time of reaching its decision?
3. How and by whom were these representations made, to you as Chairman, to other members of the Board, or to the Board as a body?
4. Have you or the Board had any subsequent communication, through official or unofficial channels, from members of the Cabinet or their responsible subordinates criticizing the action which the Board has taken?

I hope that your answer, together with those from the several administration officials, will sufficiently illuminate the facts so that we can avoid the necessity for public hearings.

In asking you these questions, I want to assure you that we are not now seeking to probe into the judgment of the Board in the exercise of its responsibilities. Nor are we asking for information as to the Board vote or discussions which led to the decision. Since, however, the Board does act as an agent in carrying out the powers delegated to it by the Congress, I feel that it is not only proper but necessary that we should inquire as to the nature of the influence brought to bear upon it.

Sincerely yours,

WRIGHT PATMAN,  
*Chairman, Subcommittee on Economic Stabilization.*

[Same letter to Secretary Sinclair Weeks, Department of Commerce, Secretary James P. Mitchell, Department of Labor, and Chairman Arthur F. Burns, Council of Economic Advisers]

CONGRESS OF THE UNITED STATES,  
JOINT COMMITTEE ON THE ECONOMIC REPORT,  
May 10, 1956.

HON. GEORGE M. HUMPHREY,  
*Secretary of the Treasury,*  
*Department of the Treasury, Washington, D. C.*

DEAR MR. SECRETARY: Beyond referring to questions at recent press conferences by the President, it is certainly not necessary here to call your attention to the number of press comments in recent days which have noted the existence of differences of opinion between certain administration officials, including yourself, and the Board of Governors of the Federal Reserve System in respect to the Board's action in raising the discount rate. I am sure you are also aware of the widespread public concern, both before and since the so-called accord of 1951, in the independent role of the Federal Reserve System as an agency carrying out the delegated powers of the Congress.

It is perhaps too early to judge at this time the merits of the conflicting viewpoints as to the prospects for further inflationary or deflationary pressures, and the appropriate monetary policy in the circumstances. The record which has given rise to this public discussion should, however, be made accurate and clear.

Preparatory to considering the matter by our Subcommittee on Economic Stabilization, as chairman I would like, therefore, to have your answer some time next week to the following questions:

1. Did you, and for what reasons, disagree with the action taken by the Board of Governors?

2. Did you or your associates, and by what channels—telephone conversations, memoranda, or meetings—communicate your views or make representation to System officials, either Chairman Martin, the Board, other members of the Board, or staff members?

3. Subsequent to the action taken by the Board, have you or your subordinates communicated your criticisms to representatives of the Board other than through the press stories purporting to state your views, either publicly or privately expressed?

I hope that the answers which we receive from you, the other officials, and the Board itself will sufficiently illuminate the facts so that we can avoid the necessity for public hearings.

As I have told Chairman Martin in writing to him, we are not now concerned with probing into the wisdom of the Board's decision but feel, however, that the Congress is entitled to and must of necessity know the forces brought to bear upon its agency in carrying out delegated powers constitutionally assigned to the Congress.

Sincerely yours,

WRIGHT PATMAN,  
*Chairman, Subcommittee on Economic Stabilization.*

BOARD OF GOVERNORS  
OF THE FEDERAL RESERVE SYSTEM,  
Washington, May 16, 1956.

HON. WRIGHT PATMAN,  
*Chairman, Subcommittee on Economic Stabilization,*  
*Joint Committee on the Economic Report, Washington, D. C.*

DEAR MR. PATMAN: This is to acknowledge your letter of May 10, with regard to the recent action of the Federal Reserve System in raising rediscount rates.

The directors of each of the 12 Federal Reserve banks who initiated this action, with the subsequent approval of the Board of Governors, voted for increased discount rates prior to publication of the press stories to which you refer. The decisions to increase discount rates were taken separately at each of the 12 Federal Reserve banks by their respective boards, consisting all told of 108 directors.

As you know, the Treasury and the Federal Reserve work as partners in discharging their responsibilities. To this end there must be and there is constant consultation and cooperative discussion between them with respect to economic and related problems with which both are concerned. Similarly the Federal Reserve, in keeping abreast of developments in the economy, nec-

essarily maintains contacts with branches of the Government other than the Treasury. Such consultations do not, however, mean any loss of independence by the Federal Reserve in discharging the responsibilities delegated to it by the Congress.

From time to time there are bound to be differences of judgment, of emphasis and timing. It would be astonishing in a democracy if this were not so and indeed it would be reason for grave concern if precautionary action had to wait for unanimity.

There has been no departure now or at any time during my chairmanship from the procedure of full and frank discussion between members of this Board and staff and officials of other interested Government agencies with a view to discharging public responsibilities in accordance with the best obtainable judgment and the independent exercise of that judgment.

Sincerely yours,

WM. McC. MARTIN, Jr.

THE SECRETARY OF THE TREASURY,  
Washington, May 15, 1956.

HON. WRIGHT PATMAN,  
*Chairman, Subcommittee on Economic Stabilization,  
Joint Committee on the Economic Report,  
Congress of the United States, Washington 25, D. C.*

DEAR MR. CHAIRMAN: I have your letter of May 10 and am glad to answer your questions.

As I have testified before your committee, the Treasury recognizes fully the independent responsibility of the Federal Reserve System for its decisions, and as long as I have been here we have never encroached on its domain.

However, as I have also testified before your committee, I believe it is in the best interest of the people of this country and Government operations as a whole that there should be the fullest consultation and cooperation between the Treasury and the Board. To promote this, Mr. Martin and other members of the Board and various members of the Treasury Department, including myself, make it a continuing practice to keep in the closest possible touch with each other to discuss fully current conditions and prospective trends in order that each of us may be posted as to the other's thinking and appraisal of the various influences affecting the economy both currently and prospectively.

It is, of course, only natural that we often have some differences of judgment arising from varying appraisals of the timing and effect of economic trends. We both are glad to have the benefit of the other's views, as well as the views of many other people in trying to help us reach our own independent judgments.

There is nothing in the events to which you refer that is at variance with our regular practice.

Yours very truly,

G. M. HUMPHREY,  
*Secretary of the Treasury.*

THE SECRETARY OF COMMERCE,  
Washington, May 15, 1956.

HON. WRIGHT PATMAN,  
*Chairman, Subcommittee on Economic Stabilization,  
House of Representatives, Washington, D. C.*

DEAR MR. CONGRESSMAN: I have yours of May 10 and following are my answers to your questions:

1. I did disagree with the action taken, but my disagreement was more in the realm of "timing" than otherwise.
2. Neither I nor any of my associates have had any communication with the Reserve Board—collectively or individually—on this subject.
3. I have not communicated any criticisms to representatives of the Board. In fact, I actually did not criticize the Board's action in my press conference to which you have made reference.

In this respect the press asked me the following question:

"Do you have any information on the recent increase in the discount rate's impact on housing particularly?"

My answer follows and I'm sure you'll agree that it was not voiced in a critical but in a factual vein.

"Of course, that is a field I don't move into very much. I leave that to the Treasury and the Reserve Board. Money is tight today and money is short, and that may prove to be a handicap as we move along here."

I think this answers your three questions.

Sincerely yours,

SINCLAIR WEEKS.

---

DEPARTMENT OF LABOR,  
OFFICE OF THE SECRETARY,  
Washington, May 16, 1956.

HON. WRIGHT PATMAN,  
*Chairman, Subcommittee on Economic Stabilization, Joint Committee on the Economic Report, Congress of the United States, Washington, D. C.*

DEAR CONGRESSMAN PATMAN: This is in reply to your letter of May 10 in which you request my answers to the questions regarding the recent action of the Board of Governors of the Federal Reserve System in raising the rediscount rate.

I did not communicate my views or make representation to System officials, either Chairman Martin, the Board, other members of the Board, or staff members; and to my knowledge neither have any of my associates, either before or after the action taken by the Board.

Sincerely yours,

JAMES P. MITCHELL,  
*Secretary of Labor.*

---

THE CHAIRMAN OF THE COUNCIL OF ECONOMIC ADVISERS,  
Washington, May 18, 1956.

HON. WRIGHT PATMAN,  
*House of Representatives, Washington, D. C.*

DEAR CONGRESSMAN PATMAN: I am writing in reply to your inquiry of May 10. In keeping with its duties prescribed by law, the Council of Economic Advisers keeps constantly in touch with the departments and agencies of the Federal Government that are principally concerned with economic matters. The Council's efforts in this direction have been described in its annual reports to the President, which have been published in recent years as appendixes to the Economic Report of the President.

I find it necessary and important to discuss the economic situation and governmental economic policies fairly frequently with Chairman Martin, among others.

You have inquired about the Federal Reserve Board's recent action with respect to discount rates. In view of somewhat conflicting tendencies, particularly the divergent movements that have occurred of late in retail trade and capital expenditures, I doubt the timeliness of this action. However, it must be recognized that some uncertainty inevitably attaches to judgments on a matter of this type.

The conversations that members of the Council have with officials of the Federal Reserve Board do not, of course, involve or raise any question concerning the independence of the Board. This is entirely clear as a matter of both law and policy.

Sincerely yours,

ARTHUR F. BURNS.

The CHAIRMAN. With this background, I should like to turn to my letter of May 10 to Secretary Humphrey of the Department of the Treasury, and ask him to respond now to the specific questions which I asked at that time. Mr. Humphrey, if you will identify yourself for the record, it would be appreciated, sir.



**STATEMENT OF HON. GEORGE M. HUMPHREY, SECRETARY OF THE  
TREASURY**

Secretary HUMPHREY. George M. Humphrey, Secretary of the Treasury.

The CHAIRMAN. Would you like to make any preliminary comment of your own, Mr. Humphrey?

Secretary HUMPHREY. No, Mr. Patman. I wrote you and I thought that I had answered your questions. If you did not feel they were responsive, I am glad to add to them in any way, and try to answer any questions you may have to suggest.

The CHAIRMAN. That is fine, sir. I would like to ask you, then, first, did you, and for what reasons, disagree with the action taken by the Board of Governors on raising this discount rate of April 13, 1956?

Secretary HUMPHREY. I thought that before it was done, that it was unnecessary to take that action. I thought that the situation was sufficiently in balance, and the trend was toward a sufficient balance without taking that action, and in our discussions, as we have discussions continuously, and we hear what the members of the Federal Reserve feel about things, and we tell them how we feel about things, we go over the situation frequently, very frequently, together, looking forward to trying to balance out how their opinions of things are, and ours are, and we are very frank in expressing our opinions to each other in order that each may have the benefit of the other's feelings in determining our respective responsibilities and determining what action we will each take for which we are responsible.

In those discussions, those conversations that we had, I had the feeling and expressed it that no further action was required just at that time.

The CHAIRMAN. You expressed your feeling in advance of the order being issued, I assume?

Secretary HUMPHREY. I did. We talked about it for a number of times, and over a rather extended period before action was taken, but it wasn't just with respect to this. We meet frequently and we talk about how things are going and get each other's views as to present conditions and what future trends are.

The CHAIRMAN. Now, there were, I believe, four other increases before this one.

Secretary HUMPHREY. Yes.

The CHAIRMAN. Over a period of what time, say?

Secretary HUMPHREY. Over a period of several months.

The CHAIRMAN. About 12 months, I believe, is that right?

Secretary HUMPHREY. About that.

The CHAIRMAN. Did you agree to those increases, the other four increases?

Secretary HUMPHREY. I didn't agree with them. I mean there is no such thing as agreeing from the point of view of influencing the action. I thought their action was wise when they took it.

The CHAIRMAN. You did not object to them?

Secretary HUMPHREY. I did not.

The CHAIRMAN. Well, this time, when you did not agree, it some way got in the press. How did it get to the press? Did you give

it out, Mr. Humphrey, that you were not in agreement with this particular action of the Board?

Secretary HUMPHREY. I have forgotten, Mr. Patman, how we did, what the first word about it was. Of course, it is always news if there is a disagreement on any subject, and I really have forgotten just how it did arise.

The CHAIRMAN. What caused me to wonder about that, is that so far as I know you did not advise the press at the time you favored the other four increases. On those occasions there was no publicity.

Secretary HUMPHREY. I don't know as anybody asked me. Strangely enough, it doesn't seem to be news if people are in agreement and it does seem to be news if they are not.

The CHAIRMAN. Well, I agree with you about that, Mr. Humphrey.

Did you or your associates, and by what channels—telephone conversations, memorandums, or meetings—communicate your views or make representation to System officials, either Chairman Martin, the Board, other members of the Board, or staff members?

I believe you have answered that. You did communicate your views?

Secretary HUMPHREY. I did.

The CHAIRMAN. To these different people.

Secretary HUMPHREY. On a number of occasions, and over a rather extended period.

The CHAIRMAN. Subsequent to the action taken by the Board, have you or your subordinates communicated your criticisms to representatives of the Board, other than through the press stories purporting to state your views, either publicly or privately expressed?

Secretary HUMPHREY. We have continued our discussions frequently, and just as we have always done ever since we have been here, and as we expect to continue as long as we are here. We have discussed these matters currently, and we keep doing it currently, and we expect to continue doing so.

The CHAIRMAN. You feel that you are communicating with them as to the extent necessary to get your views over?

Secretary HUMPHREY. Not to get our views over at all. We apprise them of what we think, and we will have the benefit of their thinking. We each are entitled to have the benefit of the other fellow's thoughts in this very important field.

The CHAIRMAN. I agree with you.

Secretary HUMPHREY. We not only have the benefit of each other's thoughts, but we seek and we welcome the benefit of any other person's thoughts, who is qualified and in whose judgment we have confidence.

The CHAIRMAN. This action raising the discount rate of course meant an increase in interest rates across-the-board, did it not?

Secretary HUMPHREY. Well, I don't know that it was this action or not. As a matter of fact, I rather think this action followed the pressure toward the increased rates rather than preceding it.

The CHAIRMAN. As Secretary of the Treasury, Mr. Humphrey, do you consider it your duty to keep the rate as low as possible on the national debt?

Secretary HUMPHREY. No, I don't think so. I don't think that it would be good for the country or good for the people in it if the rate on the national debt was depressed to an unduly low level.

The CHAIRMAN. What factors did you consider in agreeing to an increase in the discount rate, as you agreed in the four instances preceding the last one?

Secretary HUMPHREY. You keep saying "I agree."

The CHAIRMAN. Well, you did not object.

Secretary HUMPHREY. This is not a matter of a deal between us.

The CHAIRMAN. I know that.

Secretary HUMPHREY. It is a matter of my feeling as to whether it is wise or not.

The CHAIRMAN. I didn't intend to leave the impression that I suspected any "deal." In any case, it is not your responsibility.

Secretary HUMPHREY. Not my responsibility, and I don't agree to it. If they do it, and I think it is wise, or I think it may be unwise, I feel perfectly free to express my opinion either way.

The CHAIRMAN. Don't you think interest rates generally over the country have gone pretty high, Mr. Humphrey? Aren't you concerned just a little bit about the great increase in interest rates across the board?

Secretary HUMPHREY. I don't know, Mr. Patman. Interest rates, of course, fluctuate as they should. And I think properly so, with demand for money and, after all, you know, I think that to have interest rates too low and over a long period of time could be a very serious thing in this country.

We have to have, we have to try to provide in this country, have to try to have developed—the Government does not provide it, but we have to have—we hope that it will develop in this country that there will be opportunities for jobs for about a million more people a year and that is an increasing amount.

Now, in America today you cannot get a job and earn the kind of pay that Americans earn unless somebody has saved and invested a matter of somewhere from \$10,000 to \$20,000 to buy the things, to buy the tools, to buy the other things that are required to afford the facilities, the transportation, and all of the things, the power and all of the things that are required to make a job to permit an American to earn the kind of money that he now gets.

I think we went through a period in this country where the emphasis on saving was entirely wrong, where there wasn't sufficient emphasis on saving, and I think that it was time that that emphasis was changed, as it has been changed, and that there should be and there will have to be in the future a continuing emphasis on saving.

We have to obtain savings, to have savings, to buy the tools that make the jobs that give people work in America, and I am talking about not just factory employees, but everybody. We have to have capital investment in order to give them the opportunity, in order to have the facilities in the country available for them to have their jobs.

In order to have that saving, two things have to be pretty well assured:

First, that the savings, if made, will not be destroyed, will not be stolen by inflation. And second, that there will be some return on those savings which induce people to save for that return rather than to just spend their money currently, because it isn't worth anything to save it.

So that I think this country requires over a long period of time a renewed emphasis on the security of savings, and efforts to preclude inflation, to avoid inflation, and the theft of the savings in that way, and the incentive to save by having their savings worth something in interest that will be paid to them if they save it.

The CHAIRMAN. You have mentioned two things which I think are very important, namely, savings and inflation. The reason you did not oppose the four increases in the discount rate preceding this last one, was I assume because you thought there was some evidence of inflation that needed to be dealt with.

Secretary HUMPHREY. You have continually, Mr. Patman, in this country, and it is good that you do, you have continually changing conditions with varying pressures—inflationary pressures on the upside and deflationary pressures on the downside. The ideal situation has been, or is, when those pressures are fairly evenly balanced. That is when you make your most progress in this country, and that is when conditions are the best.

If inflationary pressures prevail to too great an extent, and you depress the value of your money and you destroy the value of savings, you set in motion a whole chain of events which are detrimental to the future of the country. If you let deflationary pressures prevail to too great an extent, you set in motion a whole chain of events that are unfortunate for the country.

So you want to go along as nearly as you can toward a balance of the two.

The CHAIRMAN. You are just as anxious to prevent deflation as you are to prevent inflation? You want an even balance and an even keel, if possible.

Secretary HUMPHREY. Absolutely.

The CHAIRMAN. You mentioned both savings and inflation in one of your statements. I think it is important that we explore that just a little bit, if you please.

If you want to encourage savings, don't you think a mighty fine way would be to allow more interest on time deposits? If you were to take off the limitations under existing laws and rules of the Board of Governors, and permit time deposits to receive as much, say, as four per cent on savings, don't you think that would have a tendency to retard inflation and also to encourage savings?

Secretary HUMPHREY. Of course, anything that pays for saving money, any incentive toward that is a good thing to have; but actually, what we want to do is to encourage people's savings in all ways, in all forms, and to just pick out one, as to whether a relatively minor action in one field is desirable or not, you have to balance them all out.

The CHAIRMAN. Mr. Secretary, you know more about this in a minute than I do in a week or a year but it really concerns me a great deal that you don't feel obligated to keep the interest rate down on the national debt.

Now, if you do not feel obligated as a representative of the people and of the United States Government to keep the interest rate down, who does represent the people in that capacity? Whose duty is it to keep interest cost on the Federal debt down?

Secretary HUMPHREY. I just got through telling you, Mr. Patman, that I don't think it is to the advantage of the people to have the interest on the debt too low.

I think it would be disastrous in this country if we could borrow money for an eighth of 1 percent. I just don't think we ought to have it.

The CHAIRMAN. You mean of course for short-term paper, like we used to.

Secretary HUMPHREY. Long-term paper at half of 1 percent. If that was your interest rate, just let's illustrate it by an absurdity. I think it would be just as absurd to get the interest rates too low as it would to have them too high. You would be in trouble either way.

The CHAIRMAN. Aren't you now considering factors which are primarily within the purview and the duties of the Congress and the Federal Reserve Board. I am not criticizing you for running your business like you want to, Mr. Humphrey, but it seems to me like you should keep your eye on the interest rate in the interest of the taxpayers.

Secretary HUMPHREY. I am very glad to have this chance to explain to you, Mr. Patman—

The CHAIRMAN. Let the Federal Reserve and Congress look after the general economic policies dealing with the whole country.

Secretary HUMPHREY. —why I think your views are wrong, and why I think they are unduly narrow.

It is my job also to raise the money to pay the bills of the country, and it is my job also to collect in our taxes, and if we don't have suitable times in the country, if we don't have good employment in this country, and reasonably good times in this country, we won't have any money with which to pay our bills.

Now, if I took your attitude and kept my eye solely on one item of trying to knock the interest rate down on the debt, I might get the interest rate down on the debt, but even if it was half of 1 percent, if we didn't get taxes in enough to pay, it wouldn't do us any good.

So it is a much broader field here to watch, to be watchful over, and my responsibilities cover a much wider field than your question indicates. You have to keep it all in mind, Mr. Patman. You have to keep it all in mind.

The CHAIRMAN. But the weighing of economic advantages and disadvantages, the effect upon the general welfare, the people, and the general economy are factors that the Federal Reserve Board is expressly charged with; don't you agree.

Secretary HUMPHREY. The Board has certain responsibility, and the Treasury has certain responsibilities. We both have them, and it is well that we both try to do the very best we can with respect to them, and it is particularly good that we cooperate in our thinking with respect to them.

The CHAIRMAN. All right. Now, don't you think your answer was rather unrealistic when you suggested that we shouldn't have a long-term interest rate of one-eighth of 1 percent? We never had that in this country.

Secretary HUMPHREY. I was trying to illustrate the absurdity of your position.

The CHAIRMAN. But that is using as an illustration a situation that has never existed in this country.

Secretary HUMPHREY. That is the way to illustrate when the position is taken—you can illustrate it better by carrying it to an absurdity than in any way I ever knew of.

The CHAIRMAN. We had one-eighth of 1 percent on very short-term securities, 30 or 60 days, but we have never had any long-term rate less than about 2 percent; have we?

Secretary HUMPHREY. I don't know.

The CHAIRMAN. I do not recall any long-term rates lower than 2 percent.

Secretary HUMPHREY. But when you say that I should be concerned to try to push it down—

The CHAIRMAN. To a reasonable level.

Secretary HUMPHREY. You didn't say that.

The CHAIRMAN. That is what I mean to imply. Naturally, I wouldn't think about a devastatingly low level, or anything like that.

Secretary HUMPHREY. Perhaps our difference then can be as to what is a reasonable level, and what is a reasonable level depends very largely upon times and conditions. What is reasonable today might not be reasonable tomorrow. So that you and I would move back and forth and if you stick to a reasonable level, and reasonable under the conditions existing, we wouldn't be far apart.

The CHAIRMAN. I have always had the feeling that since the rate on long-term Government bonds, is more or less the basic, wholesale rate of interest—the cost of money—that 2½ percent is a reasonable rate, and probably should not go beyond that.

Secretary HUMPHREY. I don't believe you can pin a figure that is continuously and always a reasonable rate for money any more than you can for the price of pork or beefsteak or eggs.

The CHAIRMAN. That is the reason I was shocked when you set the rate of 3 percent on a bond issue early in your administration. If you don't mind, how did you arrive at that 3 percent rate, Mr. Humphrey?

Whose counsel and advice did you seek, if you did seek the counsel and advice of other persons in arriving at that 3 percent rate.

Secretary HUMPHREY. You mean on our long-term issue?

The CHAIRMAN. On the long-term issue.

Secretary HUMPHREY. As I think I have explained to you before, Mr. Patman, we don't make interest rates. The market makes the interest rates. We have securities to sell, and we sell our securities. We sell our securities as nearly as we can at what the prevailing markets are.

The CHAIRMAN. Do you really believe, Mr. Humphrey, that we have a free money market in this country?

Secretary HUMPHREY. You try to sell something, and you will find out.

The CHAIRMAN. I wish you would answer my question. Do you believe that we have a free market?

Secretary HUMPHREY. Certainly we have a free market.

The CHAIRMAN. In Government bonds?

Secretary HUMPHREY. Certainly. Certainly we do. No question about it. We went for a long time under Democratic rule, when we didn't have.

The CHAIRMAN. Of course, I am not bringing any politics into this because I think this goes beyond politics. We are looking into the

future over a long period of time. But in arriving at this 3 percent rate, with whom did you confer?

Secretary HUMPHREY. Well, when that was—that was a year and a half ago, or something like that. I can't tell you exactly. We attempted to get all the information we can, as to market conditions currently. We have committees that we confer with. We have all sorts of meetings for learning what is going on in the financial markets, and we get the very best information that we can as to what the facts are, and as to what the trends are.

We seek information, as I said before, everywhere that we can get it, from sources in which we have confidence.

The CHAIRMAN. All right. Let me see if I can get more specific information from you. You confer with representatives of the American Banking Association?

Secretary HUMPHREY. Yes.

The CHAIRMAN. You confer with representatives of the Investment Bankers Association?

Secretary HUMPHREY. That's right.

The CHAIRMAN. You confer with representatives of the life-insurance companies?

Secretary HUMPHREY. Yes.

The CHAIRMAN. Do you confer with representatives of the Stock Exchange?

Secretary HUMPHREY. No.

The CHAIRMAN. Of speculative boards?

Secretary HUMPHREY. Oh, we know a number of people. I know a lot of people, and Burgess does—we all know a lot of people that—for example, the president of the exchange drops in the office every once in a while.

The CHAIRMAN. But those three groups are the ones that—

Secretary HUMPHREY. Oh no; we confer with a lot of people. We know a lot of business people. We confer with a lot of people, and we confer with everyone we know of in whom we have any confidence in their judgment with respect to money markets and money-market conditions.

The CHAIRMAN. Being more specific, Mr. Humphrey, don't you call these people in when you are trying to arrive at a rate, like the American Bankers Association, and the Investment Bankers, and the life-insurance company representative? You confer with them in your office?

Secretary HUMPHREY. That's right.

The CHAIRMAN. Here in Washington?

Secretary HUMPHREY. And a lot of others.

The CHAIRMAN. You have a formal meeting for that?

Secretary HUMPHREY. They come down here, and we present to them our situation; we present to them what it is that we propose to do, the amount of financing that is required at some time in the near future, and we get their opinion about conditions.

The CHAIRMAN. At this meeting, do you have any representatives of the Board of Governors of the Federal Reserve System?

Secretary HUMPHREY. No. These meetings are all separate. We meet with different groups and groups separately.

The CHAIRMAN. At different times.

Secretary HUMPHREY. At different times. But we also talk to the Board at the same time.

The CHAIRMAN. After you have this meeting with the groups I have indicated here, the three in particular, did you know that—

Secretary HUMPHREY. We meet with others right at the same time.

The CHAIRMAN. Do you know that the representatives of the three groups go out and confer with Mr. Martin of the Federal Reserve Board, and before they make their recommendations to you as to what you should—

Secretary HUMPHREY. I don't know who they talk to. I don't know who they talk to.

The CHAIRMAN. They come back and make their recommendations later?

Secretary HUMPHREY. Yes.

The CHAIRMAN. On setting this 3 percent rate, how many of those 3 groups agreed to the 3 percent rate?

Secretary HUMPHREY. Now, Mr. Patman, you have asked us to come here to talk about a matter between us and the Federal Reserve Board.

The CHAIRMAN. That's right.

Secretary HUMPHREY. Now you are talking about something a year and a half ago. Now, let's get back to what we are talking about.

The CHAIRMAN. I think the committee has a little something to do with that, Mr. Humphrey.

Secretary HUMPHREY. We will be perfectly glad to talk about the other if you will tell me you want to do it, but that isn't what we are here for now.

The CHAIRMAN. You are talking about interest and savings. This goes into it, relates to it.

Secretary HUMPHREY. That isn't what we are here for now. You asked us to come on this specific subject, and that is what we are here for.

The CHAIRMAN. I want to confine it more or less to that.

We expect to have another investigation later on. We hope to go into all of this.

Secretary HUMPHREY. All right.

The CHAIRMAN. Including the three and three-quarter—

Secretary HUMPHREY. I will be glad to refresh my recollection and tell you specifically who said what a year and a half ago, if you will tell me ahead of time you want to know it.

The CHAIRMAN. And the 3¾ percent, too?

Secretary HUMPHREY. Yes. If you will tell me specifically. I will get out the files and look them up and—

The CHAIRMAN. I don't know that I will ask you to name names.

Secretary HUMPHREY. You just did.

The CHAIRMAN. I am talking about the several groups: insurance, investment bankers, and—

Secretary HUMPHREY. Well, Mr. Patman, let me say this: I don't know ever—it may have occurred some time, but almost never have any of these groups been unanimous in their feelings. Almost always there is a difference of opinion among the groups themselves. They act—they are not acting as groups. They don't vote as groups. We get their general expressions of opinion of 20 men, and I, as a rule, ask every one of the 20, or every one of the 30, his individual opinion, and



almost invariably there is a difference of opinion in that 20 or 30 people on specific items that we are talking about, and we are glad to have that difference, and we are glad to have the feeling of the different people in order to measure them and to have them in mind when we reach our own decision as to what we will do. When we decide what we will do, it is our decision, and it isn't anybody else's.

The CHAIRMAN. Mr. Humphrey, there is some information in the press to the effect that if this discount rate works out all right, you won't say too much about it, and it will be all right. But if it is devastating to the country and slows up business and everything, you will be in a position to blame the Federal Reserve with it, and that it is a Democratic Federal Reserve Board, and Mr. Martin is a Democrat.

Secretary HUMPHREY. Mr. Patman, I never passed the buck in my life.

The CHAIRMAN. Beg pardon?

Secretary HUMPHREY. I never passed the buck in my life, and I am not going to start now.

The CHAIRMAN. You recommended the appointment of Mr. Martin?

Secretary HUMPHREY. I did.

The CHAIRMAN. His reappointment.

Secretary HUMPHREY. Yes, sir.

The CHAIRMAN. You announced it yourself, didn't you?

Secretary HUMPHREY. And I would recommend it again today. Mr. Martin is the best qualified man, in my opinion, in the United States for his job.

The CHAIRMAN. Did you have the authority from the President of the United States to make this designation?

Secretary HUMPHREY. Make what designation?

The CHAIRMAN. As Chairman of the Board of Governors of the Federal Reserve System?

Secretary HUMPHREY. I didn't designate him. The President of the United States did.

The CHAIRMAN. It is for a 4-year term as Chairman?

Secretary HUMPHREY. I don't remember what it is.

The CHAIRMAN. I believe you said down at the Press Club the other day that one of the first things you did when you were appointed Secretary of the Treasury was to ask Bill Martin if he would continue. He had tendered his resignation, but you asked him if he would continue as Chairman. According to a transcript of your remarks, you said "I did it for one reason. I did it because I thought then, and I think now that Bill Martin is the best qualified man in the job. He consented and took the job." I shall incorporate the full transcript of your remarks in this connection at the conclusion of your testimony this morning.

If this turns out in a way that is not in the interest of the country, you are not going to blame the Federal Reserve Board, and you are not going to blame Mr. Martin?

Secretary HUMPHREY. I have never blamed anybody for—

The CHAIRMAN. You are not going to blame the Democrats for having the Board composed mostly of Democrats?

Secretary HUMPHREY. If I found a way, I would be glad to. [Laughter.]

The CHAIRMAN. Are you alarmed just a little bit about the tightness of the money market now, Mr. Humphrey?

Secretary HUMPHREY. No, I am not.

The CHAIRMAN. You don't think that the layoffs in the automobile industry, and the failure of the automobile dealers to sell their cars has anything to do with the tight money market?

Secretary HUMPHREY. Well, I think their difficulties arise from a number of things, and I think perhaps credit had something to do with it.

On the other hand, I think that as you look at it now, conditions are proceeding in a very satisfactory way, and I believe that over a relatively short term some of these inventory difficulties will be behind us, and we can forget them.

The CHAIRMAN. Mr. Humphrey, I would like to have your opinion on this question: Interest rates have been raised more than 1 percent the last year, generally. I think you would agree to that?

Secretary HUMPHREY. Well, I guess that's right.

The CHAIRMAN. More than 1 percent. I think that is a very safe estimate. Well, a 1 percent interest rate across the board in a country whose aggregate debt, including public and private, is more than \$700 billion, would amount to about \$40 per capita each year increase, so during the last month we have had a \$40 per capita increase in the interest rates.

Now, in a family of five that is the equivalent of \$200 increase in interest rates.

Now, don't you think that by increasing these interest rates, and thereby diverting purchasing power, \$200 from a family of five, from buying automobiles and refrigerators and appliances and other needed comforts and conveniences of life, to the payment of interest, don't you think that has something to do with slowing up our economy?

Secretary HUMPHREY. Mr. Patman, you are just as wrong as you can be.

The CHAIRMAN. I hope I am.

Secretary HUMPHREY. Now, just let me show you how ridiculous that statement is.

The CHAIRMAN. I would like to be proven.

Secretary HUMPHREY. This debt, the great bulk of this debt is over a term. It doesn't all expire today, and a change in interest today doesn't change it all today.

The CHAIRMAN. Very true.

Secretary HUMPHREY. Bonds are out for 20 years and 30 years, and there are bonds out for 40 years, and bonds that are out for 10 years, and a change in the interest rate doesn't affect them a penny.

So you haven't had anything like what you say in the change of interest, anything like it. And it can't come that way, and it is very fortunate that it cannot, because you don't have these wide swings.

An interest rate change affects only the current borrowing at the moment. The borrowing next week is at a different rate from this week, and the week after that is at another rate, and all the debt which is outstanding in the meantime which is what you are talking about is not affected a penny because it is out at fixed rates, so you don't have anything like what you are indicating. Your premise is completely in error.

The CHAIRMAN. Let's bring it down a little closer. You will have to admit it will affect installment buying immediately, won't it?

Secretary HUMPHREY. I think that installment buying has slowed somewhat, and I think it is very good for the country that it has.

The CHAIRMAN. Now, you are going into something else.

Secretary HUMPHREY. You asked me if I thought it would do it, and I said it would, and I thought it was good.

The CHAIRMAN. It is slowing up installment buying?

Secretary HUMPHREY. I think that is good.

The CHAIRMAN. Of course, I don't think so, but you have as much right to your opinion as I have to mine.

Secretary HUMPHREY. That's right.

The CHAIRMAN. But on installment buying, that is something where the increase in interest rates is reflected quickly, isn't it, right now?

Secretary HUMPHREY. Yes.

The CHAIRMAN. Therefore, the poorest people in the country who represent a large part of the purchasing power, the increase in interest rates slows them down right quick.

Secretary HUMPHREY. Only as to new stuff they buy. It doesn't change the interest rate on what they bought last week. Certainly not. So you are not talking about that at all.

The CHAIRMAN. But the installment buying, you see, the terms there are not so long—12 months, 18 months.

Secretary HUMPHREY. That's right. The downpayment may be a little more, and therefore the new commitment isn't quite as readily made as this week, as it was last week.

And I think that is good. I think that it was good that some of these installment buying, that payments on it should catch up, and it has been catching up.

The CHAIRMAN. How do you determine whether or not installment buying, the aggregate amount, is too high?

Secretary HUMPHREY. That is a very difficult thing, and I don't think anybody can tell you whether it is too high, or whether it isn't too high. I think that you can get into periods that you can see where excesses are going on, and it is well to restrain excesses. It is good, Mr. Patman—one of the things that slows business down and puts people out of work in this country is the accumulation of inventory.

Now, inventory can accumulate in the hands of the public, just as well as it can accumulate in the hands of the intermediate manufacturer, or somebody else. It is total unpaid inventory, total inventory not in use.

Now, if inventory gets too great, then people stop and begin to use. They stop buying new and begin to use that inventory. They begin to use that inventory, the new manufacture slows down. That means people are out of work.

So that one of the things we don't like to see, and that isn't good for the country, is an accumulation of unused inventory. That is one of the things that credit helps to restrain. That is, inventory accumulates. If credit becomes a little tighter, it helps to restrain your accumulation of more inventory. If we just do these things, I think I told you a couple of years ago, and Senator Douglas, that if we can just restrain some of these excesses early, the earlier they are restrained, the less effect it has, the quicker they are corrected.

It is when you get to a great excess one way that you are forced into a great excess the other way.

If we can have, as we go along, a rolling readjustment, an adjustment here and there, and in the other place, one at a time as we go along, this country can continue at a high level and with lots of employment.

If we get into great excesses in any direction, there will be a day when there will be a lot of trouble. That is what we are seeking to avoid.

It is by restraints, when restraints are required, and by assistance, when assistance is required, that you try to level out and to keep a rolling readjustment going, rather than to get into a difficult position—you know, the higher you go the harder you fall. It is just that simple.

The CHAIRMAN. We should guard against falling down, too, as well as up; because deflation is just about as destructive as inflation.

Secretary HUMPHREY. Just exactly. The reason we don't want to get too far up is because we don't want to go too far down.

The CHAIRMAN. I remember a time in this country when automobiles were not selling, and people were saying it is overproduction when, looking back, it was underconsumption. People just didn't have the purchasing power.

Secretary HUMPHREY. I read in the paper the other day that Chevrolet automobiles were within 1 percent of the same number of cars sold up to June 1 this year as they were last year.

The CHAIRMAN. I am not keeping up with the exact amount.

Secretary HUMPHREY. That isn't very much of a fall-off.

The CHAIRMAN. In regard to this interest rate being reflected slowly, in the entire economy, I think you must admit, Mr. Humphrey, that it is reflected rather quickly among the masses of the people who are the low-income groups. They are the ones who buy on the installment plan all the time and charge accounts, and in addition to that where they have home mortgages they have to refinance them every now and then, and in refinancing they have to pay this increased interest charge. I think that you must admit that our economy is affected more seriously among those groups by an increase in interest rate than the other groups are, and by reason of that would have a tendency to slow up the economy quicker.

Secretary HUMPHREY. Well, increased interest, increased tightening of credit terms does tend to restrict activity. There isn't any question about it.

The CHAIRMAN. Do you know anything else that unbalances everybody's budget except increased interest rates?

Secretary HUMPHREY. Yes, a lot of things will unbalance them a whole lot faster than that. You lose your job—

The CHAIRMAN. You are talking about individuals?

Secretary HUMPHREY. Sure.

The CHAIRMAN. I am talking about throughout the Nation, do you know of anything else that will unbalance everybody's budget immediately except—

Secretary HUMPHREY. Interest wouldn't unbalance the budget immediately.

The CHAIRMAN. When they have to pay more interest—

Secretary HUMPHREY. They don't have to pay more interest unless they make a new—

The CHAIRMAN. They are spending less.

Secretary HUMPHREY. They don't pay more unless they make a new loan. It only affects the fellows that make new loans.

The CHAIRMAN. They are making new loans all the time, and increase in interest rates, that unbalances the Federal budget, the States, the counties, cities, political subdivisions.

Secretary HUMPHREY. Only when they borrow the new money.

The CHAIRMAN. Every corporation, every public utility, every partnership, every person, every family budget in the Nation is immediately unbalanced by increase in the interest rates.

Secretary HUMPHREY. That is where you are just as wrong as you can be, and if you leave out the word "immeditaely" and put in 20, 30, 40 years, I will agree with you.

The CHAIRMAN. But people look into the future.

Take, for instance, in the city where interest rate is going up, they know that means increased taxes. They begin to plan for it. They know that the telephone company is going to ask for an increase in rates because they are paying higher interest. The gas company and the electric utility, they know that all utilities are going to come in and ask for an increase in rates because they are having to pay higher interest.

Secretary HUMPHREY. Well, Mr. Patman, I think this is about the same line of talk you gave me 2½ or 3 years ago, at the time we put out those 3¼ percents, when you prophesied all these dire things, and we have had a two-tenths of 1 percent change in the cost of living, so it hasn't happened in the last couple of years.

The CHAIRMAN. Let's analyze that briefly, Mr. Humphrey. Where has the cost of living gone? The farmer hasn't received it. While industrial prices were going up, farm prices had to go down to keep the cost of living on an even keel.

Secretary HUMPHREY. Very small adjustment either way.

The CHAIRMAN. If farm prices had gone up in the same way that industrial prices went up, you couldn't say that you would be within that 2 percent.

Secretary HUMPHREY. I didn't say 2 percent. I said two-tenths of 1 percent.

The CHAIRMAN. You can't say 2 percent, or 5 percent, either. If farm prices had gone up in proportion to industrial prices, so, after all—

Secretary HUMPHREY. Now, wait a minute. Have you made those figures—

The CHAIRMAN. Wait just a minute. After all, this stable price level, if you want to put it that way, is at the expense of the farmer.

Secretary HUMPHREY. No.

The CHAIRMAN. Because as industrial prices went up, farm prices had to go down, or that cost level would have gone up, too.

Secretary HUMPHREY. No, no. If you made up the figures, Mr. Patman, you will find it would be a very small difference.

The CHAIRMAN. Concerning interest rates and looking into the future, people in our country in the Southwest are not voting bonds for public schools and roads and public improvements like they have been, because of this high interest rate. They are having to pay up to 3½ and 4 percent interest on securities. Now, that is a pretty high tax-

exempt interest rate. Doesn't that disturb you a little bit, Mr. Humphrey, that people have to pay  $3\frac{1}{2}$  percent on tax-exempt bonds?  
 Secretary HUMPHREY. No.

The CHAIRMAN. How much do you think they should pay?

Secretary HUMPHREY. I don't know. And what they should pay now may not have anything to do with what they should pay 6 months from now, or what they paid 6 months ago. It will vary. But I think this, Mr. Patman, that we are at the highest level of employment in this country that this country has ever seen. Never have there been as many people working in America for as high wages as they are today. We have never had anything like it before. We have a relatively full employment in America, a very high employment in America. We have shortages and have had over the past several months, shortages in a great many commodities. You are just on a balance, and it is hard to get a great many commodities.

Now, if when you are at that extremely high level, extremely high level both of manpower and materials, you still keep moving up, what happens is that you just bid against each other for the same things, and you don't make more things; you just raise the prices.

So that when you get up to a very high level, and you have got your head against the ceiling, it is well to just have it hesitate a little bit, and not keep pushing forward to a point where all you do is increase the price and not the commodities. And that is what is going on now, and I think it is very good and very wholesome.

The CHAIRMAN. But we have to expand every year to do what you said a while ago.

Secretary HUMPHREY. Sure.

The CHAIRMAN. To just take care of these million people.

Secretary HUMPHREY. We are expanding. We are expanding.

The CHAIRMAN. I guess about two-thirds of them each year are new people coming on the market and about one-third of them just displaced in some way or manner.

Secretary HUMPHREY. That's right, Mr. Patman, and real wages in terms of what money will buy, and real employment in terms of people employed are higher today than they have ever been in the history of this country.

The CHAIRMAN. What I can't understand is how we can keep on having this degree of prosperity in expansion if we keep on increasing the interest burden on the people unnecessarily and get more and more, taking more and more out of their pay envelope for increases, thereby making it impossible for them to buy more and more of the things that they actually need.

In other words, it is diverting purchasing power, and I think there will be a limit to it, and I think our whole economy will suffer from it. I hope it does not.

Secretary HUMPHREY. That is exactly what you told me 3 years ago, when you were talking about the  $3\frac{1}{4}$  percent, and for those 3 years you have been wrong all the while.

The CHAIRMAN. I don't know whether I have been or not. Talking about inflation, the farmers are still suffering; the small-business man is suffering. The small-business man, I think, is in worse shape than he has been in for a long time in this country, and I think it is one thing that is due to the fact there is no credit available for him.

Now, for the big man you have got the specialists, those who operate in other countries; we have the World Bank, where we put up our part of the money, about a third; with the Export-Import Bank—it has billions of lending power, and we put up all the money there. We have the International Finance Corporation that you so ably represented to us to be such a thing before the Banking and Currency Committee.

Those three agencies can take care of the big concerns. But we have no way of helping the little man, and the little man is suffering more now than he has ever suffered.

He has had no inflation. There is no inflation among the farmers, no inflation among the small-business men, no inflation among the home builders.

Secretary HUMPHREY. There isn't any inflation anywhere I know of, and I hope we don't get it.

The CHAIRMAN. That is the matter I am talking about: Why then all these interest rate increases?

Secretary HUMPHREY. They are helping to restrain inflation.

The CHAIRMAN. To restrain inflation?

Secretary HUMPHREY. They are helping to restrain it; yes, sir.

The CHAIRMAN. Don't you think we should keep in mind the needs to restrain deflation, too?

Secretary HUMPHREY. I do; very definitely.

The CHAIRMAN. Well, Mr. Humphrey, you have been very kind to come up and answer these questions today. I wish you had answered them more fully in your letter at first. But, of course, that is your prerogative, and you have a right to do anything you want to about it.

I would like to reserve the right, as I have before, if I have overlooked some question I would like to ask you, I would like the privilege of sending it down to you and ask you to answer it for this record before the record closes, if you please.

Secretary HUMPHREY. Mr. Patman, I will be glad to try to answer any questions you want at any time.

The CHAIRMAN. You have always been very cooperative, and I thank you.

Secretary HUMPHREY. I thank you very much.

(The excerpts previously referred to follow:)

EXCERPT FROM THE TRANSCRIPT OF REMARKS BY TREASURY SECRETARY HUMPHREY  
AT PRESS CLUB LUNCHEON, MAY 24, 1956

\* \* \* Knowing the Press Club's habit of thinking up the most embarrassing questions they can to present, I thought maybe I would feel that I would ask myself some questions first, taking my own questions that I would ask and perhaps by the time I got through answering them you would either be so tired listening, or it would be so late the chairman would adjourn the meeting and it would be all over.

\* \* \* \* \*

This is my last question: Is there a controversy between the Federal Reserve System and the Treasury?

You must admit that I have tried to ask questions that are at least subjects of discussion.

The Federal Reserve System as a whole spreads out all over the United States. It is made up of boards of our best citizens, a majority of whom are businessmen in the various communities, and these communities cover the entire United States.

When you are talking about the action of the Federal Reserve System, you

are talking about a widespread system of information, of opinion, of examination of what is going on, and of knowledge of conditions in this country.

The Federal Reserve System, under our laws, is an independent system and is responsible for certain areas of action. At some previous times in our history the question of its independence has come into discussion. There have been times when perhaps it has been subservient to other judgment.

Before we came here there was such a situation. It was resolved before we came here in the reestablishment of the independence of the Federal Reserve System in its field. Mark you, in its field.

When I assumed the responsibility of my office, I realized the close association that would have to exist between the Federal Reserve System and the Treasury, because our fields are so interlocked. Bill Martin was then the Chairman of the Federal Reserve Board. One of the very first things that I did was to ask Bill Martin if he would continue. He had tendered a resignation. I asked him if he would continue as the Chairman. I did it for one reason. I did it because I thought then, and I think now, that Bill Martin is the best qualified man in the United States for his job. [Applause.]

He consented and took the job. We arranged at that time that we would have the closest cooperation between the Federal Reserve Board and the Treasury, each recognizing the other's field of operation and the other's independence in his particular field.

We set up a lot of mechanics, such as meetings back and forth, weekly meetings, biweekly or triweekly meetings. We have gone along in a very close association, each presenting to the other his views, hearing his views, giving consideration to the other's views, and finally deciding what he was going to do in the field of which he was responsible and going ahead with his job. We have had that close association, as I think you must in any situation where you are trying to balance.

The most difficult situation is where you are trying to balance the effect of pressures, both inflationary and deflationary pressures, not only as to what the effects of those pressures are today but what the effect of those pressures is going to be 3 months, 6 months, or even some longer period hence.

You are in a field of tremendous difficulty. You are in a field where nobody can really be very sure that he is right. Worse than that, you never can know afterwards who is right because this is a moving business. When you take action one way you never will know, and nobody else will ever know, what would have happened if you had taken the action the other way. There is no way to ever check up.

All during this period we had continual discussions, continual questions back and forth amongst our staffs, as to what action should be taken to resist both inflationary and deflationary pressures.

By and large we have been fairly lucky in having a pretty close balance during most of the period between these pressures. That is the finest position that the people of the United States can be in. And it is the most difficult position for the people who are trying to balance the pressures in any way that they can.

I will just cite for a moment what the pressures are.

We have for a period of a good many months had the highest employment in the history of this country, the highest earnings in the history of the country, the greatest volume of business in the history of the country. We have been going along at this extremely high level a large part of this period, and pretty well balanced with very little change, either deflationary or inflationary, during this period. Very, very little change.

When you are in a period of very high employment, very high business activity, if you try to move up to any great extent from that extremely high level, you soon reach the place where there are not enough more materials, and there are not enough more people, to make many more goods. If the pressure is pushed too high under those circumstances, you get a scramble for materials and a scramble for people and you raise costs to the general public, the cost that the public has to pay, without giving the public anything more or better for it.

That is an inflationary pressure that should and must, be avoided, if it can be, because you are not getting better goods and you are not getting more goods. You are simply paying more for them because you already are at about as high as you can go.

If during such a period there are pressures and scrambles to increase inventories, or to build inventories, or to gamble with goods against price rises, or against material shortages, you very soon get yourselves into a position where



you have more than your normal requirements need. Under those circumstances as inventories accumulate they, in and of themselves, soon become a burden and have to be liquidated. As you liquidate the inventory you curtail your purchase of new products. Then you begin to have deflationary pressures and you begin to lose employment and begin to get in trouble on the down side.

The Federal Reserve System, with its combined judgment of all of these people, has been leaning, as they say, against the wind during this high period, to prevent inflationary pressures. We have had discussions as to when they should move, or how they should move. We very frankly always stated our opinions to them, and they to us. We talked about it at length. Included in those discussions are the President's economic advisers who worked with us continually, Arthur Burns and his people, and we all expressed ourselves, and a great deal of the time there is a difference of opinion in shades of timing and in shades of what the pressures will be.

We work this out to a point where the Federal Reserve System exercises its final judgment in its field and the Treasury exercises its final judgment in its field.

This last time when the discussion was up as to whether we would make this additional move, we had to balance not only the conditions that obtained at the time, but the question of what those conditions are going to be sometime hence. Very frankly I differed with Bill [Martin], and our people differed with his people, as to the force of the pressures some time hence. Not as to the conditions of today, but as to the force of pressures some time hence.

It seemed to us that we could already see some natural conditions that were coming. We could see some excessive inventory in the automobile business. We could see some excessive inventory here and there. We could see a steel wage negotiation coming up. We could see some accumulation in that field. We felt that the natural conditions would exert some downward pressures that would offset these pressures upward, and that there was no further action required at that time, that it was better to go without it.

My general feeling about our economy is that the best interests of America are served when the great majority of people in America have confidence in the situation, when they believe that things are sound and strong, that their jobs are reasonably secure and that good times, which we are in, are going to continue. Not necessarily peak times. I think we must distinguish that.

I think we are often apt to exaggerate when in some particular place there is some relatively small readjustment, and think that is bad times, or that when somebody is not breaking records all the time, that that is bad times. It is not.

When you have very high levels, you have to expect small adjustments in the economy, and you thank the Lord that they are small and come here there and the other place. When they are coming here and there and the other place, it means they are not all going to come at once. When they do not all come at once they correct themselves relatively soon and with relatively little damage.

When you have a high degree of confidence that that is the situation, you can feel that you have pretty sound ground under your feet.

The reason I put so much stress on confidence is this: The majority of people in America have more money to spend than just what they have to spend every day to live on—for clothes and food and shelter. They can spend a little more, or a little less, depending on how they feel, depending on how secure they feel—depending on their confidence.

They can buy a washing machine or not buy. They can trade automobiles, or go along with the one they have. They can buy a house or they can still pay rent. With confidence you have the people going along on an even keel and buying not just the things they need, but other things they want, the things that are available for them to have, to keep increasing their scale of living and to keep a strong economy and widespread activity.

If people begin to lose that confidence and they begin to curtail their activities, why you can very soon find yourself in a position where, when that fellow decides not to buy that washing machine, it is only a little while before either there is another washing machine in the inventory, and later there is a man out of a job.

The most important thing in America is a job. Don't ever forget it. If you do not have the jobs, you do not have any America. The problem for all of us is to see, in every way that we can, that we do have jobs in America. It is jobs in America that makes everything that we have. It makes all the goods we have. It makes all the material things. I am not talking spiritually. I am talking materially. Jobs make all the material things that we have. Jobs are the most important thing in this country.

Confidence in our financial situation and our financial management, in our prudence, in our financial integrity, is essential to the maintenance of jobs and lots of jobs. Therefore, I think that what we want to do is so conduct ourselves in every way so we do not shake that confidence, so that the people feel that we are working in the best interests of leaning against both inflation and deflation, but letting the judgment of 160 million people determine what they will buy, when they will buy it, and what they will pay for it and have the confidence to go ahead and do it.

**STATEMENT OF CHAIRMAN WILLIAM McCHESNEY MARTIN, JR.,  
BOARD OF GOVERNORS OF THE FEDERAL RESERVE SYSTEM**

The CHAIRMAN. Mr. Martin, we are delighted to have you here. Will you identify yourself for the record, please, sir?

Mr. MARTIN. Mr. William M. Martin, Jr., Chairman of the Board of Governors of the Federal Reserve System.

The CHAIRMAN. Would you like to make a statement of your own, preceding the questions to be asked?

Mr. MARTIN. I would like to, Mr. Patman. I would also like to answer the 3 or 4 questions in the letter.

The CHAIRMAN. I wish you would do that first.

Mr. MARTIN. I would like to explain first that I regret very much that you feel that our answers were unresponsive in the first instance. There was no intention to be unresponsive. It was entirely a matter of endeavoring to describe the modus operandi of an informal working arrangement, which is nonstatutory, for consultation and continuous conversations and cooperation with the Treasury Department and other interested agencies.

It was in that light that we made the original answers, and you state in your statement that you suggest there is similarity between Secretary Humphrey's answers and my answers.

The CHAIRMAN. Yes.

Mr. MARTIN. I would like to say that I consulted with Secretary Humphrey about this answer, because I thought it was important to know whether he had a different concept about the Federal Reserve System than I had.

The CHAIRMAN. Preceding your reply.

Mr. MARTIN. Preceding my reply. If he had a different concept of the independence of the Federal Reserve System than I had, it didn't seem to me to make any difference particularly whether I answered these specific questions or not. So I would like you to know that I had that consultation. We did not exchange drafts in that sense, but I went over this matter with him to be sure that there was no conflict whatever.

Now, there has been no feuding between the Treasury and the Federal Reserve System, and we are continuing to work on a weekly, daily basis, and the nature of these conversations that we have are those where we get the benefit of being able to converse weekly, daily, over the telephone, and at any time that we feel like it, about any aspect of monetary and credit policy, and about other operations of the financial end of the Government.

Now, it is in that light and in the fact that we have certain statutory responsibilities given us in the Federal Reserve Act, that the Congress has given us the Federal Reserve Act, which, as I frequently say, is our trust indenture, whereby we act in a trustee capacity for the

Congress and the people of the United States, and the Congress can change the Federal Reserve Act.

The CHAIRMAN. May I interrupt you there just to remind you of a statement that went out from Washington last week by a famous weekly publication? I will just read it to you, and see if you agree with it, on that particular point.

Is there politics in it?—

speaking about the discount rate—

Is it due to administrative pressures for easy feeling before election? Federal Reserve men emphatically say "No." They say they are independent of any party or any Government administration.

Would you consider that a correct statement?

Mr. MARTIN. I would say that the Federal Reserve System, as set up and as presently administered, is as close to a nonpolitical agency as it is possible to have in this world. A definition of "politics" could become very difficult at times but we are trying to do what is right in a completely nonpolitical sense.

The CHAIRMAN. I know, but you have not answered the question.

Mr. MARTIN. I would say that the gentleman who wrote that is wrong. That is his judgment.

The CHAIRMAN. But you are not independent of any Government administration. You are independent of any political party. I would agree with you on that, but you are not independent of any Government administration. Of course, I assume Government administration would mean either one of the branches of the Government, like the executive or the legislative. You are not independent of the legislative branch of the Government, because you are an agent of Congress.

Mr. MARTIN. We are an agent of the Congress.

Vice Chairman PATMAN. Agent of the Congress.

Mr. MARTIN. I would like to stress that in my prepared statement that the Federal Reserve Act, as we read it—

The CHAIRMAN. Before we get away from it, if you please, Mr. Martin, pardon the interruption. In consulting all these different people and in arriving at your conclusions, and making these far-reaching decisions, do you confer with anybody in connection with the Congress that is connected with the Congress?

Mr. MARTIN. From time to time I have conferred with the chairmen of the Banking and Currency Committees, in the Senate and the House. I do not, as a regular practice.

The CHAIRMAN. Do you do that in regard to raising discount rates and similar things?

Mr. MARTIN. No; I have not done that.

The CHAIRMAN. It occurs to me that you are in a position—I am not trying to subordinate you or anything like that—but you yourself have said at one time that you are in the position of a servant. The relationship as between the Congress and the Federal Reserve Board, is more like that of a master and servant, and having that relationship, or a similar one, wouldn't you feel that you should confer with the Congress now and then about things which involve so much?

Mr. MARTIN. I am open to suggestions. I have had great question about it, because ours is a delegated authority. We are fully responsible, and accept responsibility. If something goes wrong, we expect

to take the blame. We stand before the body politic. It could be that you would want to have a watchdog committee, or to have a representative of the Congress attend all of our meetings, but in that event it seems to me that since this is a continuous process that changes from day to day, and week to week, that that representative ought to be a full-time representative, and ought to share in the responsibility for the decision, as well as serve on a consultative basis. The responsibility for the decision in this instance, or in other instances, in terms of the Federal Reserve Act, lies with the Federal Reserve Board, and we stand at the bar of public opinion and congressional behest on that at any time.

The CHAIRMAN. May I comment briefly on that suggestion of yours, namely, that whoever you confer with should assume some of the responsibility, if it is a representative of the Congress? You do not expect the people with whom you confer outside of Congress to share your responsibility, do you? You do not expect the Federal Advisory Committee of the Federal Reserve System, for instance, to share in your responsibility. You don't expect any of these 108 directors of the 12 Federal Reserve banks to share any of the Board's responsibility. You take the responsibility yourself, do you not?

Mr. MARTIN. Oh, no; I expect the directors of the Federal Reserve banks, in accord with the Federal Reserve Act, to act to accept their share of the responsibility. As to the Federal Advisory Council, that is a statutory body—

The CHAIRMAN. That's right.

Mr. MARTIN. And where it is written into the statute that we should confer with anybody, why, of course, we are going to do it. I am talking about statutory responsibility now.

The CHAIRMAN. Of course, you know why the Federal Advisory Council was written in there. You know that President Wilson was determined that bankers should not be on a policy-making board and finally they agreed on having the bankers represented through that Council. After Mr. Wilson died and we were in the depths of the depression, the bankers who wanted representation on important money management boards got it during the depression and they still have it. That is right, isn't it?

Mr. MARTIN. The Federal Advisory Council is a part of the statute.

The CHAIRMAN. They have got not only the Federal Advisory Council, but they have got banker representation, too, on the Open Market Committee.

Mr. MARTIN. Not banker representation on the Open Market Committee unless—this is a favorite discussion between you and me—your reference is to the fact that the original recommendation comes from the board of directors of a given bank that includes certain directors who are bankers.

The CHAIRMAN. I once asked you to find out how many of the class B directors own interests in banks. Didn't your questionnaire disclose that a majority of them were bankers?

Mr. MARTIN. I don't think a majority.

The CHAIRMAN. That is the impression I go from the information from your Board.

Mr. MARTIN. I think I could resubmit for the record that statement. I would be very glad to do it, but there were a few that do have interest in banks, though there are very few.

The CHAIRMAN. The information I got was majority.

Mr. MARTIN. I will put that statement in the record of this hearing, if that is desired.

(The statement referred to is as follows:)

Information with respect to the ownership of bank stock by class B directors of Federal Reserve banks was furnished at the request of Mr. Patman for the record at the hearings before the Committee on Banking and Currency of the House of Representatives on H. R. 9285—Direct Purchases of United States Obligations by Federal Reserve Banks—on February 27 and 29, 1956. The following is taken from page 25 of those hearings:

"The law does not prohibit class B directors of Federal Reserve Banks from being stockholders of banks. In order to respond to the request of Mr. Patman and Mr. Multer, therefore, it was necessary to ask each Federal Reserve bank to obtain a statement from each of its class B directors of the amount of bank stock now owned and whether there had been any change in ownership during the past 3 years or since their election as directors, whichever is the shorter period.

"Under the law, there are 36 class B directors of Federal Reserve banks (3 for each of the 12 banks). At the time of this inquiry there was 1 vacancy, and it was not possible to obtain the information from 2 of such directors who were on extended trips and could not be reached.<sup>1</sup>

The remaining 33 class B directors own stock of banks as follows:

"Sixteen own no bank stock and have owned no bank stock since their election as directors.

"Eleven own less than one-half of 1 percent of the stock of any 1 bank.

"Three own less than 2 percent of the stock of any 1 bank.

"One owns 2½ percent of the stock of 1 bank (130 of 6,000 shares).

"One owns 13 percent of the stock of 1 bank (3,900 of 30,000 shares).

"One owns 15¼ percent of the stock of 1 bank (312 of 2,000 shares).

"Four of the directors had increased their holdings of bank stock within their term of office for the past 3 years. The increased holdings of three resulted from stock dividends or the exercise of rights in connection with an increase in capital. Only one represented an increase in proportionate ownership. None of the 17 owning bank stock has decreased his holdings since his election as director."

The CHAIRMAN. They are elected by bankers. Out of the board of directors in New York—and it is the same in each Federal Reserve district—6 of the 9 directors are elected by the banks. Now, whoever they select, of course, I consider that banker representation has selected them. You think that because some of them are not bankers that—

Mr. MARTIN. I think because they are insulated—and I am glad to have an opportunity to put this statement in the record, because I think if there is anything not in consonance with the Federal Reserve Act, nobody wants to know it quicker than we do.

The CHAIRMAN. All right, sir. Pardon the interruption, Mr. Martin. You may proceed.

Mr. MARTIN. Would you like me to read this statement?

The CHAIRMAN. If you prefer.

Mr. MARTIN. Then I will answer these questions very briefly at the end.

Your letter of June 4, advising me of the time for this public hearing, and the subcommittee's statement of June 7 for the press, state

<sup>1</sup> Since that time the vacancy has been filled and the information from the two directors referred to has been obtained as follows:

One director owns eighty-two hundredths of 1 percent of the stock of one bank.

One owns 1½ percent of the stock of one bank (300 of 20,000 shares, which has been reduced from 350 shares within the past 3 years).

One owns 3¼ percent of the stock of one bank (200 of 6,000 shares) and 10 percent (100 of 1,000 shares) of another bank. There has been no change in his holdings during the past 3 years.

that you are interested at this time in procedural matters surrounding the recent increases of the discount rate at Federal Reserve banks, and that you wish to leave for a later date questions as to the merits and wisdom of the action itself.

Your decision not to go immediately into the merits or demerits of this particular action seems to me a wise one. As you know, the Federal Reserve Act specifies a procedure for reporting annually to the Congress, whose agent we are, on the policy actions of the Reserve Board, and of the Federal Open Market Committee.

A wider understanding of these procedures is very desirable. Accordingly, this statement will set forth an elementary outline of organization and procedure and will include a statement relative to the 108 directors of the 12 Federal Reserve banks, who, under the Federal Reserve Act, have initial responsibility for determining discount rates at their respective institutions.

I list the name and the directors at the back of the statement.

The CHAIRMAN. You list those that were class 3 directors that owned the stock in banks?

Mr. MARTIN. No, but I will supplement this statement with other material to meet the request which has just come up.

Discussion and full disclosure of monetary policy and action are, of course, essential. The effects of a given step in the development of monetary policy, however, are difficult, if not impossible, to gauge in the short run.

Monetary policy is a fluid, not a static, process. Each separate action is usually a supplemental or complementary step in development of an overall pattern of policy.

Policies are shaped from day to day by a connected series of separate actions, with constant adaptations to the ever-changing factors and forces in the vast economic fabric of the country.

Therefore, it would be illogical and misleading to lift out of context a given step in the process. Debate close to the time of action does not afford a broad enough perspective, particularly when judgments as to timing or as to the economic outlook differ.

Under circumstances of diverse trends, hesitancy and delay in taking monetary action might result if those responsible for action were expected to explain publicly and defend any given step of a continuing or changing pattern, before the economic indicators were so unmistakably clear as to support a unanimity of judgment.

The annual reports to Congress required by law are sufficiently removed from the time the various actions are taken to afford a broader perspective as to their wisdom or lack of it. Thus, a better, calmer appraisal is probable than is apt to be the case if judgments are made around the time action is taken.

The CHAIRMAN. May I ask you a question on that one?

Mr. MARTIN. Certainly, sir.

The CHAIRMAN. I know that your reports are invariably delayed. Instead of making a report right at the end of December, you usually make the report about—when?

Mr. MARTIN. We have been usually doing it around March or early April, because—

The CHAIRMAN. We don't usually get them, or at least I haven't been getting them early. I had this in mind, about the first of June or first of July.

Mr. MARTIN. We have done better than that, and I am making every effort administratively to get them up earlier. I hope next year to get it in in early March.

The CHAIRMAN. Since you mentioned that here, it was wise to have the decision, the announcement of the decision delayed, I thought maybe it was deliberately done.

Mr. MARTIN. No, sir; absolutely not.

A wider understanding of these procedural processes which you are studying today should lead to a better public understanding of policy action, what they aim to accomplish, and what they can and cannot do. There is, of course, no magic in Federal Reserve, monetary, or other governmental measures that will assure perpetual and evenly distributed economic health. Maladjustments, imbalances, excesses in some sectors and shortages in others are inevitable; but partial readjustment should not be postponed, at the risk of increasing the general ailments.

Monetary policy is a standard, though limited, remedy for some ills.

The discount rate particularly can be greatly overrated as a cause or cure. Open market operations, discount rate changes, and reserve requirement changes are the closely interrelated parts of Federal Reserve monetary mechanism. Confusion often arises because we are apt to talk about the three parts of this mechanism as if we were offered a choice among three separate means of easing or tightening credit.

All three must operate together—in a continuing pattern, the supply of reserves always being basic. Open market operations and reserve requirements affect that base. Discount rates do not affect the volume of that base, but only the cost of reserves. It is therefore misleading to think of the three components as if they were alternatives to be used independently of each other. They must be used together.

The use of one component rather than another at a particular moment is explained by the fact that, by its nature, each has a different impact. Reserve requirements are the bluntest of the three, having the heaviest impact because they directly affect all member banks in varying degree and release or absorb very large sums. Changes in reserve requirements are best suited to broad basic adjustments, and the impact of such changes is often modified by subsequent Federal open market operations.

Open market operations are best suited to day-to-day adjustments, for they can be used to release or impound small or large sums of reserves in accordance with current conditions. In this way, what have aptly been called "high-powered dollars" are added to or taken out of the reserves of the banking system.

It is most important to note here that contrary to a widespread misunderstanding, the Federal Reserve System does not use the reserves deposited with it by the member banks to buy Government securities.

The CHAIRMAN. On that point, Mr. Martin, you remember that a representative of the American Bankers Association insisted one time in answering my question before the Banking and Currency Committee of the House that these deposits were used to buy Government securities. Every year I questioned them, and the American

Bankers Association representatives adhered to their former insistence. Finally, last year they wrote me a letter and stated I was right and they were wrong. I have never published that letter, but I think I should. I am glad you brought it out.

Mr. MARTIN. I think that was very helpful, your bringing out that error.

For this purpose the Reserve System creates money, and additional reserves are thus put at the disposal of member banks on which loans and investments can be pyramided at a ratio of about 6 to 1. That is why the money created to make such purchases is spoken of as "high-powered dollars."

Discount rate changes, in respect to frequency of use, are less frequent than open market sales and purchases, but more frequent than reserve requirement changes. For example, the rates of discount were revised downward twice in 1954, during a comparatively short and mild business downturn, and have been revised upward 5 times over the last 12 or 13 months as the economy rose toward its production capacity, and demand for credit strained the limits of supply.

The initiative as to discount rates rests with the directors at each of the 12 banks. They meet regularly, different Reserve banks having different days, in some instances, for directors' meetings; but each bank acts every 14 days, either to reestablish or change its existing discount rate. The action taken, whether to continue the same or to change the rates; is immediately reported to the Board of Governors, and acted upon at a regular or special Board meeting.

Since System procedure is based on organization, it seems relevant and appropriate to outline briefly the way in which the Reserve System is organized. It is essentially a regional system, made up of 12 Reserve banks with 24 branches, and having a total of 260 directors. The Board of Governors has responsibility for coordinating policy of the 12 banks, and in some instances supervises operations as well.

The Federal Reserve Act spells out, in detail, how the directors of the banks and branches are to be chosen. At the head offices, there are 9 directors, 6 elected by member banks. You are correct in that.

Three—class A, in the law—are chosen from local member banks, so grouped as to provide representation for the larger, medium-sized, and smaller banks in each district. And the bulk of the member banks are, in fact, small businesses, engaged in serving small businesses in their communities. Three—class B—are required to "be actively engaged in their district in commerce, agriculture, or some other industrial pursuit." The first 3 may be considered as lenders, the second 3 may be looked upon as representatives of borrowers. The remaining three—class C—are chosen by the Board of Governors with a view to providing a still broader representation, and they cannot be bankers. Of the class C directors, the Board of Governors designates one as the chairman and another as the deputy chairman for each Reserve bank.

The CHAIRMAN. May I interrupt you there? You state here that class C directors cannot be bankers, but I believe the law requires them to be men of tested banking experience.

Mr. MARTIN. That's correct, as to the chairmen.

The CHAIRMAN. They must have been bankers recently?

Mr. MARTIN. Oh, no.

The CHAIRMAN. They must be of tested banking experience.

Mr. MARTIN. It is banking in the broad sense.



The CHAIRMAN. I am not making any point, except to say that the whole board is topheavy with bankers.

Mr. MARTIN. Well, we have for example, Mr. James R. Killian, Jr., who is the president of the Massachusetts Institute of Technology, one of those selected as a class C director. He has been very faithful, and a fine director.

The CHAIRMAN. I am not saying anything against any of them.

Mr. MARTIN. I know that. I just wanted to point that out.

In this blending of public and private participation, the act vests the regional banks with as large a degree of autonomy as is feasible in an organized system. While each president and first vice president of a Reserve bank is initially selected by the local directors for a term of 5 years; the selections are subject to approval by the Board of Governors, a procedure that, in my judgment, gives these officers a very desirable freedom from domination by the Governors, the directors, or by others.

The CHAIRMAN. May I ask you about the Open Market Committee on this particular action, Mr. Martin? The Open Market Committee manager is selected by the 9 directors of the New York Bank, 6 of whom were selected by the banks in that Federal Reserve District. Is that correct?

Mr. MARTIN. New York Federal Reserve Bank?

The CHAIRMAN. That is the only one, of course, that has a manager.

Mr. MARTIN. That's right.

The CHAIRMAN. The Board of Governors approved him?

Mr. MARTIN. That's right.

The CHAIRMAN. That person who has that very important place handling the operation, open market operations, is not directly responsible to you, is he? When I say "you," I mean of course the Board of Governors. He is responsible to the New York Federal Reserve Bank?

Mr. MARTIN. He is responsible to the bank, but the bank is acting as an agent of the Open Market Committee.

Now, on this point, in our ad hoc subcommittee report, which we have discussed frequently, it has been my feeling that the selection of the manager should be by the Open Market Committee, and then the directors of the New York bank should approve the selection rather than having it in reverse. That is the wiser approach, in my judgment.

The CHAIRMAN. Wouldn't you go further, Mr. Martin, and say that the bankers should be off the Open Market Committee, and that the Open Market Committee should be composed of the Board of Governors here in Washington and the whole open market operation moved to Washington?

Mr. MARTIN. No; I wouldn't go that far.

The CHAIRMAN. You wouldn't go that far? All right.

Mr. MARTIN. Similarly, the functions of the System are distributed. Thus reserve requirements are the sole responsibility of the Federal Reserve Board. Open market operations are the responsibility of the Federal Open Market Committee, a statutory body consisting of the 7 members of the Reserve Board and the 5 Reserve bank presidents. And the law specifies that all the presidents shall serve on the Committee at intervals. Discount rates are a joint responsibility of the Reserve Board and the Reserve bank directors.

The CHAIRMAN. May I interrupt you there, and you say the law specifically says that these are at intervals? Isn't there an exception, a very important one, that the president of the Federal Reserve Bank of New York is always a member?

Mr. MARTIN. That's correct.

The CHAIRMAN. This is incorrect to that extent.

Mr. MARTIN. Well, not so far as my comment here is concerned with the fact that all the presidents serve on the Committee at some time.

The CHAIRMAN. At intervals, but indicating that they skip, 1 year on, 2 years off, which of course is true.

Mr. MARTIN. Not true in the case of New York.

The CHAIRMAN. In New York they are permanent members.

Mr. MARTIN. They are permanent members under the law.

These provisions have been carefully thought out in the legislative process and have worked reasonably well in practice. I do not mean to say that the System is perfect—it is not—but I am confident that the Congress would not wish to make important changes in it without thorough study and deliberation.

Although the discount rate is fixed periodically by each bank subject to the Board of Governors' approval, in the actual granting of discount accommodation to individual member banks, the Federal Reserve bank directors act on their own initiative and responsibility, free from intervention or pressures by the Board of Governors or by other Reserve banks. These directors are always in close touch with conditions in their districts, and the discount operations, including the rates, take account of local economic needs and trends. At the same time, through the constant stream of intercommunication among governors, directors, presidents, and their staffs, all who have responsibilities in the System, are in touch with and advised of the economic picture nationally and the needs of the overall economy.

The CHAIRMAN. May I interrupt you there, too, Mr. Martin?

Although these directors have all this power and the responsibility of fixing these rates, you can veto any rate you want to, can't you?

Mr. MARTIN. The law gives us that authority.

The CHAIRMAN. Gives you that power. In other words, they can talk about it and decide on it, but if you want to change it, you can do it.

Mr. MARTIN. The final authority rests with us.

The CHAIRMAN. In the Board right here in Washington.

Mr. MARTIN. In the Board right here.

The CHAIRMAN. That's right.

Mr. MARTIN. Through the medium of frequent meetings of the Federal Open Market Committee—meetings are held every 3 weeks or oftener as circumstances require—there is an interchange of economic information and operational experience that keeps Board members and the Reserve bank presidents and directors informed on the course of the economy, both regional and national.

I would like to point out here that the airplane has been a very great help to us.

The CHAIRMAN. What has?

Mr. MARTIN. The airplane has been a very great help to us, in that the president of the San Francisco Reserve Bank hasn't missed a meeting in months—since February, I think, although I didn't check this exactly. That wouldn't have been possible 10 years ago, or at least

it would have been very difficult, so swift transportation has been helpful to the operation of this Committee.

As discount policy is closely interwoven with open market policy, it is among the important subjects discussed at the frequent meetings of the Federal Open Market Committee, and the presidents of the Reserve banks generally express their individual views as to whether they feel they should recommend to their boards of directors changes in discount rates. A consensus may emerge from the round table discussion, but—and this is important to bear in mind—there is no effort on the part of any member of the committee to dictate to any individual Reserve bank, its president or directors what those rates should be.

The CHAIRMAN. On that point, I think it is germane to ask you about this last increase in the discount rate which was passed on, I believe, by 10 or 11 of the banks, the same day.

Mr. MARTIN. That Board approval was given 11 banks on the same day. The reason for that was that we held up to give—but let me give you the sequence: The first bank to come in with a recommendation was the Atlanta Reserve Bank. The second bank to come in was the Philadelphia bank. We knew that the following Thursday—April 12, the day, as it happened, that the discount action was announced—there would be some meetings of quite a number of banks. On Wednesday, April 11, preceding the Thursday date—as I pointed out, these banks have different meeting dates, and no effort was made to pressure anybody to go along and do anything—and the San Francisco bank came in.

The CHAIRMAN. You don't mean to say you were not conferring with them at different times?

Mr. MARTIN. On this discount rate change?

The CHAIRMAN. Yes, sir.

Mr. MARTIN. We conferred in the Open Market meeting, which preceded it, but we did not confer with them individually as they went along.

The CHAIRMAN. In the Open Market Committee preceding the actions of the different boards you had discussed it, and you had agreed it might be a good thing?

Mr. MARTIN. No; we didn't come to any agreement. We had a full discussion of it in which it was indicated that several of the banks might go up.

The CHAIRMAN. It was not wholly unexpected?

Mr. MARTIN. Not wholly unexpected, but I was by no means certain. I did know that two banks were coming in with different rates, that they would come in at rates different from the others.

The CHAIRMAN. Were they justified, or authorized in reaching that conclusion, that it would meet with the approval of the Board, if they did raise these rates?

Mr. MARTIN. They knew that it would be considered by the Board promptly, and having participated in the Open Market Committee meeting, they had reason to believe that there was gradually crystallizing in the System a view that a higher rate might be desirable.

That there should be differences—as evidenced at the moment by different rates in two of the districts—reflects not only different judgments, but also the absence of dictation or undue influence. This, I believe, is the way in which this function was expected to be performed, based primarily on the judgments of directors familiar with local

conditions, and with coordination effected through the Board of Governors.

Finally, let me point out that discount rates are the interest rates paid by member banks, when they borrow from their district Federal Reserve bank. It should be emphasized that such borrowing is intended to meet only temporary needs of member banks for reserve funds, and not long-term needs geared to the normal growth of the economy, or to the annually recurring seasonal requirements of commerce, industry and agriculture in the 12 districts. Reserves necessary for such general and repetitive purposes are predetermined as closely as possible by the Federal Open Market Committee and ordinarily supplied by Federal open market operations or occasionally by the Board of Governors through changes in reserve requirements.

In arriving at policy decisions, great care is taken to obtain and evaluate all relevant views, including, of course, the views of officials of the Government who have responsibilities in the economic field. These consultations frequently develop differences of view. That is to be expected. Our final decision, however, under the law, must be our own and represent, as closely as human relations can, our judgment on the direction of action that will contribute most to the public welfare.

Following is a list of the Federal Reserve bank directors and their business affiliations:

DISTRICT 1—BOSTON

Class A:

Lloyd D. Brace, president, the First National Bank of Boston, Boston, Mass.  
 Harold I. Chandler, president, the Keene National Bank, Keene, N. H.  
 Oliver B. Ellsworth, president and trust officer, Riverside Trust Co., Hartford, Conn.

Class B:

Milton P. Higgins, president, Norton Co., Worcester, Mass.  
 Frederick S. Blackall, Jr., president and treasurer, the Taft-Peirce Manufacturing Co., Woonsocket, R. I.  
 Harry E. Umphrey, president, Aroostook Potato Growers, Inc., Presque Isle, Maine.

Class C:

James R. Killian, Jr., president, Massachusetts Institute of Technology, Cambridge, Mass.  
 Robert C. Sprague, chairman and treasurer, Sprague Electric Co., North Adams, Mass.  
 Harvey P. Hood, president, H. P. Hood & Sons, Inc., Boston, Mass.

DISTRICT 2—NEW YORK

Class A:

John R. Evans, president, the First National Bank of Poughkeepsie, Poughkeepsie, N. Y.  
 Ferd I. Collins, president and trust officer, Bound Brook Trust Co., Bound Brook, N. J.  
 Howard C. Sheperd, chairman of the board, the First National City Bank of New York, New York, N. Y.

Class B:

Lansing P. Shield, president, the Grand Union Co., East Paterson, N. J.  
 John E. Bierwirth, president, National Distillers Products Corp., New York, N. Y.  
 Clarence Francis, director, General Foods Corp., New York, N. Y.

Class C:

Jay E. Crane, vice president, Standard Oil Co. (New Jersey), New York, N. Y.  
 Forrest F. Hill, vice president, the Ford Foundation, New York, N. Y.  
 Franz Schneider, consultant to Newmont Mining Corp., New York, N. Y.

DISTRICT 3—PHILADELPHIA

Class A:

- Wm. Fulton Kurtz, chairman of the executive committee, the First Pennsylvania Banking & Trust Co., Philadelphia, Pa.
- W. Elbridge Brown, president and trust officer, Clearfield Trust Co., Clearfield, Pa.
- Lindley S. Hurff, president and trust officer, the First National Bank of Milton, Milton, Pa.

Class B:

- Warren C. Newton, president, O. A. Newton & Son Co., Bridgeville, Del.
- Bayard L. England, president, Atlantic City Electric Co., Atlantic City, N. J.
- Charles E. Oakes, president, Pennsylvania Power & Light Co., Allentown, Pa.

Class C:

- Lester V. Chandler, professor of economics, Princeton University, Princeton, N. J.
- William J. Meinel, chairman of the board, Heintz Manufacturing Co., Philadelphia, Pa.
- Henderson Supplee, Jr., president, the Atlantic Refining Co., Philadelphia, Pa.

DISTRICT 4—CLEVELAND

Class A:

- J. Brenner Root, president, the Harter Bank & Trust Co., Canton, Ohio.
- Edison Hobstetter, president and chairman of the board, the Pomeroy National Bank, Pomeroy, Ohio.
- King E. Fauver, director, the Savings Deposit Bank & Trust Co., Elyria, Ohio.

Class B:

- Alexander E. Walker, chairman of the board, the National Supply Co., Pittsburgh, Pa.
- Joseph B. Hall, president, the Kroger Co., Cincinnati, Ohio.
- Charles Z. Hardwick, executive vice president, the Ohio Oil Co., Findlay, Ohio.

Class C:

- John C. Virden, chairman of the board, John C. Virden Co., Cleveland, Ohio.
- Frank J. Welch, dean and director, College of Agriculture and Home Economics, University of Kentucky, Lexington, Ky.
- Arthur B. Van Buskirk, vice president and governor, T. Mellon & Sons, Pittsburgh, Pa.

DISTRICT 5—RICHMOND

Class A:

- J. K. Palmer, executive vice president and cashier, Greenbrier Valley Bank, Lewisburg, W. Va.
- Daniel W. Bell, president and chairman of the board, American Security & Trust Co., Washington, D. C.
- Joseph E. Healy, president, the Citizens National Bank of Hampton, Hampton, Va.

Class B:

- W. A. L. Sibley, vice president and treasurer, Monarch Mills, Union, S. C.
- Robert O. Huffman, president, Drexel Furniture Co., Drexel, N. C.
- L. Vinton Hershey, president, Hagerstown Shoe Co., Hagerstown, Md.

Class C:

- Alonzo G. Decker, Jr., executive vice president, the Black & Decker Manufacturing Co., Towson, Md.
- D. W. Colvard, dean of agriculture, North Carolina State College of Agriculture and Engineering, Raleigh, N. C.
- John B. Woodward, Jr., chairman of the board, Newport News Shipbuilding & Dry Dock Co., Newport News, Va.

DISTRICT 6—ATLANTA

Class A:

- Roland L. Adams, president, Bank of York, York, Ala.
- W. C. Bowman, chairman of the board, the First National Bank of Montgomery, Montgomery, Ala.

William C. Carter, chairman and president, Gulf National Bank, Gulfport, Miss.

Class B:

A. B. Freeman, chairman of the board, Louisiana Coca-Cola Bottling Co., Ltd., New Orleans, La.

Pollard Turman, president, J. M. Tull Metal & Supply Co., Inc., Atlanta, Ga.

Donald Comer, chairman of the board, Avondale Mills, Birmingham, Ala.

Class C:

Harlee Branch, Jr., president, Georgia Power Co., Atlanta, Ga.

Henry G. Chalkey, Jr., president, the Sweet Lake Land & Oil Co., Lake Charles, La.

Walter M. Mitchell, vice president, the Draper Corp., Atlanta, Ga.

DISTRICT 7—CHICAGO

Class A:

Vivian W. Johnson, president, First National Bank, Cedar Falls, Iowa.

Walter J. Cummings, chairman, Continental Illinois National Bank & Trust Company of Chicago, Chicago, Ill.

Nugent R. Oberwortmann, president, the North Shore National Bank of Chicago, Chicago, Ill.

Class B:

William A. Hanley, director, Eli Lilly & Co., Indianapolis, Ind.

Walter E. Hawkinson, vice president in charge of finance, and secretary, Allis-Chalmers Manufacturing Co., Milwaukee, Wis.

William J. Grede, president, Grede Foundries, Inc., Milwaukee, Wis.

Class C:

J. Stuart Russell, farm editor, the Des Moines Register and Tribune, Des Moines, Iowa.

Bert R. Prall, 558 Ridge Road, Winnetka, Ill.

Carl E. Allen, Jr., president, Campbell, Wyant & Cannon Foundry Co., Muskegon, Mich.

DISTRICT 8—ST. LOUIS

Class A:

William A. McDonnell, president, First National Bank in St. Louis, St. Louis, Mo.

Phil E. Chappell, president, Planters Bank & Trust Co., Hopkinsville, Ky.

J. E. Etherton, president, the Carbondale National Bank, Carbondale, Ill.

Class B:

Louis Ruthenburg, chairman of the board, Serval, Inc., Evansville, Ind.

Leo J. Wieck, vice president and treasurer, the May Department Stores Co., St. Louis, Mo.

S. J. Beauchamp, Jr., president, Terminal Warehouse Co., Little Rock, Ark.

Class C:

M. Moss Alexander, president, Missouri Portland Cement Co., St. Louis, Mo.

Joseph H. Moore, farmer, Charleston, Mo.

Caffey Robertson, president, Caffey Robertson Co., Memphis, Tenn.

DISTRICT 9—MINNEAPOLIS

Class A:

Harold N. Thomson, vice president, Farmers & Merchants Bank, Presho, S. Dak.

Harold C. Refling, cashier, First National Bank in Bottineau, Bottineau, N. Dak.

Joseph F. Ringland, president and chairman of the board, Northwestern National Bank of Minneapolis, Minneapolis, Minn.

Class B:

John E. Corette, president and general manager, Montana Power Co., Butte, Mont.

Ray C. Lange, president, Chippewa Canning Co., Inc., Chippewa Falls, Wis.

Thomas G. Harrison, president, Super Valu Stores, Inc., Hopkins, Minn.

Class C:

Leslie N. Perrin, director, General Mills, Inc., Minneapolis, Minn.

O. B. Jesness, head, department of agricultural economics, University of Minnesota Institute of Agriculture, St. Paul, Minn.

F. Albee Flodin, president and general manager, Lake Shore, Inc., Iron Mountain, Mich.

DISTRICT 10—KANSAS CITY

Class A :

- W. L. Bunten, president, Goodland State Bank, Goodland, Kans.
- Harold Kountze, chairman of the board, the Colorado National Bank of Denver, Denver, Colo.
- W. S. Kennedy, president and chairman of the board, the First National Bank of Junction City, Junction City, Kans.

Class B :

- K. S. Adams, chairman of the board, Phillips Petroleum Co., Bartlesville, Okla.
- Max A. Miller, livestock rancher, Omaha, Nebr.
- E. M. Dodds, chairman of the board, United States Cold Storage Corp., Kansas City, Mo.

Class C :

- Oliver S. Willham, president, Oklahoma Agricultural and Mechanical College, Stillwater, Okla.
- Joe W. Seacrest, president, State Journal Co., Lincoln, Nebr.
- Raymond W. Hall, vice president and director, Hallmark Cards, Inc., Kansas City, Mo.

DISTRICT 11—DALLAS

Class A :

- W. L. Peterson, president, the State National Bank of Denison, Denison, Tex.
- Sam D. Young, president, El Paso National Bank, El Paso, Tex.
- J. Edd McLaughlin, president, Security State Bank & Trust Company, Ralls, Tex.

Class B :

- John R. Alford, industrialist and farmer, Henderson, Tex.
- D. A. Hulcy, chairman of the board and president, Lone Star Gas Co., Dallas, Tex.
- J. B. Thomas, president and general manager and director, Texas Electric Service Co., Fort Worth, Tex.

Class C :

- Hal Bogle, rancher and feeder, Dexter, N. Mex.
- Robert J. Smith, chairman of the board and president, Pioneer Aeronautical Services, Inc., Dallas, Tex.
- Henry P. Drought, attorney at law, San Antonio, Tex.

DISTRICT 12—SAN FRANCISCO

Class A :

- M. Vilas Hubbard, president and chairman of the Board, Citizens Commercial Trust & Savings Bank of Pasadena, Pasadena, Calif.
- Carroll F. Byrd, president, the First National Bank of Willows, Willows, Calif.
- John A. Schoonover, president, the Idaho First National Bank, Boise, Idaho.

Class B :

- Alden G. Roach, president, Columbia-Geneva steel division, United States Steel Corp., San Francisco, Calif.
- Reese H. Taylor, president, Union Oil Company of California, Los Angeles, Calif.
- Walter S. Johnson, chairman of the board, American Forest Products Corp., San Francisco, Calif.

Class C :

- A. H. Brawner, chairman of the board, W. P. Fuller & Co., San Francisco, Calif.
- Philip I. Welk, president, Preston-Shaffer Milling Co., Walla Walla, Wash.
- Y. Frank Freeman, vice president, Paramount Pictures Corp., Hollywood, Calif.

Now, I would like to supplement, if I might, Mr. Patman, turning to your letter, a comment on why I made the answer I did to your first letter, which I am sorry was not clear to you.

I would like to point out that since I have been in the System, we have tried to operate in the most effective way possible consistent with the act.

Now, in 1935 the Comptroller of the Currency, and the Secretary of the Treasury, were removed by statute from the Board of Governors. They were on it up to that time, and they were voting members.

Now, since that time there has been no formal statutory provision outlining consultation or conversation. When we had President Truman and Secretary Snyder we had a working relationship where I conferred with Secretary Snyder every single day of the week. After Secretary Humphrey came in, with the administration of President Eisenhower, Secretary Humphrey and I have conferred every Monday. And on Wednesday, the lunches which were started at the time that you are familiar with—from our hearings, the time of the Treasury-Federal Reserve accord, those lunches have been continued. The only difference in this administration has been that where Assistant Secretary Bartelt was the ranking Treasury official at most of the lunches during the Truman-Snyder regime, Under Secretary Burgess has been ranking luncheon guest during the Eisenhower-Humphrey regime.

The CHAIRMAN. I think it is appropriate to ask you here, Mr. Martin: Do you feel like that Mr. Humphrey is the delegated person by the President of the United States for you to confer with?

Mr. MARTIN. No.

The CHAIRMAN. You don't refer to him or think of him then as one designated by the President. You don't confer with him by reason of any designation by the President?

Mr. MARTIN. The President has never mentioned any delegation of that sort to me, but I confer with Secretary Humphrey quite naturally because debt management and monetary policy are very closely inter-related. Senator Douglas, who I am sorry isn't here today, used to say, "Good fences make good neighbors." Now, we have tried to work out a relationship on monetary and credit policies and debt management. I have insisted that in addition to the Senator's comment, and you have heard me a number of times, that we need a revolving door to go through to make it effective. That is the type of relationship that we tried to work out.

These conversations that we have frequently over the telephone on a regular weekly basis, and sometimes on a daily basis, as I have indicated to you, have no agenda, no memorandum of what the conversations are at the time, and they are completely informal. I change my mind from time to time; the Secretary changes his mind from time to time.

I have discussed matters with Chairman Burns of the Council of Economic Advisers on exactly the same basis.

In other words, we have tried to get the maximum benefit of an informal working relationship, which is continuous.

The CHAIRMAN. I want to ask you a question, following up what I have just asked you.

Who asked you to serve, continue on as Chairman, Mr. Humphrey or President Eisenhower?

Mr. MARTIN. Well, let me put it this way: The reputed tender of resignation is not quite accurate. It was known to some people that I had received an offer that was attractive to me near the end of the previous regime, and that I had testified before your committee, the Patman committee, that since the change in the Banking Act of 1935.



which changed the Reserve Board Governor and Vice Governor to Chairman and Vice Chairman, designated by the President, that I was inclined to believe, if you will recall that testimony, that the designation of Chairman on a 4-year basis was intended to make it possible for an incoming President to designate or appoint his Chairman.

The CHAIRMAN. That's right.

Mr. MARTIN. As it has worked out, it hasn't happened that way because I was serving the unexpired portion of Mr. McCabe's term, and he was serving an unexpired portion of another term, so that the time aspect hasn't quite fitted in with that position.

When I had indicated privately to several people who knew of this that I was perfectly agreeable to act in accord with the position I had taken, if I were a persona non grata—now, I did not know at the time who the new Secretary of the Treasury would be. In the course of time, several advisers of the President-elect—later to be advisers of the President—informed me that they hoped I would not be precipitous in tendering a resignation.

I never tendered a resignation. Secretary Humphrey came in. He urged me, as he testified, to stay, and I told him I would stay, and subsequently I met with the President, President Eisenhower, and expressed to President Eisenhower the same position that I am expressing to you, and the President asked me to remain.

The CHAIRMAN. Now, do you consider that you have a 4-year term, commencing when?

Mr. MARTIN. Well, you see, my term changed. My term as a member of the Board of Governors expired on January 31, 1956.

My designation as Chairman of the Board expired April 1, 1955.

President Eisenhower sent for me in early March of 1955, and informed me that he would like to redesignate me as Chairman. I was very flattered and pleased, and said I would serve. He indicated to me that it was possible that my term would end January 31, 1956, and I said, Well, I wouldn't want you to be obligated to me, or me to be obligated to you, Mr. President.

Now, subsequently, I was reappointed, as you know.

The CHAIRMAN. At the same time, if you had not been reappointed, you could not have served on as Chairman, that is obvious.

Mr. MARTIN. I would have dropped out automatically.

The CHAIRMAN. So your term will expire 4 years from March 1955?

Mr. MARTIN. That's correct.

The CHAIRMAN. You did not resign, because it was not necessary for you to resign?

Mr. MARTIN. That's correct.

Well now, I just wanted to point out that there is no agenda or record kept of these conversations.

The CHAIRMAN. If you will go back now to answer the questions in my letter just briefly:

(1) Is it a fact, to your knowledge, that the decision of the Board of Governors "went against the wishes" of the administration advisers? If so, whom?

Mr. MARTIN. If you mean were there differences of opinion, the answer is "yes." As to the further inquiry. "If so, whom"—the conversations that I had over a period of some 3 weeks previous to the action were with Secretary Humphrey and with Chairman Burns of the Council of Economic Advisers and Under Secretary Burgess participated in a good many of them and on one occasion Dr. Hauge, of the White House staff, was present.

Now, "what communications and representations"—Question No. 2—

what communications and representations from executive department officials, or their subordinates, did the Board have before it at the time of reaching its decision?

The answer is, "None." I informed the Board, as is my practice, of the conversations which had been carried on and of the fact that Secretary Humphrey and Chairman Burns questioned the wisdom of the action, but there were no formal representations. That was conveyed to the Board. They knew that at the time they took their action.

"How and by whom were those representations made, to you as Chairman"—I have already answered that in the preceding question.

(4) Have you or the Board had any subsequent communications, through official or unofficial channels, from members of the Cabinet or their responsible subordinates criticizing the action which the Board has taken?

The answer is, "None"; although we have, and I have, continued the same procedure, and the same considerations, with Secretary Humphrey and with Chairman Burns.

The CHAIRMAN. But you received no criticism?

Mr. MARTIN. None whatever.

The CHAIRMAN. The only criticism you have seen, then, was in the papers?

Mr. MARTIN. What was in the papers, that's right.

The CHAIRMAN. You mentioned "the accord" a while ago. I want you to comment on a statement that Mr. Burgess has recently made before a congressional committee in referring to the accord, that is, the agreement or accord, or whatever you want to call it which was entered into about March 4, 1951?

Mr. MARTIN. Right, sir.

The CHAIRMAN. All right. This is Mr. Burgess' testimony:

Now, the agreement had a lot of codicils and strings and things to it that made it far from perfect, but it was a great step forward. It did not go all the way. It did not completely free the market from Federal Reserve support. The Treasury, I think, continued to try to put out its securities at artificially low rates. When we came in, at the end of 1952 and the beginning of 1953, we recognized those principles. We felt we carried them to their logical conclusion in giving the Federal Reserve the freedom it needed to fulfill its lawful function of influencing the credit situation in the public interest.

Would you like to comment on that statement?

Mr. MARTIN. Well, I couldn't make any comment on it, except that is Under Secretary Burgess' judgment. Insofar as I am concerned, I have worked just as faithfully and conscientiously with the previous Treasury setup as I have with the current setup.

The CHAIRMAN. Yes, sir; but about changing the accord, he said it had a lot of codicils.

Mr. MARTIN. That is a technical document which expired at the end of 9 months. You see, in my understanding—I have worked on that, and I was in the Treasury at the time—

The CHAIRMAN. Just for the particular administration?

Mr. MARTIN. Not for that particular administration, but the terms of the accord, insofar as it applied to—

The CHAIRMAN. To an effective document.

Mr. MARTIN. To what we could do, and, I think I so testified on one occasion, ended up doing.

For example, in the accord—and this has come out in previous hearings—in the accord we had an agreement to maintain the discount rate, no matter what circumstances might occur until the end of the year. That is, from March 4, 1951 until January 1, 1952.

The CHAIRMAN. You mentioned a moment ago about the terms. Was it a written document?

Mr. MARTIN. Well, there were some aspects of it that were.

The CHAIRMAN. Have you filed everything before the committee that we had at one time that looked into that? Did you file everything that you had in connection with the accord that was in writing?

Mr. MARTIN. I did.

The CHAIRMAN. Everything that was in writing.

Mr. MARTIN. Everything that we had.

The CHAIRMAN. I don't recall anything in that that indicated it would expire in 9 months.

Mr. MARTIN. I am talking about this one aspect of it, because I am saying this was a specific provision that at the end of 1951 there was no obligation to maintain the discount rate beyond that time.

The CHAIRMAN. The rest of it did not expire?

Mr. MARTIN. The lunches have gone on just the same.

The CHAIRMAN. I am not talking about the lunches.

Was that one of the major things in the accord; the lunches?

Mr. MARTIN. You so stated on one occasion. [Laughter.]

The CHAIRMAN. I am asking you the question: Do you consider it one of the major functions?

Mr. MARTIN. I think it was a major thing, because I think it is important to have a regular date at which the staffs of the Treasury and the Federal Reserve Board, at the working level, get together, visit. You don't do it regularly. You have a tendency to go away on vacations, or something, and have a time lapse where you don't confer.

The CHAIRMAN. Well, Mr. Martin, have you finished your statement there now?

Mr. MARTIN. I think so, unless there is anything you would like to ask me on those four questions.

The CHAIRMAN. Your testimony has been quite revealing to me about why your letters were so similar, the fact that you gentlemen conferred together, and you didn't have any understanding and you couldn't call it unofficial understanding, but did not have any meeting of the minds. Since each one of you knew what the other one was going to say in reply to the letter, they naturally would be somewhat similar.

Mr. MARTIN. Which I thought was very important.

The CHAIRMAN. That explains why the letters were so much alike. That is the part I couldn't understand.

I didn't charge any conspiracy, or anything like that, but it did look like they had gotten together.

Mr. MARTIN. I want to put the facts out on the table.

The CHAIRMAN. You put it right out on the table. You have admitted it, and it is all right. I won't say you have broken down and confessed, because it is not one of those things. [Laughter.] But that does explain it.

Now then, about the discount rate increase. I can't understand, Mr. Martin, why you always use an increase in discount rates instead of a change in reserve requirements as a retarding influence on infla-

tion. The effect is to compel interest-rate increases all over the country, although the reasons may be largely psychological since the discount rate doesn't amount to much in a substantial way unless banks actually borrow.

Instead of an increase in reserve requirements which would not necessarily increase interest rates all across the board, why is it that you invariably use the discount rate? Having the two methods—you have others also—why do you choose the discount rate which automatically causes interest rate increases clear across the board, and unbalances everybody's budget in America?

The other vehicle or instrument is raising reserve requirements which would do, I think, the same thing, but not force an increase in interest rates. Why is it you always use the former, and never use the latter? At this point I would like to insert two tables based upon the Federal Reserve Bulletin, May 1956, which show the relative use of the two instruments since 1948 and especially since 1954.

(The tables are as follows:)

*Federal Reserve Bank of New York discount rate*<sup>1</sup>

[Percent per annum]

Date effective:	Rate	Date effective—Continued	Rate
1948—Jan. 12	1¼	1955—Apr. 15	1¼
Aug. 13	1½	Aug. 5	2
1950—Aug. 21	1¾	Sept. 9	2¼
1953—Jan. 16	2	Nov. 18	2½
1954—Feb. 5	1¾	1956—Apr. 13	2¾
Apr. 16	1½	In effect May 1, 1956	2¾

<sup>1</sup> Under secs. 13 and 13a, as described in table above.

*Member bank reserve requirements*

[Percent of deposits]

Effective date of change	Net demand deposits <sup>1</sup>			Time deposits	
	Central reserve city banks	Reserve city banks	Country banks	Central reserve and reserve city banks	Country banks
1948—Feb. 27	22				
June 11	24				
Sept. 16, 24 <sup>2</sup>	26	22½	16	7½	7½
1949—May 1, 5 <sup>2</sup>	24	21	15	7	7
June 30, July 1 <sup>2</sup>		20	14	6	6
Aug. 1, 11 <sup>2</sup>	23½	19½	13	5	
Aug. 16, 18 <sup>2</sup>	23	19	12		5
Aug. 25	22½	18½			
Sept. 1	22	18			
1951—Jan. 11, 16 <sup>2</sup>	23	19	13	6	6
Jan. 25, Feb. 1 <sup>2</sup>	24	20	14		
1953—July 1, 9 <sup>2</sup>	22	19	13		
1954—June 16, 24 <sup>2</sup>	21			5	5
July 29, Aug. 1 <sup>2</sup>	20	18	12		
In effect May 1, 1956	20	18	12	5	5
Present statutory requirements:					
Minimum	13	10	7	3	3
Maximum	26	20	14	6	6

<sup>1</sup> Demand deposits subject to reserve requirements, which beginning Aug. 23, 1935, have been total demand deposits minus cash items in process of collection and demand balances due from domestic banks (also minus war loan and series E bond accounts during the period Apr. 13, 1943–June 30, 1947).

<sup>2</sup> 1st-of-month or midmonth dates are changes at country banks, and other dates (usually Thursdays) are at central reserve city or reserve city banks.

Mr. MARTIN. We don't always. This is a relatively short period we have been discussing.

The CHAIRMAN. Well, the last five times.

Mr. MARTIN. That is because we have been in an expanding and prosperous economy in this period. Our whole approach to this is, ultimately, to fight, as you and I are both doing, fight deflation.

It is our conviction that employment which is created out of borrowed money, which cannot be ultimately repaid with ease, is going to be temporary employment.

The CHAIRMAN. Mr. Martin, you say "borrowed money." Under our capitalistic system, you cannot have any prosperous economy unless people do borrow money. Our economy is based on debt: no debt, no money.

Mr. MARTIN. I want them to borrow money in accord with their position, the sensible relationship. We are talking about reserve requirements now.

The CHAIRMAN. You are talking about excess borrowing?

Mr. MARTIN. Now, reserves, and our gold stock, are at the heart of a sound banking system, and we want them to expand in a proper way. We used the reserve requirement method twice, and I was glad we could use it, when we were having a mild business decline. I am not at all certain that reserve requirements may not be too high in relation to permissible limits. That is something we will have to consider over a long period of time.

During the war they got up to pretty high levels, because we wanted to have adequate reserves from a national standpoint in a war emergency—that is, we wanted to be able to use our gold stock adequately. But when you see demand and supply in this market, which you don't think is as free as I do, but nevertheless—

The CHAIRMAN. You think it is free market?

Mr. MARTIN. I think it is a free market. I think one of the great blessings of our economy today is that neither the Federal Reserve nor the Treasury is strong enough to override the forces at the grass-roots that are there in this economy. Some of my good friends think I am a little bit hipped on this, but I think that is the strength of our economy.

Now, you can vitiate the forces of supply and demand, but you pay a price for it, and when the Treasury does its financing, neither the Federal Reserve nor the Treasury can afford to ignore the forces of the market unless they want to have unbridled inflation.

I want interest rates to be as low as we can have them without producing inflation, because I think that will contribute to capital formation. But when we artificially interfere with the forces of supply and demand to create low interest rates, then we are paying a price for it, which is too great, in my judgment.

The CHAIRMAN. That is the only way, I will agree, if you just have got to raise interest to fight inflation, I would agree with you, but I do not agree that you have got to raise interest rates to fight inflation. There are other ways to do it. You take, for instance, the suggestion I made to Mr. Humphrey that you could increase interest on savings and people, instead of spending their money, would deposit their money in savings banks. That is one way you could do it.

That would encourage savings and prevent inflation, too, but your Board has held it down. You have the power under existing law.

I of course don't think you should ever have been given that power, but you were; you have OPA powers to fix interest rates. You fixed them low, very low. Did you ever consider raising the interest rates on time deposits in the fight against inflation?

Mr. MARTIN. We have thought about that. I heard you raise that question before—but that is something that we have been considering from time to time.

The CHAIRMAN. How long have you been considering it?

Mr. MARTIN. Within the last year. We have constant discussions of this. The point I am trying to make is that interrelated parts of the monetary mechanism all have to be synthesized to be used effectively and it isn't possible to isolate any one of the monetary instruments at a given time. We don't start with a clean sheet of paper, in terms of what we are all working for, which is as high a level in employment as it is possible to have.

It is my conviction, that if you pursue an inflationary policy and let natural forces generate a boom and bust, then when the inevitable readjustment comes, you will have two people unemployed, whereas you would have only one person unemployed if you had followed a sounder policy. That is what we are both struggling so hard to achieve.

The CHAIRMAN. Yes, an even keel, of course, is preferable, but don't you see some reason for alarm in the present situation where there are so many people unemployed in the automobile industry, the farmers are suffering, and small-business fellows are suffering, homebuilders are suffering.

Mr. MARTIN. I don't want to see anybody unemployed any more than you do, but now let's take this question of availability of credit. There are more questions, of course. Business doesn't live on credit alone.

The CHAIRMAN. It lives on debt.

Mr. MARTIN. Not on debt alone.

The CHAIRMAN. Couldn't do business without debt.

Mr. MARTIN. It would be possible, but difficult. You would have to change the system. You would have to change the markets, and at some point the sources of supply and demand which determine through the market mechanism how those various needs will be met.

Now, so far as the little man is concerned, we have heard a lot of talk recently that a restrictive policy is making it a little more difficult for the little man and it doesn't weigh quite as heavily on the big man.

Now, I would merely like to point out here that in this question of bigness, a good big man is probably better than a good little man, but most good little men in business are trying to get larger. From having been a little man in a very small way, I think that the greatest blessing you can give the little man of this country is price stability. If prices get out of hand with him—and this means far more to him than the difficulty of getting credit—he is just cut to ribbons by it. Whereas the big entrepreneur, the big merchant, can handle a price advance in one way or another, the little fellow, if he has to struggle with price instability and it gets out of hand, is literally wrecked by it.

Administratively—if he has more difficulty in the early stages of a period such as we have been going through, getting credit accommodation, and I regret that as much as anyone—we can administratively help just with a little bank service the little customers; but you can't do anything about the price level that gets away from you.

Now, we saw sometime back an indication that prices might start booming and getting out of hand, with a boost from borrowed money. No objection whatever could be raised to plant equipment expansion being financed out of savings or retained earnings. But as to coming to the market and going to the banking system for a long-term credit under the guise that a few years from now maybe it will be cheaper—well if you really want to make a difficult situation ultimately, in terms of a bust, just let all of this wonderful plant and equipment expansion which we all want, go on being financed out of bank credit—particularly if it is short-term credit, when it should be long-term credit and when it is in excess of the savings.

The CHAIRMAN. You say about price stability. I agree with you that that is a big factor in business, but don't you think instability in interest rates enters into it, too?

Mr. MARTIN. I would like to see interest rates stabilized within bounds, but on the other hand, though business has been so good, the law of supply and demand has been the big factor with respect to rates and we have not been trying to fix interest rates—I think that the Secretary was quite correct in his answer this morning, making a judgment there, but the Federal Reserve probably followed interest rates in the discount rate action rather than leading them.

The CHAIRMAN. A booklet we get out here, Economic Indicators—I guess you see it around—I think it indicates that the people are paying now much more than \$4 billion a year in interest rates in excess of what they were paying, say, 3 years ago. Don't you think, Mr. Martin, that it is damaging to our economy to divert more and more from people more of their purchasing power, from their ability to buy goods and services to the payment of interest? Don't you consider that a factor that should be carefully considered?

Mr. MARTIN. Interest is one of the costs of doing business.

The CHAIRMAN. I know it is one of the costs.

Mr. MARTIN. As you have pointed out, I think flexibility in interest rates is an important ingredient of a strong vigorous economy.

Now, I think that by and large we want to have as much flexibility as we can have within reason, and that the greatest single blessing that we can give, particularly for the little people, the pensioners, and the people with small savings accounts, is to prevent inflation of their currency. I think that this money we have is something that ought to be really removed from politics, as it is in the Federal Reserve, with due respect to that writer you quoted earlier today; it ought to be removed from politics because this money belongs to Democrats and Republicans alike, and it is a very important thing, particularly for the little man, that he has a currency that he can depend upon.

The CHAIRMAN. Well, I think that the interest rates have gone too high. I think we should be concerned about them. I think they are affecting our economy. I think they are to blame for this drop in cars.

I don't think installment buying is too high. As long as people pay debts—and no one complains that people are not paying their debts today. I think installment payments are as good or better than they have ever been, aren't they, Mr. Martin?

Mr. MARTIN. I think they are very good.

The CHAIRMAN. That does not indicate that installment credit is too high if people pay their bills and their debts. It looks to me like that is getting along pretty good. Why should we jump on them and

say we should cut it down? Don't you think it is interfering with their ability to buy cars?

Mr. MARTIN. I question very much whether it had any influence. I would like to make a comment here, purely an aside, about an automobile dealer, who wouldn't mind my saying this. He called me not long ago and told me he wanted to congratulate us on raising the discount rates. He won't be identified. I thought at first he was kidding me. Then he said, "You know, we didn't have anybody to blame for our poor sales, until you raised the rate."

I said, "I am very glad to oblige you in that fact, but," I said, "I really would like your advice. I am seeking advice all the time. I am worried all the time." I am a professional worrier, as I have testified to your committee. That is what I am paid for. I try to get a good night's sleep so I can worry effectively. [Laughter.]

The CHAIRMAN. When was this time? Was that recently?

Mr. MARTIN. Within the last 3 weeks.

The CHAIRMAN. I think he might have had in mind the other four raises before the last one.

Mr. MARTIN. He didn't specify, but pursuing this, I said, "I would really like to know, because I am deeply interested in this."

He said, "I think when you make tight money, and when people talk about bad times, or the possibility of bad times coming, that that does have some influence on our sales."

"But," he said, "I would just like you to know that as far as our particular business is concerned, the customer we have lost is the cash customer and not the credit customer."

I just thought that was an interesting comment from a man who has been in the business for a good many years.

The CHAIRMAN. Do you expect interest rates to go higher, Mr. Martin?

Mr. MARTIN. I don't know, Mr. Patman.

The CHAIRMAN. You would not resist further increases then, if there should be a reason, in your opinion, for stopping inflation? You feel that raising the interest rate is the best way to do it?

Mr. MARTIN. I want to assure you that the Federal Reserve Board is going to do everything within its power to resist both inflation and deflation. We are going to lean against the wind just as hard as we can in both directions.

The CHAIRMAN. I hear talk of 7 percent interest, and 10 percent.

Mr. MARTIN. I have no idea about whether there is anything in that. I would not make any future predictions.

The CHAIRMAN. I heard one man say the other day that the concern in which he is a very large stockholder had put in orders for about \$60 million worth of modern, I will call it machinery, and they are seriously thinking about canceling that order and taking a loss of \$5 or \$6 million, or whatever is necessary, because this interest rate is going on up.

People won't have any money to buy things. You divert it to money lenders and take it away from the bloodstream of business and commerce. I guess that is rather a far-fetched conclusion that he drew, but he is a mighty sensible businessman. He is greatly concerned about the high interest rates. If they were to cancel that contract—it involves the employment of lots of people—that would mean that



these people couldn't pay the installments on cars and purchases and debts and rents and taxes, and thing like that.

It would become distressing and alarming.

Mr. MARTIN. I hope your friend will study the situation more carefully and come to a different conclusion.

The CHAIRMAN. But he has a lot to think about when in the last five times that you have dealt in inflation, you have dealt with it by raising interest rates every time. You didn't deal with it by reserve requirements, which you had the power to do.

Mr. MARTIN. Well, we have tried to use all of these instruments, and I wouldn't forecast what use we would make of any one of these instruments, because I couldn't say. After all, I am only one member of a group.

The CHAIRMAN. A rather powerful member, I would say, Mr. Martin.

Would you like to comment on the significance of Mr. Sproul's resignation, and the choice of this relatively obscure successor of his?

Mr. MARTIN. The choice of Mr. Sproul's successor was made by the directors of the Federal Reserve Bank of New York. It has never been my pleasure to work with a more dedicated and conscientious group.

They canvassed the field for a long time. They had a choice as to whether they would take a young man or an older man. They decided that the nature of this jobber and the problems were such that they would like to have a younger man, and they chose Mr. Alfred Hayes, who has a marvelous background. He was well known to two of the directors of the Federal Reserve Bank of New York. Two of them have worked with him, and he came down and met with the Board of Governors, and we were very much impressed with him, and we look forward to a very successful year.

The CHAIRMAN. In other words, you left it up to the directors of the Federal Reserve Bank of New York?

Mr. MARTIN. That's right.

The CHAIRMAN. Although you had veto power, you didn't feel like you should exercise the veto power? I am not saying you should in this case. I don't know. But I thought it was unusual.

Mr. MARTIN. We have used the veto power on a number of occasions.

The CHAIRMAN. More than once?

Mr. MARTIN. Yes.

The CHAIRMAN. Outside of Chicago?

Mr. MARTIN. Yes.

The CHAIRMAN. This person who has charge of the Open Market Committee, successor to Mr. Sproul, has lots of power, as you know. Now, that is an unregulated bond market that they are dealing with. Don't you think that the Government bond market should be regulated, Mr. Martin, or do you think you should turn those fellows loose with the Government's credit, unlimited as to billions of dollars, in an unregulated Government bond market?

Mr. MARTIN. I think that the Government bond market is by no means perfect, any more than the stock exchange or—

The CHAIRMAN. But the stock exchange is subject to regulation and some restrictions.

Mr. MARTIN. I think we need a lot of study about the Government bond market. I have never held it out as perfect. It is a negotiated market, as distinct from an auction market, and right at the present time New York clearance banks have agreed to make a study about the money aspect of it.

The CHAIRMAN. So you think the question should be studied as to whether they should be regulated?

Mr. MARTIN. I think that they have adequate supervision at the present time. As to whether you need a separate regulatory authority, I don't think you need anything; I think the Federal Reserve System is going to take care of it.

The CHAIRMAN. Would you like to comment further on anything we have brought up?

Mr. MARTIN. I don't think so.

The CHAIRMAN. If I, or any member of the committee, should want to ask you a question for this record, you would be willing to answer it for the record?

Mr. MARTIN. At your service.

The CHAIRMAN. Mr. Ensley.

Mr. ENSLEY. Mr. Martin, Business Week for the 5th of May carried an editorial on monetary policy, and I would like to read a couple of sentences, and get your reaction to it.

The editorial states:

The Federal Reserve is afraid of inflation. Yet, to some of its friends it appears to be acting as though it is afraid of growth. How is it possible to set a goal of a \$500 billion economy by 1965, as the President has done, if the money supply is to be frozen at a level inadequate to support a gross national product of less than \$400 billion?

That is the question raised by Business Week. You have testified on questions of this type in the past, but I wonder if you would again comment on this particular point?

Mr. MARTIN. I think we should provide the resources for growth. I don't agree with the judgment that is expressed in this editorial, and we are trying very hard to see that growth is there. It just happens—I had no idea, as you can testify, that you were going to make this comment—but it just happens I have here a table which I would be very glad to put in the record: "Changes in deposits and currency at all banks."

The CHAIRMAN. We would like to have that.

(The material referred to is as follows:)

*Changes in deposits and currency at all banks—selected dates*

Date	Demand deposits adjusted and currency outside banks <sup>1</sup>	Demand deposits adjusted, currency outside banks, and time deposits <sup>2</sup>	Date	Demand deposits adjusted and currency outside banks <sup>1</sup>	Demand deposits adjusted, currency outside banks, and time deposits <sup>2</sup>
	In billions of dollars: Increase or decrease (-)			In percent: Increase or decrease (-)	
1950.....	6.5	7.1	1950.....	5.9	4.2
1951.....	6.9	9.1	1951.....	5.8	5.1
1952.....	4.5	8.8	1952.....	3.6	4.7
1953.....	1.5	6.1	1953.....	1.2	3.1
1954.....	3.9	8.8	1954.....	3.0	4.4
1955.....	3.8	6.9	1955.....	2.8	3.3
Total, 1950-55.....	27.0	46.8	Total, 1950-55.....	24.3	27.6
Annual average.....	4.5	7.8	Annual average.....	4.1	4.6
1956—January.....	( <sup>3</sup> )	( <sup>2</sup> )	ANNUAL RATES OF GROWTH		
February.....	-0.6	-0.2	1956—January.....	( <sup>4</sup> )	( <sup>5</sup> )
March.....	0.4	0.9	February.....	-5.4	-1.1
April.....	1.3	1.3	March.....	3.6	5.1
May <sup>4</sup> .....	-1.4	-1.2	April.....	11.7	7.3
Total, January to May.....	-0.3	0.8	May <sup>4</sup> .....	-12.5	-6.7

<sup>1</sup> Demand deposits adjusted exclude interbank and U. S. Government deposits and items in process of collection. Currency excludes bank vault cash. Monthly data are adjusted for seasonal variation.

<sup>2</sup> Time deposits include those at commercial and mutual savings banks and in the Postal Savings System.

<sup>3</sup> Less than \$50 million.

<sup>4</sup> Estimated.

<sup>5</sup> Less than 0.05 percent.

*Changes in loans and investments at all commercial banks*

[In billions of dollars]

Item	Increase or decrease (-)			
	1955	1954	1953	1952
	Loans, total.....	11.6	2.9	3.4
Business.....	6.4	-3	-7	2.0
All other.....	5.5	3.4	4.1	4.5
U. S. Government securities.....	-7.4	5.6	.1	1.8
Other securities.....	.4	1.6	.5	.8
Loans and Investments, total.....	4.6	10.2	4.1	9.0
	January-March		April-May <sup>1</sup>	
	1956	1955	1956	1955
Loans, total.....	1.3	.8	1.1	1.6
Business.....	1.3	.5	.2	.6
All other.....	.1	.4	.8	1.0
U. S. Government securities.....	-3.1	-4.8	-1.0	.8
Other securities.....	-1	.7	-3	-3
Loans and Investments, total.....	-1.8	-3.3	-3	2.1

<sup>1</sup> Data for May 1956 are estimated.

NOTE.—Data exclude interbank loans. Total loans are after and types of loans before, deductions for valuation reserves. Details may not add to totals because of rounding.

MR. MARTIN. In terms of averages, the annual average growth in demand deposits and currency from 1950 to 1955 shows here in percentage terms as 4.1 percent, which is a bit in excess of the 3 percent that we have talked about.

Now, when you study the money supply, and keep it in mind as a moving stream or flow, it seems to me it is the average over time, and not any given month, that is very important. I would be glad to put that table in the record.

The CHAIRMAN. You keep saying, "money supplied." You make the money supply?

MR. MARTIN. We have power to create money within the limits of the Federal Reserve Act, so long as our liabilities and—

The CHAIRMAN. You have unlimited power for all practical purposes, to manufacture it on the books of the bank.

MR. MARTIN. No; I do not—

The CHAIRMAN. In fact, banks are the biggest manufacturers in the Nation. I am not saying it is wrong. I think we have to have a fine commercial banking system; but the truth is they manufacture money, and you allow them to manufacture money. If they haven't got enough, you put it in the market through the Open Market Committee; you buy bonds.

Of course, through reserve requirements you can change it. Instead of being able to lend \$6 to every \$1 they have, you can enable them to lend \$10 for every \$1 they have, and if there is tightness of money you can supply that market with money to loosen it up. That is your purpose, is it not?

MR. MARTIN. The relationship of cost and availability of money to the stability of your currency is one of the important factors, also. You mentioned earlier several communities that might not want to borrow money at the present time because they might have to pay more than they thought they ought.

The CHAIRMAN. That's right.

MR. MARTIN. I think if you reduce that to nontechnical terms, I am not holding this out as a technically perfect thing—if you reduce it into nontechnical terms, then if the money is available under conditions of relatively full employment and prosperous conditions but people won't borrow the money because they want to get money cheaper, they're exercising a choice. The choice that people have, that businessmen have, is whether they would rather, for example, see this municipality have a sewer issue at 2¾ percent instead of 2⅞ percent, or see money pumped out to provide an artificially low rate until it thereby depreciates their currency by a small amount.

It seems to me that that is a price that the majority of the people in this country wouldn't want to pay.

The CHAIRMAN. Don't you see a dangerous trend there, Mr. Martin, in tax-exempt securities being so high; I mean interestwise?

In other words, to a person in the 50 percent bracket 3½ percent is equal to nearly 7 percent, and in some instances up to 35 percent, depending upon the income.

MR. MARTIN. This is purely an aside. A lot of people don't like my views on this, but I personally don't like tax-exempt securities. I have so testified. To me, it is unfortunate to have them.

Mr. ENSLEY. Mr. Chairman, I ask consent to insert in the record the complete editorial of May 5, referred to above and a memorandum of the committee staff of April 18 with respect to the economic situation and outlook.

The CHAIRMAN. Mr. Martin, we want to thank you. You are always very cooperative, and we appreciate your testimony very much.

Before closing the record and for the sake of completeness, I think it is appropriate to include several other items which bear directly upon the subject of this morning's proceedings.

First of all is an article from Newsweek of April 23, 1956, entitled "Tighter Money: The Backstage Drama." So far as I know, this was one of the first public indications of conflicting official opinion over the wisdom of the April 13 action of the Reserve System in raising the discount rate.

Along with the editorial from Business Week of May 5, which has just been referred to, I think it appropriate also to include two other editorials which appeared in the same journal on May 26 and June 2 respectively.

A news article which appeared in the New York Times of April 26, 1956, reporting on a press conference with President Eisenhower and entitled "President Backs Federal Reserve," is quite significant.

An excerpt from the testimony of Secretary of the Treasury Humphrey at hearings before the Committee on Finance, United States Senate, May 17, entitled "Highway Revenue Act," pages 86-88, should also be included.

The Joint Committee staff memorandum entitled "The Economic Situation and Outlook," which Mr. Ensley has referred to and which came out about this time, should likewise be placed in the record.

(The documents referred to follow:)

[Newsweek, April 23, 1956]

TIGHTER MONEY: THE BACKSTAGE DRAMA

In one swift stroke last week, the Federal Reserve Board made money more expensive than it has been at any time since 1933.

The announcement was simple and unemotional: FRB hiked the discount rate, which determines bank-loan rates in general, by a fraction of a percent.

But the cold percentages obscured a behind-the-scenes conflict of dramatic proportions.

In essence, the issue was whether the move was nicely timed to head off a serious inflation or whether it might hobble the boom. Involved were men of the caliber of Federal Reserve Chairman William McC. Martin, Jr., on the one hand, and Treasury Secretary George M. Humphrey on the other.

In the following report, Hobart Rowen of Newsweek's Washington bureau and Associate Editor Clem Morgello tell what went on behind the closed doors, what the arguments were, and what the upshot may be.

For nearly 2 weeks, Federal Reserve officials huddled in conferences with Treasury people and other top administration aides, arguing whether it was time to tighten up on credit. Booming business across the country supplied the backdrop for these Washington sessions. With few exceptions (autos, textiles, farming, farm equipment), the economy was moving at top speed—so fast, in fact, that some feared it might blow a gasket.

*Arguments pro.*—The signs of boom—and threatening inflation—were not hard to find. First-quarter steel production broke all records as the industry poured out 31.9 million tons of ingots—and still customers clamored for more. Construction outlays rose 10 percent in March, to \$3 billion, equaling the record set last year. Capital spending hit a record annual rate of \$33.2 billion in the first three months and was due to go higher in the April-June period.

Money was needed to oil these furiously turning wheels. Businessmen and consumers, Federal, State, and local governments rushed to their banks or to Wall Street creating the tightest money market in almost 3 years. In February alone, commercial bank loans increased \$1.3 billion, or 5 percent.

Chairman Bill Martin and other FRB officials feared all this new money would do more to kick up prices than to boost production, since business was already at peak levels. And the price picture already looked dangerous.

Rail freight rates recently rose 6 percent. Some crude-oil producers were clamoring for a 60-cent-a-barrel hike. Steelmakers had long insisted they needed more for their product, and last week Pittsburgh Steel president Avery Adams put a price tag on that increase: \$12 to \$15 a ton. This estimate, Adams emphasized, didn't cover any wage hike that may soon be won by steelworkers. There was talk that their demands added up to a 40-cent-an-hour package, and it didn't take too much imagination for some to see that this might be the start of a vicious new wage-price spiral.

*Arguments con.*—But a number of top administration officials, including Treasury Secretary George Humphrey, believed that talk of inflation was being exaggerated. Key economic barometers weren't all pointing up, these advisers noted, and the economy had only been holding its own so far in 1956.

First-quarter figures, for instance, will show a gross national product of roughly \$398 billion (annual rate), only a fractional increase over the previous quarter's \$397.2 billion. After allowing for price increases, that means there was hardly any real gain at all.

White House insiders also contended that consumer buying was not creating a real inflationary push. True, said Humphrey et al., retail trade rose from \$15.3 billion in February to a record \$15.7 billion in March. But the gain did not seem great enough to them to force prices up.

As a matter of fact, Newsweek learned, the President's top economic adviser Arthur F. Burns believes the increases have been surprisingly small, considering the current worldwide boom. Burns thinks the economy could absorb the pressure even if prices edged up a bit.

Humphrey's views dovetailed with these, and he argued his point in conversations with the Federal Reserve's Martin. The Treasury boss—who well remembers the complaints that rolled in 3 years ago when money was tightened sharply—wanted to wait a few months to see if loans continued to expand rather than to act now and risk knocking the economy into a skid.

*Man of decision.*—But in the end it was Martin's decision to make, and he made it. The decision: Boost the discount rate from 2½ percent to 2¾ percent (and to 3 percent in 2 districts). By approving this increase—the fifth such boost in a year—Martin hoped to dry up some demand by making it more expensive for banks to borrow from the Federal Reserve, which in turn would make it more expensive for businessmen and consumers to borrow from their local banks. So strongly did Humphrey disagree that he drafted a public statement of his views. He killed it at the last minute to avoid an open controversy.

Meanwhile, the cost of borrowing money has already gone up. Major banks raised their prime rate—what they charge their best customers—from 3½ percent to 3¾ percent. Other rate hikes quickly followed. Possible effects: Less borrowing by business to build inventories; delay of expansion plans which are not essential this year; a slight tightening in consumer credit.

*Guideposts.*—In the coming weeks, Washington experts will keep especially close watch on the economic barometers. Among the things to watch will be consumer spending. If it goes up in the face of tighter credit, the FRB will be vindicated.

But if, for example, the FRB industrial-production index stays where it is (at 143 percent of the 1947-49 average) or falls off, worries about inflation will quickly die. In that case, the Federal Reserve may well decide to reverse last week's action.

---

[Business Week, May 5, 1956]

#### THE POLITICS OF TIGHT MONEY

The prestige of the Federal Reserve System, which had fallen to a low estate during the first postwar years, has had a remarkable recovery. Under the chairmanship of William McC. Martin, the Federal Reserve Board has met skillfully and courageously the problems of a turbulent economy. At home and abroad, there is an almost alarming degree of confidence in its ability to steer our economy between the dangers of boom and bust.

The renaissance of the Fed reached a high point last week when President Eisenhower reaffirmed the complete independence of our central banking organization. He acknowledged that the policy of credit stringency now being pursued by the Federal Reserve was one that raised grave doubts on the part of his own advisers. Nevertheless, with his usual patience and breadth of view, the President defended the right of the Federal Reserve to pursue an independent course. No other President has ever spoken thus.

Yet at this moment of triumph, the Federal Reserve System, it seems to us, stands in considerable peril. No matter how secure their independence, Martin and his fellow members of the Federal Reserve System are up to their armpits in politics.

It is impossible to influence the basic trend of a nation's economy without at the same time influencing its politics. Economic intervention, if it is effective, is bound to be political action. And at this moment, the Federal Reserve is subjecting the country to the most drastic credit squeeze since early 1953.

It is not simply a matter of increasing interest rates, although the general level of interest charges has been raised to the highest point in 23 years. It is a question of the actual availability of money. Day after day, business enterprises are turned away as they seek to obtain credit to carry out their plans.

The Federal Reserve is afraid of inflation. Yet to some of its friends it appears to be acting as though it is afraid of growth. How is it possible to set a goal of a \$500 billion economy by 1965, as the President has done, if the money supply is to be frozen at a level inadequate to support a gross national product of less than \$400 billion?

#### WHEN THE SQUEEZE IS ON

Unless the Federal Reserve relaxes its stringent policy, and that promptly, we shall have to revise considerably these widely accepted goals of an expanding economy. American industry has planned this year to invest \$35 billion in new plant. The Federal Reserve's policy is designed to prevent any capital expansion program of this size.

If the Federal Reserve persists in this course, we may expect the current hesitation in business to develop into a downtrend. Such a downtrend in the normal course of events ought to be plainly evident in terms of falling sales and rising unemployment by September and October next.

Without in any way impugning the purity of the Federal Reserve Board, we may assume that this timing will cause no sadness in the Democratic National Committee.

The credit squeeze strikes most directly at smaller business. The giants, like General Motors and General Electric, will get the money for their capital expansion programs, but the smaller enterprises are already having to lay aside or cut their capital expansion plans. Thus the political charge that the Eisenhower administration favors big business will be strengthened if the Federal Reserve keeps the credit screw turned tight enough long enough.

#### WHEN THE SQUEEZE COMES OFF

Nor is that all. In 1953, when the Federal Reserve finally reversed its tight money policy, it slashed member bank reserve requirements and bought nearly \$1 billion of Government securities in the open market. It thus increased bank reserves by over \$2 billion. The inevitable consequence was that Government and other gilt-edged bonds, having been depressed unduly, rebounded sharply. Any financier of average intelligence was offered a guaranteed profit. All that was necessary was to sell enough Government bonds at the lower prices to wipe out the year's tax liability, switch the funds into comparable issues, and sit back for the free ride.

If the Federal Reserve has to make a similar abrupt reversal this year, the same thing will happen. It will take no very skillful demagog to point out that all this does no good to the farmer or to the worker—but it richly lines the coffers of the Wall Street banks, insurance companies, etc.

The Federal Reserve System ought to be above politics. It ought not to use its great powers for political purposes, and we are quite sure that no responsible official of the System would, under any circumstances, knowingly consent to such a course. Yet the System will not survive if it attempts to close its eyes to the political consequences of its actions. If the Federal Reserve System, by overdoing its policy of credit restraint, brings on a business recession this year,

we may be certain that a new administration of another party would not wait long to take away powers that can be used, however correct the motives, to accomplish such drastic political consequences.

---

[Business Week, May 26, 1956]

#### SHARING RESPONSIBILITY

Misgivings about the current phase of the Federal Reserve's tight money policy have spread so widely that at this point the Fed seems to stand almost alone in its conviction that any relaxation of the squeeze on credit would invite inflation.

Almost every member of the administration with an interest in this area—from President Eisenhower on down—has voiced his concern, formally or informally, over the repressive effects of the last hike in the discount rate.

In all their statements about credit, administration officials have been scrupulously careful to respect the independence of the Federal Reserve. That is as it should be.

But in Government there is an important difference between an independent responsibility and an exclusive one. The Fed is not the only agency with the duty of guiding the United States economy and promoting its welfare. The Fed can preserve its cherished independence only as long as it realizes that it shares responsibility with other Government agencies and that its policies must harmonize with the policies of these agencies.

It is a good thing to be independent, but there is always a danger of carrying independence to the point of being just stubborn. Sometimes the line between the two is a little hard to define, but the line exists. It would be a tragedy for the country if the Fed let itself slide over that line without realizing it.

---

[Business Week, June 2, 1956]

#### MONETARY CONTROLS: THE THEORY LAGS

The current dispute over the Federal Reserve System's credit policy has given rise to two separate proposals that merit serious attention.

One was made by Representative Wright Patman, of Texas, who is Congress' self-appointed watchdog on Federal Reserve matters. He has demanded that officials state their views in public hearings.

The other came from Allan Sproul, retiring president of New York's Federal Reserve Bank, who, in a valedictory address, proposed that the President appoint a commission to make a broad national inquiry into our financial institutions.

What these two proposals have in common is a desire to throw more light on the effect of monetary policy. Patman's plan is aimed at clarifying the present situation—the pros and cons of the Fed's most recent tightening moves. Sproul, on the other hand, seeks to study the entire history of our monetary system in order to improve its functioning.

We think both proposals should be acted on. Although we have not agreed with Patman's position on most matters of Fed policy, his plan to hold hearings could serve a constructive purpose in revealing how the Fed and the administration came to differ over policy.

Such an inquiry should not attempt to censure anyone but to define and clarify the areas of responsibility and independence held by the Fed.

A thorough examination of our financial system is long overdue. There was once a time when more was known about central banking than almost any other field of economic theory. In fact, the use of indirect monetary controls by a central bank was the first real attempt at Government intervention in free enterprise economics.

But over the past 2 decades, other economic weapons have been developed and have gained widespread acceptance. In the 1930's and 1940's, the central bank lost its pivotal role. Moreover, the function of monetary policy, and what it can or cannot do under changing conditions, was never examined. Today the study of monetary theory seriously lags behind other fields of economics.



Now that the Fed has regained its independence, this lack of knowledge is a great handicap. The Fed has done its best to reshape itself to meet new conditions, but it has been a piecemeal and pragmatic adjustment. As Allen Sproul himself said, "We cannot afford much longer \* \* \* to go ahead not really knowing what to expect of our central banking system, of our commercial banking system, of our savings banks and building and loan associations, of our insurance companies and pension trusts, and of all the other bits and pieces which we are using to try to keep our production facilities and our credit facilities in balance."

This is a remarkable admission from the dean of America's central bankers. Our reliance on monetary controls makes it imperative that we know more about their limits and their powers. Both Patman's and Sproul's proposals would help increase our understanding and our knowledge.

[New York Times, April 26, 1956]

PRESIDENT BACKS FEDERAL RESERVE—AFFIRMS ITS RIGHT TO ADJUST CREDIT INDEPENDENTLY OF THE EXECUTIVE BRANCH—DISPUTE ACKNOWLEDGED—"CERTAIN INDIVIDUALS" OPPOSED LOAN RATE RISE—BURNS, HUMPHREY MENTIONED

By Edwin L. Dale, Jr.

WASHINGTON, April 26.—President Eisenhower affirmed without qualification today the authority of the Federal Reserve Board to handle money and credit as an agency independent of the executive branch of the Government.

The affirmation came after his own top advisers, according to authoritative report, had opposed the latest increase by the Federal Reserve in the interest rate charged to member banks. The President indirectly conceded at his news conference today that his own people had had reservations about the move.

Two weeks ago this interest rate, called the discount rate, was raised from 2½ to 2¾ percent at 9 of the 12 Federal Reserve banks and to 3 percent at 2 others. The 12th went to 2¾ percent a week later. The raises were approved by the Reserve Board in an effort to curb what it felt were inflationary tendencies in the economy.

The President said he was confident the Federal Reserve would not let money get "too tight." But his central point was this:

"The Federal Reserve Board is set up as a separate agency of Government. It is not under the authority of the President, and I really personally believe it would be a mistake to make it definitely and directly responsible to the political head of state."

#### HISTORIC ISSUE RAISED

The history of conflict between central banks and elected governments is a long one, both here and abroad. Up until 1951, the Federal Reserve bowed to the wishes of the Treasury, and President Truman wanted it that way.

Thus today's statement, coming in an election year and at a time when there is a genuine fear in some quarters that the Federal Reserve may be going too far, may mark an important milestone in the history of monetary policy.

The President was asked to comment on the widespread reports that his Secretary of the Treasury, George M. Humphrey, and his chief economic adviser, Arthur F. Burns, had "serious reservations" about the increase in the discount rates. He made plain that he had kept fully informed on the subject and on the controversy.

The President said the Reserve Board "had the unanimous conclusions of their 11 district boards that this rediscount rate ought to be raised, and after studying the whole situation they decided to go ahead and do it." The 12th district was Chicago, which acted later.

General Eisenhower went on to say that the matter was "argued for a long time" and that "certain individuals had viewpoints on the opposite side of the fence."

#### CONFIDENCE EXPRESSED

The President said: "There are two things about money: one, it gets a little dearer in its cost to the borrower; the other is that it is just not there to borrow." But he said he had "this confidence" in the Federal Reserve Board—that "if money gets to what is normally referred to as tight, they will move in the other direction in some way or other as soon as they can."

The historic conflict over money has had two related aspects:

(1) The politically elected government is inclined to lean toward easier money, even at the risk of a little inflation, because that policy takes the least risk of recession and unemployment. Thus governments tend to have a "bias toward inflation."

(2) But if control over money and credit is removed from the politically elected executive, that does not remove from the executive the responsibility, as far as the public is concerned, for the state of the economy. If an independent central bank goes wrong, and tips a booming economy over into even a short recession by making money too scarce, the elected executive gets the blame.

In March 1951, the Federal Reserve asserted its independent authority, though the new policy was termed an "accord" with the Treasury. It has been operating independently ever since.

President Eisenhower pledged during his campaign to preserve that independence. Recent weeks have provided the first severe test of that pledge. Today he reaffirmed it.

---

EXCERPT OF TESTIMONY, SECRETARY HUMPHREY, COMMITTEE ON FINANCE, UNITED STATES SENATE, HEARINGS, MAY 17, 1956

Senator LONG. \* \* \*

I would like to ask this question, though:

Are you really in sympathy with this last increase in interest rate that the Federal Reserve Board has passed on?

Secretary HUMPHREY. That is a long story. I don't know whether you want to take the time to go into it in detail at this meeting or not. I would be glad to do it.

Senator LONG. I would like to hear your views on it. I wouldn't want you to testify all day here.

Secretary HUMPHREY. Let me put it just as simply as I can.

Under the law, the Federal Reserve Board is an independent agency. There is a great school of thought in the world, based on long experience, that central banks should be independent of current administrative processes, that it works better for the finances of the country over a long period of time.

Because of that, Senator Glass proposed in the original Federal Reserve Act that there be an independence in action of the Board, and it has obtained ever since, and it is still the law.

Now, I believe that a close cooperation, and an interchange of ideas and thoughts, as between the different departments of the Government, the different branches of the Government, is a very desirable thing, in order that, when a department is independent—and most of them are independent in certain fields—that before they take independent action they should have the benefit of consultation with the other departments of the Government and the varying views of the other people.

Fortunately, the present members of the Federal Reserve Board have that same feeling. The result is that, since we have been here, we had a period, as you will well recall, before we came, when the Federal Reserve Board and the Treasury were at outs, and there was such a battle that it finally got to the White House for decision, and it disturbed a lot of conditions.

We have attempted not to have that happen again, because it isn't good for the country.

So that, we have been very careful, and we both believe that we should consult with each other and have the benefit of each other's views in all the actions that either of us take that will affect the economy.

We visit right along, Martin comes over for lunch every Monday to the Treasury; I go to the Federal Reserve Board quite frequently, and one of us, either Randolph Burgess or I, go over there every week, and we meet several times between.

Now, in looking ahead, and in trying to gage what economic conditions are going to be, and what the demands of the economy for money and credit are going to be, and what the demands for people and employment are going to be, to keep jobs going, to keep plenty of jobs, as many jobs as we can have, and to keep things on an even keel as well as we can, and to keep prices from running away and getting into an inflationary period which robs the people of their money, we meet together and discuss all sorts of things that bear on those conditions in the future.

Now, Senator Kerr has just brought out how difficult it is for anybody to gage the future, and in these discussions that we have, we very often differ in our views as to the weight to be given to certain inflationary forces or certain deflationary forces or acts here, or acts later.

What we do—what we try to do is, we give them the very best estimates we can make of the effective weights and the time of the events in the future, the pressures that will be forthcoming in a few weeks, months, a year hence, inflationary pressures or deflationary pressures, so that we can have our views in their minds when they come to take their action. And they, in turn, give us the benefits of their views.

Senator LONG. All I wanted to know was whether you agree with their decision or not, is what I really wanted to know.

Secretary HUMPHREY. I felt this last time, if it had been my responsibility, I would not have made this last move—all the others, but this last one might have been postponed, and natural conditions might have taken care of it. Whether I am right or wrong, I don't know.

---

CONGRESS OF THE UNITED STATES,  
JOINT COMMITTEE ON THE ECONOMIC REPORT,  
April 18, 1956.

MEMORANDUM

To: Members of the Joint Committee on the Economic Report.  
From: Grover W. Ensley, executive director.  
Subject: The economic situation and outlook.

Attached is a summary of the economic situation and outlook prepared by the committee staff on the basis of information contained in Economic Indicators for April, released today, and other information received by the staff.

We have also ventured to suggest the implications of this outlook for Federal economic policy.

THE ECONOMIC SITUATION AND OUTLOOK

I. ANOTHER LOOK AT 1956

The first quarter has been marked by continued indications of economic strength. Other trends indicate instability.

*A. Total output and employment*

With output pressing against capacity in many industries and unemployment close to a minimum, changes in production and employment have been small in the first quarter:

(1) Gross national product, according to preliminary estimates, rose \$1.7 billion from the fourth quarter level to \$399 billion. Much of this increase represented higher prices

(2) The Index of Industrial Production averaged slightly under the fourth quarter.

(3) Changes in employment and unemployment since last October have represented mainly the usual seasonal movements.

*B. Business investment*

Business expenditures for new plant and equipment, according to the recent Commerce-SEC survey, are scheduled to reach about \$35 billion in 1956, some \$2 billion more than plans for this year reported in the MGeraw-Hill survey of last November, and 22 percent or \$6.2 billion more than in 1955. Considered together the annual and quarterly statistics imply a further, though slower rise in the second half. About half of the \$2 billion increase over earlier plans may be offset by less construction expenditures than previously expected, principally for housing.

*C. Sales, inventories, and new orders*

(1) Total business sales have fluctuated within a narrow range since late 1955.

(2) Business inventories reached \$83.5 billion in February, some 8.6 percent above the low of January 1955. With sales leveling out, ratios of inventories to sales have risen in recent months though, in some lines, are still below those prevailing in early 1953. Much of the rise in the value of inventories recently reflects price increases. Trade reports indicate rising steel inventories in anticipa-

tion of price increases or work stoppages. Some further rise in total business inventories seems probable although the automobile industry in March, according to press reports, brought its inventories down slightly by holding output below sales.

(3) New orders received by manufacturers have continued to exceed shipments, although the trend from December through February was somewhat lower (February about 5 percent below December), reducing the excess of new orders over shipments each month from about 7 percent to about 2 percent.

#### *D. Incomes and prices*

(1) Wages continue to rise. Average hourly earnings in manufacturing rose sharply in March, especially in the industries affected by the new minimum wage. The new high of \$1.95 per hour was 5.4 percent above a year ago. Therefore, in spite of a slight decline in the hours of work, average weekly earnings were 4.7 percent above a year ago. Provisions in existing contracts plus the trend of recent collective bargaining agreements point to further wage increases.

(2) Agricultural income in the first quarter was \$10.4 billion (seasonally adjusted annual rate), in line with the expected decline this year of \$1 billion or less from 1955 levels. However, action by the Department of Agriculture, under existing law, could add \$500 million to farm incomes this year.

(3) Prices continued to increase during early months of 1956 at about the rate prevailing since June 1955. Overall price indexes show less rise than many components since lower prices of crude foods and raw materials have been offsetting increases in finished goods and services. The recent 6 percent increase in railroad freight rates and steel price rises now in prospect are among the harbingers of continued price rises during the year.

#### *E. Consumption*

(1) Preliminary results of the annual Federal Reserve Board survey of consumer finances reaffirm consumer optimism.

(2) Personal consumption expenditures increased in the first quarter more than did disposable income, resulting in a reduction in the rate of savings from the fourth quarter. This trend seems to confirm earlier expectations that rising total consumer spending will be a strong factor this year in spite of lower auto sales.

#### *F. International situation*

Economic activity abroad continues strong, particularly in Europe and Canada. Both Great Britain and Canada are taking steps to curb excessive inflationary tendencies.

#### *G. Federal fiscal developments*

(1) Reports through mid-April indicate that the Federal budget will show an administrative surplus of about \$2 billion and a cash surplus of perhaps \$4 billion for this fiscal year ending June 30, 1956. These committee staff estimates represent increases in receipts of about \$3 billion over estimates in the January budget, which were reaffirmed in February by the Secretary of the Treasury. Expenditures may be about \$1 billion higher (due mainly to handling CCC payments inside the budget rather than by sale of notes to commercial banks).

(2) For the fiscal year 1957, the surplus will probably be larger than estimated in the January budget unless: (a) business conditions deteriorate, or (b) legislation increases expenditures significantly more than estimated.

#### *H. Monetary developments*

(1) Apart from meeting week-to-week seasonal needs, the Federal Reserve System during the past half year has supplied no added reserves to the banking system. Government security holdings of the Reserve banks are substantially the same as a year ago.

(2) Member banks have doubled their borrowing from the System in the past year. This increased borrowing to support added loans to customers has occurred in spite of successive increases in the discount rate from 1¼ to 2¾ percent and to 3 percent in the San Francisco and Minneapolis districts. (The latest action was taken on April 12.)

(3) Since mid-1955, member bank borrowings have been greater than estimated excess reserves, with a resultant deficiency in the overall reserve position of member banks taken collectively of between \$300 and \$500 million.

(4) For the year ended March 30, 1956, weekly reporting banks reduced Government securities by about \$5 billion, while increasing commercial, industrial,

real estate, and other loans approximately \$8 billion. In spite of restraint, loans to business increased \$1.25 billion in March, or nearly 5 percent in one month.

(5) The trend in interest rates is illustrated by behavior of Treasury bond prices. This decline has meant an increase since mid-February of about  $\frac{1}{2}$  percent in the yield of Treasury securities with a maturity of  $2\frac{1}{2}$  years. The 3 percent's of 1955 have fallen to about  $97\frac{1}{2}$ .

## II. IMPLICATION FOR FEDERAL ECONOMIC POLICY

On balance, the changes in economic indicators in recent months reinforce the view that overall restrictive governmental policy continues to be warranted. As always, there are factors which may be pointed to on the deflationary side. These seem to be outweighed, however, by other considerations.

Some of the present inflationary forces do not appear to be sustainable, and if not now restrained, give prospect of creating maladjustments. The recent rises in industrial prices, stock market prices, inventory accumulation, and bank credit expansion are cases in point. The force of these upward pressures, coupled with foreseeable further increases in steel and other prices, freight rates, and wage rates tend to fan the inflationary forces into a speculative overexuberance which increases the risks of reversal if allowed to run undampened.

Given this preponderance of inflationary influences at the moment, what are the implications for public policy in the monetary and fiscal fields?

The committee's recommendation of March 1, 1956, against a Federal tax reduction continues at the present time to represent the best fiscal policy. A major guide to fiscal policy should be the state of the national economy, as the Subcommittee on Tax Policy has pointed out (S. Rept. No. 1310). Although long-run projections indicate the possibilities of tax reductions, the emergence at this time of a surplus, either anticipated or greater than originally anticipated, is not persuasive as to the wisdom of tax reduction in the face of a booming economy already pressing the limit of immediate resources and fanned by a variety of upward drafts. The fact is that the emerging Federal surplus of itself is but another indication of the strength of the booming forces present in the economy.

As pointed out above, the Federal Reserve System has been pursuing, and continues to pursue, a monetary policy consistent with this restrictive fiscal policy. A restrictive monetary policy necessarily involves some hazards. The principal of these is that too much or too long restraint can turn the economic situation toward caution or liquidation. Apart from judgments as to specific instruments to be used and their timing, it has been suggested that restriction may fall unequally upon small and large business, that it may unduly enhance bank profits, and that if long persisted in, it may have serious implications for the distribution of income. Continual alertness is necessary in carrying out monetary policy to insure that emphasis is shifted toward encouraging more liberality by lenders as soon as inflationary forces subside.

It is clear that the costs of a monetary policy sufficiently restrictive to maintain stability in the face of a tax cut now would be too great to risk. When inflationary forces slacken, a policy of progressive credit ease can be, and should be, initiated, with changes in fiscal policy reserved until more persistent depressing forces are apparent.

(Whereupon, at 12:15 p. m., the committee adjourned, subject to the call of the Chair.)

# INDEX

	Page
Automobile industry.....	16, 18, 46
American Bankers Association.....	13, 29
Burns, Arthur F., letter to Chairman Patman.....	6
Business Week, editorials.....	52-54
Congress, United States:	
Federal Reserve System as agent of.....	25
Federal Reserve System, reports to.....	28
Consultations preceding Federal debt issues.....	12
Debt management.....	8, 10
Deposits and currency, selected dates, table.....	49
Directors of Federal Reserve banks:	
Discount rates, determination of.....	30, 32
List of, and business affiliation.....	34, ff
Ownership of bank stock.....	27
Responsibilities.....	26
Selection.....	30
Discount rates:	
Federal Reserve Bank of New York.....	42
Official views on recent changes.....	7, 29, 39, 40
Procedures establishing.....	30
Role of regional bank directors.....	30, 32
Eisenhower, President, views referred to in New York Times.....	55
Ensley, Grover, memorandum to Joint Committee on the Economic Report.....	57
Federal Reserve System:	
Agent of Congress.....	25
Directors and affiliations of, regional banks.....	34 ff
Directors of Reserve banks.....	26, 27, 30, 32
Relations to Treasury Department.....	7, 24, 38
Federal Reserve-Treasury accord.....	40
Humphrey, George M.:	
Appointment of Martin, William McC., as Chairman, Board of Governors.....	15, 38
Current economic situation.....	7, 16, 20
Debt management and the interest rate.....	8, 11
Free money market.....	12, 43
Interest rates and savings.....	9
Letter to Chairman Patman.....	5
Procedures in establishing coupon rates.....	13
Testimony, Committee on Finance, United States Senate.....	56
Transcript of remarks at Press Club luncheon.....	15, 21
Views on actions increasing discount rates.....	7
Interest rates:	
Cost of changes in.....	16 ff.
And debt management.....	8, 10
Flexibility of.....	44-45
And savings.....	43
Views of Humphrey, George M.....	9
Installment buying.....	17
Investment Bankers Association.....	13
Loans and investment, changes in, table.....	49
Member bank reserve requirements.....	41, 42
Martin, William McC.:	
Humphrey, George M., on appointment as Chairman.....	15, 38
Independence of Federal Reserve System.....	24
Letter to Chairman Patman.....	4
Relations with Treasury Department.....	24
Resignation, reputed tender.....	38-39

	Page
Mitchell, James P., letter to Chairman Patman.....	6
Money market.....	12, 43
Newsweek, article.....	51
New York Federal Reserve Bank.....	31, 32, 47
Discount rate table.....	42
New York Stock Exchange.....	13
New York Times, views of President Eisenhower.....	55
Open Market Committee.....	31, 32, 33
Patman, Wright:	
Letter to Burns, Arthur F.....	4
Letter to Humphrey, George M.....	4
Letter to Martin, William McC.....	3
Letter to Mitchell, James P.....	4
Letter to Weeks, Sinclair.....	4
Memorandum to members of Joint Committee on the Economic Report.....	2
Opening statement.....	1
Press Club, excerpt from luncheon remarks by Humphrey, George M.....	21
Prices.....	19
Reserve requirements.....	41, 42
Savings:	
And interest rates.....	43
Interest on time deposits.....	10
Need for.....	9
Senate Finance Committee, excerpt, testimony, Humphrey, George M.....	56
Staff, Joint Committee on the Economic Report memorandum.....	57
Tax-exempt securities.....	50
Time deposits, interest on.....	10
Weeks, Sinclair, letter to Chairman Patman.....	5

# MONETARY POLICY: 1955-56

---

---

## HEARINGS

BEFORE THE

SUBCOMMITTEE ON ECONOMIC STABILIZATION

OF THE

JOINT ECONOMIC COMMITTEE

CONGRESS OF THE UNITED STATES

EIGHTY-FOURTH CONGRESS

SECOND SESSION

PURSUANT TO

**Sec. 5 (a) of Public Law 304**

(79th Congress)

---

DECEMBER 10 AND 11, 1956

---

Printed for the use of the Joint Economic Committee.



UNITED STATES

GOVERNMENT PRINTING OFFICE

WASHINGTON : 1957

85560



29

**JOINT ECONOMIC COMMITTEE**

(Created pursuant to sec. 5 (a) of Public Law 304, 79th Cong.)

**PAUL H. DOUGLAS**, Senator from Illinois, *Chairman*

**WRIGHT PATMAN**, Representative from Texas, *Vice Chairman*

**SENATE**

**JOHN SPARKMAN**, Alabama  
**J. WILLIAM FULBRIGHT**, Arkansas  
**JOSEPH C. O'MAHONEY**, Wyoming  
**RALPH E. FLANDERS**, Vermont  
**ARTHUR V. WATKINS**, Utah  
**BARRY GOLDWATER**, Arizona

**HOUSE OF REPRESENTATIVES**

**RICHARD BOLLING**, Missouri  
**WILBUR D. MILLS**, Arkansas  
**AUGUSTINE B. KELLEY**, Pennsylvania  
**JESSE P. WOLCOTT**, Michigan  
**HENRY O. TALLE**, Iowa  
**THOMAS B. CURTIS**, Missouri

**GROVER W. ENSLEY**, *Executive Director*

**JOHN W. LEHMAN**, *Clerk*

---

**SUBCOMMITTEE ON ECONOMIC STABILIZATION**

**WRIGHT PATMAN**, Texas, *Chairman*

**JOSEPH C. O'MAHONEY**, Wyoming  
**ARTHUR V. WATKINS**, Utah

**AUGUSTINE B. KELLEY**, Pennsylvania  
**JESSE P. WOLCOTT**, Michigan

**WILLIAM H. MOORE**, *Economist*

## CONTENTS

Statements in order of appearance:	Page
Bell, Elliott V., editor and publisher, Business Week magazine, New York.....	4
Levitt, Arthur, State comptroller, State of New York, Albany.....	23
Young, Robert R., chairman of the board, New York Central system, New York.....	41
Martin, William McC., Jr., Chairman, Board of Governors of the Federal Reserve System (accompanied by members of the Federal Open Market Committee).....	71, 115
Hayes, Alfred, president, Federal Reserve Bank of New York; Vice Chairman, Federal Open Market Committee (accompanied by members of the Federal Open Market Committee and Robert G. Rouse, manager of System Open Market Account).....	71, 115
<b>Statements and exhibits:</b>	
Bell, Elliott V., editor and publisher of Business Week.....	4
Exhibit: Supplemental questions and answers.....	40
Hayes, Alfred, president, Federal Reserve Bank of New York.....	71, 115
<b>Exhibits:</b>	
Holdings of United States Government certificates and notes by weekly reporting banks and average yield on computed Government obligations, 1952-56.....	102
Treasury bill holdings of weekly reporting banks and average yields on Treasury bills, 1952-56.....	103
United States Government bond holdings of weekly reporting banks and average yields on long-term Governments, 1952-56.....	101
Member bank earnings and expenses in selected years.....	105
Ratio of net profits to total capital, member banks and leading corporations, 1946 to 1955.....	107
Levitt, Arthur, comptroller of the State of New York.....	23
Exhibit: State aid for school buildings, total paid in New York State for school years 1926-27 through 1955-56.....	25
Martin, William McChesney, Jr., Chairman, Board of Governors of the Federal Reserve System.....	71, 115
<b>Exhibits:</b>	
Answers to Chairman Patman's supplemental questions.....	154
Biographical sketches of members of Federal Open Market Committee as of December 11, 1956.....	70
Boeckh indexes of construction costs for (1) resources, and (2) apartments, hotels, and office buildings, 1947-49 equals 100.....	90
Imports and reserves of foreign countries.....	99
Letter to Hon. Joseph C. O'Mahoney, and enclosures.....	98
Federal income taxation of commercial banks.....	110
United States gold stock and foreign dollar holdings.....	98
Rouse, Robert G., manager, Federal Reserve System's Open Market Account.....	71, 115, 150
Young, Robert R., chairman of the board, New York Central Railroad Co.....	41
<b>Additional information:</b>	
Average prices paid by farmers at independent stores September 15, 1956, compared to September 15, 1947.....	161
Average prices received by farmers for farm products in United States, November 15, 1956, compared to November 15, 1947.....	162
Bond yields and money-market rates, 1947, and week ending December 1, 1956.....	161

	Page
<b>Additional information—Continued</b>	
Chairman Patman's concluding summary statement.....	158
Corporate bonds advance while Treasury's drop, article in the New York Times, December 9, 1956, submitted by Hon. Joseph C. O'Mahoney.....	31
Farm wage rates, railroad freight rate index, and total transportation bill for farm products, 1947, 1955, 1956.....	160
Ike Disclaims Any Role in FRB Credit Moves, article in Washington Post and Times Herald, November 6, 1956.....	79
Michigan Fails To Get Any Bids for \$52 Million Highway Bond Offering, article in the Wall Street Journal, December 5, 1956, submitted by Hon. Joseph C. O'Mahoney.....	30
Supplemental question on Federal income taxation of commercial banks..	110

# MONETARY POLICY: 1955-56

MONDAY, DECEMBER 10, 1956

CONGRESS OF THE UNITED STATES,  
SUBCOMMITTEE ON ECONOMIC STABILIZATION OF THE  
JOINT ECONOMIC COMMITTEE,  
*Washington, D. C.*

The subcommittee met, pursuant to call, at 10 a. m., in the Old Supreme Court Chamber, United States Capitol Building, Washington, D. C., Hon. Wright Patman (chairman) presiding.

Present: Representative Wright Patman (chairman), and Senator O'Mahoney.

Also present: Grover Ensley, executive director; William H. Moore, staff economist; and Reed L. Frischknecht, legislative assistant to Senator Watkins.

Chairman PATMAN. The subcommittee will please come to order.

Senator O'Mahoney will be here, I am sure, and while we are waiting for him I will read the statement that has been prepared; and, Mr. Bell, will you take a place here, please.

Mr. BELL. Yes, sir.

Chairman PATMAN. Mr. Bell is our first witness this morning.

It is very nice having you come down here to make it possible to give us the benefit of your views.

Senator Watkins' administrative assistant is here to cooperate with us, and we are glad to have him.

There would certainly be very few persons today who would disagree with the proposition that it is good sense, good business, and good government to strive in every reasonable way, within the framework of free enterprise system, to promote stability and high-level employment in our economy. The intention of the Federal Government to do its part toward those ends are stated in the policy declaration of the Employment Act of 1946.

While there are doubtless many ways in which government plans, functions, and policy affect the operation of the economy, it is generally agreed that monetary, credit, and fiscal policies are the principal means of directly promoting stability, high-level employment, and growth.

Having made such an undertaking, prudence dictates that Congress and the executive agencies of Government, with the help of experts in the field, give constant attention to the adequacy and the continual modernization of the stabilization tools.

Later this week, this subcommittee is going to hold hearings on the subject of automation and technological progress in industry. In that field we know that engineers, scientists, and technicians are giving constant attention and thought to the improvement and working of

various machines and processes. The same kind of checking and precautions are just as appropriate and called for in government and economics. We, too, must be continually sure that our instruments are regularly examined for rust and not allowed to be overtaken by obsolescence.

That is precisely the purpose of these current hearings—putting an important stabilization device under examination to see how it is working and if its working can be improved upon. Other subcommittees of the joint committee give similar study to other major policies affecting stabilization and growth, especially fiscal policy.

The Joint Economic Committee, charged as it is with the duty of making continuing studies of matters relating to the working of the economy, has, over the years, conducted a series of such hearings and examinations of progress and knowledge in the field of monetary and credit controls.

One great accomplishment under the authority of the Employment Act has been the extent to which general understanding and knowledge of monetary affairs by Members of Congress, the public, the press, and even experts themselves, have been materially aided by this series of periodic reviews. This hearing will undertake to bring the record on monetary policy up to date.

This hearing is only another in this series of regular studies which the Joint Economic Committee makes. It is important that that fact be stressed in view of the rumors we have recently been hearing from various sources that the independence of the Federal Reserve System as presently constituted is being currently threatened.

Whether there is any truth or not in such rumors, this hearing, at least, is not being held with any such notions in mind. It represents a good-faith search for information as to recent and current policy and its overall effects.

While it is obviously impossible to anticipate what the evidence presented at these hearings may show, no report or immediate recommendation are likely or expected. The record will, of course, be thoroughly considered in connection with the joint committee's annual report due March 1.

Hearings at this time are warranted by the need for public enlightenment and the danger that the tight money policy may wreck the economy.

As to the control and the kind of independence enjoyed by the Reserve System, it is well to keep in mind that the Constitution is quite specific in assigning to the Congress the control over money and the value thereof. In the modern world the money supply, of course, takes the form in large part of credit and credit instruments.

The Congress, as a matter of expediency, has delegated the administration of this power over the supply of money to the Board of Governors and the Federal Open Market Committee. The relationship is such that criticism of today's tight money policy should be directed at Congress as well as at its agent—the Federal Reserve System.

The determination of monetary policy is thus an important public function to be exercised in the public interest by public-minded servants. The United States is, I believe, the only country in which the central bank is not owned outright or controlled directly by the political government. We preserve the fiction that the central bank is a private concern by allowing commercial banks to make a sort of deposit

erroneously referred to as capital stock, which prompts the private banks to falsely claim that the central bank should be independent of government.

Our plan of organization has worked tolerably well, however, because we have checks and balances inherent in the structure of the System as provided by law, and we can always change the law.

We must always be alert, however, to the danger that considerations dictated by private interests may come to influence the decisions of the Reserve authorities. If, for example, the influence or the profit-making objectives of private banking were to crowd out the public interest in management of the System, we would perhaps have then to prefer some measure of political control as the only course guaranteeing the paramount public interest in the management of the Nation's monetary affairs.

The first question which the Federal Reserve authorities, the Congress, and the critics of recent System action must answer at a time like this is whether inflationary forces are currently strong and predominant in our economy.

If we conclude that inflationary forces are substantial enough to need restraint, we must then decide what can be done about them. What alternatives do we have?

(1) We can place reliance on fiscal policy, which would possibly mean increasing taxes; (2) we can rely more or less, as we have been, upon general credit controls with their admitted shortcomings; or (3) if we feel that general credit controls are unsatisfactory and fall unequally upon various parts of the credit structure, they can be supplemented by selective credit controls or other means of control. For example, should we directly control plant and equipment investments through some sort of capital rationing device?

The purpose of these hearings is to explore these questions, including the merits of possible alternatives to high interest and general credit restraints. In any case, we need to study the impact of these various alternatives upon large and small business and upon parts of the credit structure such as home mortgage financing, school construction, and consumer installment buying.

To the extent that we decide to rely upon general monetary control, we need to consider the various instruments used in making it effective. What control devices are there other than ever higher and higher interest rates? Are these rising interest rates effective in controlling inflation, or do they possibly contribute to it?

The important thing of which we must make sure is that such credit resources as are available are flowing to the right spots and that efforts, however justifiable, in the restraint of threatened inflation, do not lead over the hump into a period of deflation, which may be even more difficult to deal with.

Our methods of dealing with deflation once it gets started are much less adequate and certain than are our brakes upon inflation.

We must guard against the danger of making high interest rates and tight credit a permanent habit in the United States. We must recognize that monetary controls are essentially short-run tools and there are other and better long-run stabilization techniques.

Finally, I think the time is here when we must begin seriously to make a policy choice. And I would like to state that although I believe our productivity can in the long run give us both stable prices and full

employment, if I had to choose between a policy that might be mildly inflationary in the short run as against one that would plunge us into recession, unemployment, bankruptcies, and farm foreclosures, my choice would be unhesitatingly for the former.

I cannot understand how anybody could possibly support the alternative of recession. But there are men in high places who conscientiously think recession is the lesser of two evils.

I hope that we can bring this basic argument before the public gaze in the course of these hearings and this basic question of public policy can be resolved in the national interest.

To sum up, I fervently believe that the time is past due for a thorough reexamination of our country's monetary and credit policy. I hope that these 2 days of hearings by our subcommittee will be a helpful curtain raiser for that reexamination.

I know that efforts in that direction will be continued in the next session by the full committee.

Our schedule of hearings at this particular time will include on December 10 at 10 a. m. Elliott V. Bell, editor and publisher, Business Week magazine, New York, N. Y., and Arthur Levitt, State comptroller, State of New York, Albany, N. Y. At 2 p. m. Robert R. Young, chairman of the board, New York Central System, New York, N. Y. On December 11 at 10 a. m. William McC. Martin, Jr., Chairman, Board of Governors of the Federal Reserve System, accompanied by members of the Federal Open Market Committee; and at 2 p. m. Alfred Hayes, president of the Federal Reserve Bank of New York and Vice Chairman of the Federal Open Market Committee, accompanied by members of the Federal Open Market Committee, and Robert G. Rouse, manager of system open market account.

This morning we have as our witness, who accepted the invitation of the committee to be here, Mr. Elliott V. Bell, editor and publisher of Business Week magazine.

Mr. Bell, it was certainly nice of you to accept our invitation, and we are looking forward to your testimony, which we know will be constructive and helpful.

You may proceed in your own way, sir.

#### STATEMENT OF ELLIOTT V. BELL, EDITOR AND PUBLISHER OF BUSINESS WEEK

Mr. BELL. Thank you, Mr. Chairman.

I have prepared a statement, not very long, which I would like to read, if I may.

There exists today more widespread concern and questioning about the working of our money system than at any time since the banking crisis of 1933. There is need for a basic reexamination of our entire monetary and financial networks to determine whether the present institutions are adequate for present needs and whether the functioning of our money system could be improved.

Such an inquiry need not imply an indictment of our existing system, but it would almost certainly disclose defects that need legislative correction.

In the past, reform and improvement of our money system has generally been delayed until forced by critical events. Thus, the National Bank Act of 1863 followed the panic of 1857, which has been

brought on by a chaotic money system that allowed every kind of wildcat bank to issue paper money.

The Federal Reserve Act of 1913 was an aftermath of the panic of 1907, and the banking reforms of the early 1930's, including the establishment of the Federal Deposit Insurance Corporation, followed the banking holiday of 1933.

It is normal for conservative economists and financiers to oppose change; but if we run away from or try to shut our eyes to current problems, the chances are that those problems will some day be dealt with by more extreme people and in more radical terms.

I have in mind the sort of broad inquiry that has been suggested by Allan Sproul and others, conducted by a Presidential commission composed of outstanding citizens.

It is now more than 40 years since the last National Monetary Commission—the Aldrich Commission—made its report in 1912. In the interval, and especially in the past twenty-odd years, there have occurred revolutionary changes in the structure of our monetary system, and equally revolutionary changes in our economic objectives. I would like to summarize those changes.

I. The past 20 years have brought the development of federally chartered savings and loan associations which today constitute a third banking system, having their own central banks—the Federal home-loan banks.

It has brought the rise and growing importance of State-chartered savings and loan associations; the entry of life insurance companies into large-scale lending, paralleling and competing with the commercial banks; the growth of large finance companies providing consumer credit, and of pension funds—a comparatively new type of financial institution, enjoying tax exemption and free from any regulation, either Federal or State. These pension funds now engage in major financial operations and promise to become one of the most important sources of lendable funds in the future.

In addition, there has been an enormous growth of Federal instrumentalities such as the Federal Housing Administration, the Small Business Administration and the Veterans' Administration, which are engaged in lending or in guaranteeing or insuring loans. A report of the Hoover Commission lists 104 such instrumentalities, created between 1913 and 1955, and I understand about a score of them is actively engaged in lending or insuring loans in a way calculated to affect credit conditions and possibly to involve an intrusion upon the course of monetary policy.

Some of these Government credit intermediaries were established by Congress to carry out a social purpose—such as rural electrification—others are more akin to private financial institutions.

And so, the question arises whether there is need for all these agencies and whether their individual operations are always in harmony with broad national policies.

II. The period since the banking crisis of the 1930's has brought the development of an increased number of regulatory agencies. These now include: the Comptroller of the Currency, the 48 State bank supervisors, the Federal Reserve System, the Federal Deposit Insurance Corporation, the Home Loan Bank Board, and others. Their jurisdictions overlap and the coordination of policies followed is de-



pendent almost entirely upon the personalities of the individuals in charge at any one period of time.

It was said that the banking troubles of the 1930's were due partly to a "competition in laxity" among the various supervisory authorities in the booming twenties. There is nothing to prevent a recurrence of such competition in the present boom.

This multiplicity of regulatory and chartering authorities raises the question of the need for more uniform standards and requirements to govern the establishment of new financial institutions, including branches of existing institutions.

Every commercial bank in the country is a part of our monetary system, and its lending and investing activities affect the supply of money. Yet, the standards of competence, character, and public necessity governing the chartering and branching of such institutions vary enormously.

Lately a new complication has been introduced by the bank holding company legislation enacted this year, which would, according to Governor Harriman of New York and the banking superintendent of that State, George Mooney, provide a means of bypassing the State authority with respect to branch banking and the concentration of banking power.

III. There is need to reexamine the task now expected of monetary and fiscal policy in this country. When the Federal Reserve was established, its primary purpose was to provide an elastic currency geared to commercial paper. Today, we are committed to a national program which calls for Government action to promote high-level employment and to maintain economic stability.

In carrying out these objectives, monetary policy has a large role to play. Is the Federal Reserve System adequate to play its part: have its responsibilities in this connection ever been clearly defined so that either the members of the Federal Reserve Board or anyone else can know what its obligations actually are?

What should be the relation between the Federal Reserve and the various other governmental agencies which extend or guarantee credit or regulate financial institutions, and with the Treasury?

Is there need for new arrangements to provide for consultation and collaboration among these various agencies?

Mr. Chairman, I ventured recently to suggest the desirability of a National Economic Council which would function in respect to economic policies somewhat as the National Security Council functions with respect to defense policies.

In some quarters this suggestion has been misinterpreted as an assault upon the independence of the Federal Reserve System. I cannot see it that way. The suggested Council could be established by congressional action, as was the National Security Council, or it could be created by the simple act of the President in inviting the appropriate individuals to participate.

In either case, I cannot see why the essential independence of the Federal Reserve System should be endangered. That independence, as I see it, simply means that the Federal Reserve must not be compelled in peacetime to use its credit-making powers to facilitate the Treasury's financing needs as was done in two World Wars.

But apart from Treasury-Federal Reserve relationships, it would, it seems to me, be a matter of common sense to bring the Federal

Reserve more directly into the councils guiding the administration in its economic policies.

I do not have so low an opinion either of Governor Martin or of President Eisenhower as to think it would be impossible for the former to counsel with the latter without losing his independence.

If, however, it is felt that the Federal Reserve Board is so sensitive that contact with the President would corrupt it, then I suggest there might usefully be formed a National Economic Council without regular representation by the Federal Reserve Board. In this event, the Fed might be invited to send an observer with the express understanding that he could sit near an open door ready to fly to the sanctuary of Constitution Avenue if he felt the danger at any point of political contamination.

IV. For some years, there has been controversy concerning the relations between the Federal Reserve Board and the Federal Reserve banks. There have been differences of viewpoint as to the composition of the Federal Reserve Board, the term of office of Board members and the rate of compensation received by them.

During the first 20 years of the existence of the Federal Reserve System, the Board in Washington was relatively unimportant and relatively impotent. The Federal Reserve banks, especially the Federal Reserve Bank of New York, were dominant.

In the reforms following the banking holiday of 1933, this situation was abruptly reversed. Power was shifted to the Board in Washington and taken away from the regional banks. And yet the President of the Federal Reserve Bank of New York is paid about three times as much as the Chairman of the Board of Governors of the Federal Reserve System.

This is an anomalous situation. If the Board is to be dominant, the question is relevant whether the compensation paid to members of the Board should not be at least sufficient to make it possible to persuade a man who has distinguished himself as president of a regional bank to go on to Washington as a member of the Board. At present I understand this is practically impossible.

Study should also be given to the question of whether it is desirable to continue a 14-year term for members of the Board of Governors; whether the Chairman of the Board should serve at the pleasure of the President who appoints him; whether his term should be coterminous with that of the President; whether he should have more authority over other members of the Board than he now has; whether the entire Board setup should be altered and replaced by something more akin to European central bank organizations in which the system is headed by a governor or chairman assisted by various deputies.

I do not advocate any of these. I think they are questions that should be explored.

Now, there have been differences of opinion between the System and its member banks about the level of reserve requirements. There has been serious disagreement within the System over open market operations. There is confusion and inconsistency with respect to the System's responsibilities toward the Government securities market. All these questions and controversies need to be examined.

V. There is need to explore the role of selective credit controls as an instrument of national monetary policy. No one likes selective controls. Yet, they can be made to work.

An outstanding example of this is the selective control of security credit through margin requirements. There are times when selective controls might prove to be a lesser evil than overall quantitative credit restriction.

For example, when installment credit seems to be expanding too fast, it might be better to have a regulation tightening up the terms of installment credit rather than putting a stranglehold on the entire economy through an overall tight money policy.

I appreciate that there are dangers of bureaucratic interference with free enterprise in the use of selective controls, but I believe there will ultimately prove also to be great dangers in the attempt to stabilize our economy through the violent alternations of dear money and cheap money we have seen in recent years.

VI. There is need also to explore the possibility of compensatory fiscal policies, such for example as variable depreciation, as instruments contributing to economic stability. This might conceivably be a means of spreading out a capital expansion boom like the present, which it seems to me tight money thus far does not seem to have affected.

I understand this device is employed in the Netherlands, so there is means of learning how useful it has been in actual practice.

VII. Other questions that need study include the effects upon quantitative credit control of high taxes and of a large outstanding Government debt.

It has become apparent in recent months that rising interest rates present no serious obstacle to large and profitable corporations. Since interest paid is a tax-deductible expense, a prime rate of 4 percent costs the corporate borrower less than 2 percent. Even a rate of 8 or 9 percent would cost the large corporation, after taxes, less than municipalities are now paying for money to build schools.

On the other hand, the corporation that is in trouble, operating in the red, is directly penalized.

It has also been noted in the past year that the existence of a large Government debt, constituting a major part of the assets of the country's financial institutions, results in a pronounced lag in the effectiveness of a tight money policy.

Although the Federal Reserve has been following a stringent credit policy for well over a year, and has prevented virtually any expansion of the money supply, bank loans have expanded to record levels.

An explanation of this appears in the condition statement of weekly reporting member banks. In the 12 months ended last November 21, these banks showed an increase in their commercial and industrial loans of \$4,600 million, while their holdings of Government securities went down \$3,700 million and investments in other securities fell \$709 million.

In short, the banks simply shifted their assets from Government and other securities to loans. Meanwhile, deposits declined nearly half a billion dollars in the year.

I am told that in the first half of this year corporate business obtained over three and a half times as much in bank loans as was obtained in the first half of 1955.

And I know in the 18 months ended last June 30, bank loans rose \$17 billion—which was the largest 18-month increase on record.

And so it seems to me the tight money policy thus far has hurt home builders, small business, and municipalities that need to build

schools and other improvements. It has not, as far as I can see, touched the capital goods boom. It may actually have stimulated, rather than curbed, business borrowing because the prudent corporation executive, reading and hearing about tight money policies, has in many cases borrowed money he did not yet need—just to be on the safe side.

This, of course, is not to say that tight money will not be effective. It may grab hold very soon now because financial institutions have come about to the end of the road when it comes to selling "governments," especially at current prices and in present thin markets. Moreover, many banks are "loaned up" to the limit of what they consider prudent.

In concluding, Mr. Chairman, may I say a personal word. I am not posing here as an expert. I do not pretend to know the answers to these difficult questions. I think it would require at least 2 years' study by a monetary commission, aided by a first-rate staff, to begin to arrive at the answers. I do claim to be a qualified observer of the financial scene.

My record over nearly 30 years should prove, I think, that I am no enemy of the Federal Reserve Board or of any public officials who try honestly and according to their best judgment to serve us all.

So far from being opposed to monetary management, including the quantitative control of credit, I have, I think, a clear record of having encouraged the broader understanding of these matters.

As for the independence of the Fed—as far back as 1950 I pointed out that the Fed was under no compulsion, legal or otherwise, to peg Government bonds. I showed that in any contest between the Federal Reserve and the Treasury, the Treasury could not hope to win. I urged the Federal Reserve to take its courage in its hands and act independently.

The Board of Governors had a speech I made at that time reprinted and sent all over the country, and the following year they did assert their independence.

And so, in raising now some troublesome questions, I am not seeking to injure the Federal Reserve System. On the contrary, I believe that if we cannot soon persuade moderate men to face up to these questions, we will be too late and will find ourselves confronted with immoderate solutions.

Thank you, Mr. Chairman.

Chairman PATMAN. Thank you, Mr. Bell. You have certainly raised some good questions. Your statement is very fine.

I wonder, Senator O'Mahoney, would you like to ask Mr. Bell some questions now, or would you prefer that I interrogate him first?

Senator O'MAHONEY. It is quite immaterial to me.

Chairman PATMAN. I mean, I do not know what your schedule is. I know you are very busy.

Senator O'MAHONEY. I am here for the duration of the morning session, at any rate.

Chairman PATMAN. Thank you, sir.

Senator O'MAHONEY. Mr. Bell, I would like to start with calling attention to yourself as a witness and as a man of great experience in the field of finance—even though you do not call yourself an expert—I think you are overmodest in that. I read with interest Business

Week, which you edit. I read it almost every week except in political campaigns. [Laughter.]

The President of the United States is reported by the press to be advocating or preparing to advocate in his state of the Union message an expansion of the Marshall plan or, shall I say, a renewal of the Marshall plan on a great scale whereby the Congress will be asked to approve large loans to foreign countries, principally, of course, the Western bloc of free nations.

We already know, and this I approve completely, that he has recommended that the British request for remission of the interest due upon the British debt shall be forgiven.

That latter recommendation of the Government forgiving entirely the interest upon the debt is altogether contrary to the policy of the Secretary of the Treasury in boosting the debt—the interest upon the debt of private citizens, private corporations, and of the Government itself.

Do you find in these facts which I have just related, any basis for further comment?

Mr. BELL. Senator, the chairman referred, in his very excellent, if he will permit me to say so, opening statement, to the inherent checks and balances that we have in our system, not merely by reason of the institutions that we have, but by reason of the divergence of viewpoints of men. And I suppose that it is a sound thing in an administration not to have people who all think exactly alike, but to have people who have at least some variance of views and of the values they place upon matters.

I would certainly not want to pass any judgement upon the validity of the point of view of anybody in the administration. My own feeling, Senator, is that it—

Senator O'MAHONEY. I am not asking you to pass any judgement.

Mr. BELL. No.

Senator O'MAHONEY. I am just asking you to give your own opinions with respect to a central fact in this whole problem of interest upon debt. Can we logically follow a policy of no interest upon the debt owed the United States Government, while levying a constantly increasing interest upon the debt of the people of the United States through the policy of the Government?

The only purpose of our sitting here is to decide what is best for the policy of the United States. We have to be prepared in our reports to Congress, just as the Executive has to be, for the opening of the new session of Congress, and I would welcome your comment upon this apparent conflict of policy.

Mr. BELL. Well, sir, I do not quite see the conflict as sharply as you apparently see it. It seems to me clearly that we are faced with a very emergent situation in Europe. The Suez crisis, without entering into the question of the rights and wrongs of it, has created a serious economic crisis in Europe, and I think, sir, that we must be prepared for emergency measures such as this remission of this one installment of debt. Otherwise, I think the consequences might be serious, not merely for our allies but for ourselves.

Senator O'MAHONEY. Now let me ask you to turn to page 9 of your statement this morning. I began to read it only toward the conclusion of your statement.

Mr. BELL. Yes, sir.

Senator O'MAHONEY. Toward the end of the paragraph beginning, "My record over nearly 30 years" —

Senator O'MAHONEY (continuing). You say:

As for the independence of the Fed—as far back as 1950 I pointed out that the Fed was under no compulsion, legal or otherwise, to peg Government bonds.

In order to carry out the foreign fiscal policy as part of the foreign policy of the United States which the President has prescribed, it will be necessary for the Treasury to borrow money.

Mr. BELL. Yes, sir.

Senator O'MAHONEY. And it was so stated. The Treasury is wondering this morning what rate of interest it must be prepared to pay to the big banks in New York on the money that will be required because of the forgiveness of the interest on the British debt.

Mr. BELL. Yes, sir.

Senator O'MAHONEY. And because of the program which the administration apparently is about to follow, of expanding its policy of economic loans.

Mr. BELL. Yes.

Senator O'MAHONEY. In order that you may be under no misapprehension as to my own views about this, I advocated and supported the Marshall plan from the very beginning, and I see no objection to the continuation of the Marshall plan, even though some may prefer now to call it the Eisenhower plan or the Dulles plan, or some other plan.

It was a good plan, and it has done wonders for Western Europe. There is only one point on which I reserve judgment, and that is the policy which Secretary Dulles followed during the last administration, of refusing to allow his subordinates, or to testify himself, before the authorized committees of Congress with respect to how the money we loan was being spent abroad, and by whom.

I know very well, and I think everybody who has watched the development of the fiscal matters knows, that when the Government holds out the molasses pot and takes the cover off, the flies begin to gather.

So when the Secretary, Secretary Dulles, deliberately refused to allow witnesses to answer questions—questions by Congress, let me say—with respect to the manner of expenditure, I felt that was wrong. Congress ought to know about it.

But, with that reservation, I see no objection whatsoever to fighting communism by economic aids rather than by war, and I deeply believe that we are engaged in a cold war which, if we continue to follow the policy of the last 4 years, we may lose to Communist Russia.

And one of the indications before us now of the danger in which we are is the point of view which you have just expressed in your paper with respect to high interest rates.

I am sorry to have taken so much time in explaining my own point of view, but I did that merely to disabuse you of any fear that I was talking from partisan motives rather than from great concern for the monetary policy of the United States.

Mr. BELL. Yes, Senator.

Senator O'MAHONEY. Now, would you care to answer, to make any comment upon this apparent conflict?

Mr. BELL. The only comment I think that I could appropriately make, sir, is that this is another complication, a very serious one, which

makes it even more urgent. It seems to me that we should reexamine these policies and counsel together on them.

Senator O'MAHONEY. I apologize to you, Mr. Bell. I talked so long that you lost the question.

Mr. BELL. Perhaps I did.

Senator O'MAHONEY. The question was keyed to your statement on page 9.

Mr. BELL. On pegging Government bonds?

Senator O'MAHONEY. On pegging Government bonds.

Mr. BELL. Yes, sir.

Senator O'MAHONEY. Do you not think it would be a very sound policy for the Federal Reserve Board to come to the aid of the Government in selling these bonds which the Treasury Department will have to sell to carry out the program that President Eisenhower is now recommending?

Mr. BELL. Well, Senator, if you will permit me to put it in my own words, which may not be quite as concise as yours, I have always felt that the Federal Reserve and the Treasury were married, that they have to get along together and they have to help each other—

Senator O'MAHONEY. I agree with that.

Mr. BELL (continuing). That it is silly to think that one can go rampaging off entirely on its own. They cannot do that.

Now, that is not to say that the Fed must peg Government bonds or that it must be a handmaiden to the Treasury to cater to whatever desires or whims the Treasury may have. But it must, of course, share responsibility for the stability of the Government security market.

Senator O'MAHONEY. I knew you took that point of view because of your speech before the American Bankers' Association. I think you said that the Federal Reserve should not say to the Government, "Go fly your own kite." Those were your words, were they not?

Mr. BELL. That is correct.

Senator O'MAHONEY. And I think it is most important to take advantage of your appearance before this committee here to emphasize that point of view, with which I completely agree.

I judge, then, that I am justified in saying that in response to my questions now, you have reasserted your oft-repeated principle that the Federal Reserve Board owes an obligation to work as a partner with the Treasury Department to see that the Government bond market is not—

Mr. BELL. Sir, an equal partner in which neither side dominates or orders the other around; in which they work together.

Senator O'MAHONEY. I think I might be invading the chairman's field in this question.

When you say "an equal partner," do you believe that the Federal Reserve Board is superior to Congress?

Mr. BELL. Oh, no, sir.

Senator O'MAHONEY. It is not superior to the Treasury, but how about Congress?

Mr. BELL. I certainly do not; by no means.

Senator O'MAHONEY. Thank you very much, Mr. Chairman.

Chairman PATMAN. On that point, Mr. Martin at one time stated that he considered the Federal Reserve Board a servant or agent of Congress. Necessarily that is true, because the Constitution is very plain that the powers that they now assume are powers that Congress

should perform and duties that Congress should perform, but Congress has delegated the powers to the Federal Reserve System.

On this study, Mr. Bell, that you have mentioned, I agree with you that a thorough study should be made, but I hope that you do not insist upon a Presidential Commission to make the study, for these reasons:

No. 1, it is a legislative matter, not an executive matter.

No. 2, people who are elected and have something to lose should be charged with the responsibility, rather than someone who is in no way connected with an obligation to directly or indirectly keep in mind the public interest.

It occurs to me that that makes a big difference, Mr. Bell.

Mr. BELL. Mr. Chairman, I would like to respond to that. I have worked, as I think you know, in very close cooperation with the Legislature of the State of New York.

Chairman PATMAN. Yes, sir.

Mr. BELL. I was for 7 years an official of the State, and I think that I have a very proper respect for the legislative branch, and I think I have some understanding of the problems that they deal with.

Now, the reason I suggested that this should be a commission which would not include members either of the legislature or of the administration, is that it seemed to me that it would be valuable at this time to get what, as far as it is humanly possible, would be an outside or detached viewpoint.

My point is that the Members of the Senate and the Congress will, of course, be studying these problems, as you are doing right now; but it is they who will ultimately have to pass upon the recommendations of this Commission, because the Commission will be meaningless except as its recommendations exentuate in constructive legislation.

It just seemed to me that it would be better if you could have this group that would study, not in terms of any legislative deadlines, not thinking of whether we have to get our recommendations in for this session or for that session, but who would work on this problem until they are satisfied that they have come as close to the answers as is humanly possible, and maybe there are no answers to some of those questions.

And they would then put forth their report and findings to be debated, and we would presumably have differences of opinion on the matter; and then ultimately these recommendations would, of course, come to the consideration of the committees like yours, sir, and if they had merit they would ultimately result in legislation.

But it seems to me that it would leave the leaders of Congress and the Senate freer to exercise their clear and unbiased judgment if they were not themselves participants in this study. That is my whole point.

Chairman PATMAN. I think they would feel very free, anyway; they usually do, Mr. Bell.

Here is the viewpoint I have on that: If you have an outside commission, you certainly delay action; because after that commission gets through, it must present its findings, and the reasons for the findings, to the proper legislative committees, House and Senate. It is going by a roundabout way, when the House and Senate, either by joint hearing or by the respective committees of the two bodies, could have the hearings and call before them the people that you



would normally select to serve on a commission. In that way you would get all viewpoints.

The Members of Congress have a responsibility to the people. They have something to lose, their own seats are involved if they make a mistake, why; it is too bad for them. On the other hand a commission appointed by the President, I am assuming that they will be public-minded people and that they would not have some ax to grind, at the same time do not have the responsibility that a Member of Congress has. They have not been elected to office. They are not under obligations to constituents. They have nothing to lose in the advocacy of what they present, like a Member of Congress, I believe that it would be better to have congressional committees, either joint or preferably each body conducting its own investigation, and calling all these people before them and getting all viewpoints.

That is just my opinion. You have yours.

Mr. BELL. Yes.

Chairman PATMAN. Which I respect, of course.

Mr. BELL. Well, I am quite sure that there is great force in what you said. It just seems to me that it would actually leave the legislative bodies freer to pass judgment upon these recommendations.

Chairman PATMAN. I understand your viewpoint. And furthermore, you know that they would be bankers, because they are the ones who would know about it.

Mr. BELL. They would have to be.

Chairman PATMAN. Well, bankers have a self-interest in this thing, and I think that is one of the bad features of the Federal Reserve System now, that the bankers have too much control, and I do not think we should necessarily consult the bankers about it.

We can hear them all right, and hear their testimony and listen to them, give consideration to their views, but I do not think they should be leading the parade, because they are too much interested.

Mr. Bell, you mentioned the inability of the central bank to control economic conditions through monetary changes because of the competitive situation with respect to those commercial banks over which they have no control.

I assume State banks would come first, and I agree with you that we should give serious consideration to that.

Mr. BELL. I merely mentioned that consideration should be given to the overall monetary system when so much of your commercial bank structure is outside of the banking system.

Chairman PATMAN. That is right. You take, for instance, the other day the interest rate was raised on time deposits.

Mr. BELL. Yes, sir.

Chairman PATMAN. In the 1935 act, you will recall, it is unlawful to pay interest on demand deposits, and it is also unlawful to pay an interest rate in excess of the amount that is fixed by the Federal Reserve Board. Heretofore that has been 2½ percent, and the other day they raised it to 3 percent.

Senator O'MAHONEY. Mr. Chairman, may I interrupt, merely to remark that some of the banks are not taking advantage of the permission of the Board to raise the interest rate on certificates of deposit?

I have seen some certificates of deposit recently reissued which still carry only 2 percent.

Chairman PATMAN. Well, there is a little catch to that three, you know. That does not apply until about 6 months, does it, Mr. Bell?

Mr. BELL. It is effective January 1.

Chairman PATMAN. I mean only to deposits that are over 6 months old.

Mr. BELL. Oh, yes.

Chairman PATMAN. I think there is a little fine print on that.

Mr. BELL. May I make a comment on that. As an old supervisor, Senator, I think that authorities who have to place these ceilings would prefer, if they could, not to be in the position of actually fixing the rates, but rather, if possible, to fix a ceiling within which there would be variations. So that I would not think that it would be desirable that everybody should immediately go to the limit of the ceiling, because then what you would have, in effect, is the Federal Reserve Board not fixing ceilings but fixing rates.

Senator O'MAHONEY. I quite agree with you, and I did not want to interrupt the chain of questions that the chairman is following, but I make this further comment to call attention to the fact that the banks increased the rate of interest which the Government must pay, but they are not ready to increase the rate of interest which the small savers can receive.

They want their money cheap when they get it from the little people, and they want to get a very high interest rate return when the Government wants it from them. And I think the time has come for the banks, as well as the Federal Reserve Board, to cooperate with the Government in meeting the terrific financial problem that is now ours.

Mr. BELL. Well, sir, I do not know whether this statement will find any sympathy with you, but it is my opinion, truly, that the majority of the larger banks, at any rate, have been very reluctant to increase their loan rates, and have really gone along with reluctant feet.

Certainly as far as the last increase in the prime rate was concerned, the New York banks wouldn't do it long after they were really being pushed. It was left for a Boston bank to do it, and the thing was set up so that the Fed appeared to be following the market, but it was really the other way around.

Senator O'MAHONEY. Mr. Chairman, would you permit me to tell my story—

Chairman PATMAN. Certainly.

Senator O'MAHONEY (continuing). About Gene McCarthy, the sheepgrower in Wyoming?

Chairman PATMAN. Go ahead, Senator.

Senator O'MAHONEY. I think it is appropriate at this moment.

Gene McCarthy was a very wealthy grower and very successful woolgrower in the State of Wyoming. He was a member of the Wyoming Woolgrowers Association.

The members of this organization, like those who are engaged in the sheep industry throughout the public land States, raised their sheep upon the public domain, and they were always very much afraid of the havoc wrought among their flocks by the coyotes. So always their representatives in Congress were requested to secure appropriations for the Department of Agriculture to make war on predatory animals.

The woolgrowers association was holding a meeting, and the president thought it would be a good idea to call on Gene McCarthy to

make a speech on predatory animals. He accepted. It was a brief speech. He said, and he had a very nice, sweet, Irish brogue:

Mr. President, you have heard a lot of technical talk this morning about predatory animals. All I want to say to you is this: If you can keep the banks out of your flocks, you don't need to worry about the coyotes.

Mr. BELL. Well, Senator, some of my best friends are bankers. [Laughter.]

Chairman PATMAN. Yes. We are not against the bankers because they are bankers. I know Senator O'Mahoney feels the same way I feel about it. In fact, we cannot get along without the commercial banking system. We think it is the finest and best system on earth, at least I do, and I think they render great service to our Nation in time of peace as well as in time of war, and I do not want to change the commercial banking system.

I do not want to change the Federal Reserve System, except get it back to its original intentions, and leave it to public members to control. That is the only thing I want to change.

Now, on the increase in the time deposit interest rate to 3 percent, do you not think that is inflationary, for this reason: The object clearly is to induce depositors to bring their money from the Federal savings and loans or similar institutions, over to the commercial banks. Obviously that is the object.

Let us suppose that a customer does that. Is that deflationary or inflationary. It is inflationary, because the savings and loan can only make a loan of just this particular money, and it is unable to expand on it; whereas if the money is brought over to a commercial bank, I think the required reserve is only 5 percent now, is it now?

Mr. BELL. Yes, sir.

Chairman PATMAN. Then the commercial banks can expand 20-to-1.

So do you not think if the policy is effective, that it will actually be inflationary rather than deflationary, Mr. Bell?

Mr. BELL. Well, I don't think so, Mr. Chairman.

First of all, I would like to make sure that there is no implication here that I am criticizing the action of the Federal Reserve in changing regulation Q. I think that their ceilings had become obsolete, and if I had any criticism it was that they didn't act sooner.

Chairman PATMAN. I am not criticizing just on that.

Mr. BELL. No.

Chairman PATMAN. I am just bringing it out.

Mr. BELL. Yes.

Now, my point of view on this matter of these interest rates is perhaps a minority viewpoint, but again it goes back to my experience as a bank supervisor.

I remember, sir, that in the 1920's, our banking system did engage in a very destructive competition to see who could pull deposits away from the other fellow by paying the highest rate of interest.

Chairman PATMAN. Higher rate of interest, yes, sir.

Mr. BELL. And the result of that, sir, was that Congress, as you have pointed out, ended it by forbidding the payment of any interest rates on demand deposits at all.

Now, I think there is a danger—I won't say it is actually here—but I would say there is a danger of getting excessive competition for these time and thrift deposits by the payment of high interest rates which strain the capacity of the banks to earn and justify them; and

I am of the opinion, sir, that so long as we have an overall monetary policy which freezes the volume of money in the country, that you are not going to increase the volume of deposits by paying higher rates of interest.

I think you are merely, as you suggest, going to yank them from one institution to another, or convert a certain amount of demand deposits into time deposits in response to these higher interest rates.

So I am concerned about them on that score, sir, but I don't think they can be described properly as inflationary. That does not seem to me to be—

Chairman PATMAN. All right. Let me ask you this question, Mr. Bell:

We will take a thousand dollars in a Federal savings and loan, and that thousand dollars moves over to the commercial bank because the customer would just rather do business with the commercial bank; the commercial bank can offer so many more services than a savings and loan.

But is not the potential there, the inflation potential, we will call it, more than at the Federal savings and loan, for the reason that they can only lend it one time, and the commercial banking system can lend it 20 times?

How can you say it is not calculated to be more inflationary under those conditions, Mr. Bell?

Mr. BELL. Well, sir, this is rather a complicated question, and I tread very lightly here, but I do not believe, Mr. Chairman, that a transfer of a savings and loan share over to a time deposit in a commercial bank would give the commercial bank any additional reserves, and it would have to get additional reserves, would it not, in order for the system to multiply deposits?

Chairman PATMAN. That is true, it would have to do that. But they are capable of doing it because they have the means of doing it.

Now, I am talking about a commercial bank which has a savings department. I am not talking about one—

Mr. BELL. Yes, sir, I realize that.

Chairman PATMAN. I am not talking about one which does not have a savings department.

Mr. BELL. Yes.

Chairman PATMAN. In some States it is possible that they cannot do that. But generally, they can do that.

Mr. BELL. Well, I believe, sir, that one would have to follow this transaction through rather carefully, and I think we must assume that the savings and loan had that money invested, and that when somebody came in and took that money out, that the savings and loan probably had to decrease its investments in order to supply the money; somebody else had to take that up, and I do not think there is any increase in money involved.

Chairman PATMAN. Not just that particular money, but 20 times that much. You see, that becomes a base, if properly used, to expand 20 times, just like in a commercial bank now it is possible to expand 6 times.

Mr. BELL. On the basis of new reserves, I must say I prefer—

Chairman PATMAN. That is right; that is all I am talking about.

Mr. BELL (continuing). I must say I would rather have some licensed practitioner, like Mr. Ensley, answer that.

Chairman PATMAN. You made a very interesting comment concerning the holding company bill.

Mr. BELL. Yes, sir.

Chairman PATMAN. I am on the Banking and Currency Committee of the House, and we watched that bill closely, and I think the bill as it passed the House was all right. I did not keep up with it in the Senate, but I understand it was in the Senate that the amendment was made that permitted the acquisition of new banks by holding companies within the States without prior approval of the appropriate State banking authority; am I correct in that, Mr. Bell?

Mr. BELL. I am sorry, I am not sufficiently close to the course of that—

Chairman PATMAN. As a Member of Congress, and certainly as a member of the Banking and Currency Committee, I am disappointed. I think if this public law goes as far as the Federal Reserve Board seems to indicate, and as the banks seem to think, something should be done immediately to repeal that part of the law.

We were not trying to expand holding companies. We were trying to restrict them. That was your understanding; was it not?

Mr. BELL. Yes, sir; it was.

Chairman PATMAN. It is rather unusual that we would end up doing exactly what we said we were trying to stop.

Mr. BELL. Well, I think, sir, that as far as we in the State of New York are concerned, we do not fully understand what the implications of this bill may turn out to be, but we do have a particular situation before us at the present time.

When I say "we," I am still a member of the Banking Board of the State of New York, so I share some part of the superintendent's concern, and it gives us a great deal of concern. There is, as you know, in our State a joint legislative committee studying our banking law. I am on an advisory committee to that, and the members of the legislature in New York are very much concerned about this problem.

We do not know the answer. We don't even know for sure that we know the right questions yet.

Chairman PATMAN. Well, I am very much concerned, and I know other members are. This bill did not turn out as it was intended.

I am not trying to place responsibility and I am not criticizing or censuring any particular person or either body of Congress about it, but I do know that the object of that bill was to restrict and limit holding companies and retard their progress. Certainly there was no thought that a law should be passed which would permit the expansion of holding companies within a State and contrary to State laws.

I think that would be terrible, and I think you would find a lot of sentiment to change it quickly.

Mr. BELL. If I may make this suggestion, sir, I think that much help could be done if there were a general revision of all of our banking laws, to make sure that the Federal chartering and supervisory authorities did abide by the State laws with respect to branches.

Chairman PATMAN. I thoroughly agree with you.

Mr. BELL. That was done with respect to the national banks, but it was left very vague in other areas, and this causes a good deal of friction and unhappiness in the workings of our dual system.

Chairman PATMAN. It is depressing to me, particularly in view of the fact that in our State constitution—and we are very proud of this provision—it is impossible for a bank to be a chain bank or have more than one office. We have an independent banking system in our State, and they can only have one office.

Mr. BELL. Yes, sir.

Chairman PATMAN. Yet, if this law which recently was enacted by Congress is interpreted as many people seem to think it should be, that would even destroy our State constitutional provision, would it not, Mr. Bell?

Mr. BELL. If that is correct, sir.

Chairman PATMAN. In other words, it could be evaded through the holding company process, if that interpretation were correct which I do not concur in.

Mr. BELL. Well, I am not sufficiently sure as to the full implications of this bill, but I know that in the case of New York, the matter that arose there was such that the New York authorities are considered to have nothing to say about it at all, and the Federal Reserve advised them of the facts as a matter of courtesy only.

Chairman PATMAN. As a matter of courtesy only.

Mr. BELL. That is right.

Chairman PATMAN. Well now, that is pretty rough; that is pretty rough. If it goes that far, I am sure there will be plenty of sentiment in Congress—

Mr. BELL. The institutions involved, although two of them were State-chartered institutions, did not advise the banking department at all.

Chairman PATMAN. You mentioned the Federal Reserve System changes in 1935. I believe it is material to suggest at this point that you recognize, I know, in view of the fact that you have kept up with the banking laws, that we did not have a central bank until 1935.

Mr. BELL. That is correct, sir.

Chairman PATMAN. And in 1935, we completely changed the Federal Reserve System.

Mr. BELL. That is correct.

Chairman PATMAN. You agree to that, do you not?

Mr. BELL. Yes; I do.

Chairman PATMAN. You see, before that we had 12 regions, and we had 9 directors of each bank, and 6 of those, of course, were selected by the banking interests, 3 of them were appointed by the Board of Governors, class C directors. They were pretty big people, you know, then. The chairman of the board was the biggest man in that bank, was he not? He was the one who had to reach back in the safe and get the Federal Reserve notes to deliver. He was the only one who could—

Mr. BELL. Wasn't he the Federal Reserve agent?

Chairman PATMAN. That is correct. The chairman of the board was the Federal Reserve agent.

Mr. BELL. Yes.

Chairman PATMAN. And he was the only one who could handle the Government's money.

Well, in 1935 the law was changed so that these six bank directors could elect their president, who would become the big man in that bank, could they not?

Mr. BELL. That is correct. Under the 1935 law the president became the head of the bank.

Chairman PATMAN. So it was completely changed there. And then the regional banks used to have lots of other authority in the open market operations which were important. Under the 1935 act, they were, for all practical purposes, put in 1 pool, and 1 person controlled it, and now when there is an open-market purchase—of a Government bond or anything else—this 1 person, who is a manager of the account in the New York Federal Reserve Bank, divides it through some system or formula that they have devised, among all the 12 banks; is that not correct?

Mr. BELL. Sir, I think you know more about this than I do.

Chairman PATMAN. And furthermore, the banks had something to do with the rediscount rate before 1935, and now it is only the Board here which has anything to do with the rediscount rate.

Mr. BELL. I believe the board still had a veto power in those early days, because as I recall, the Federal Reserve bank in New York tried several times to raise the rate in the summer of 1929.

Chairman PATMAN. They did not have what you might call the Russian type veto.

Mr. BELL. They did not stimulate spontaneous action on the part of regional banks.

Chairman PATMAN. That is right. They could discuss it.

But now, since 1935, the Federal Reserve Board absolutely controls it, and this business of saying 108 directors of the 12 banks and their branches initiated it and caused it, why, that is all hokum. They can do it, all right. But the Federal Reserve Board has the power to approve or disapprove. If they want the interest rate at 2½ percent, they can keep it there, just like Mr. Eccles testified.

They have the power to do it. If they want to let it increase, they can do that, too.

The 1935 act completely changed the System. I will not go into it thoroughly, but you do agree with me that up until that time it was not a real central bank, but since it has become a central bank?

Mr. BELL. Well, I certainly agree that prior to that time that the power lay primarily in the regional banks, especially the Federal Reserve Bank of New York, and then it was shifted to Washington. It still seems to me it is not quite accurate to call it a central bank because you have the regional setup, and so on, and there—

Chairman PATMAN. I would not want to embarrass these people in the regional system by asking what powers they have. It would be a source of great embarrassment.

Mr. BELL. Well, I think there have been—

Chairman PATMAN. Now, on this tight money, high interest policy, you are having a lot of trouble now getting money for your schools in New York. Mr. Levitt is to be here this morning.

Mr. BELL. He is right here.

Mr. LEVITT. Yes.

Chairman PATMAN. Glad to have you, sir. I know about your program and your schedule. You advised me when you were invited to attend.

Mr. LEVITT. Yes, sir.

Chairman PATMAN. With Mr. Bell's permission, we will permit Mr. Levitt to testify now, and then we will resume questioning you after he gets through, as well as Mr. Levitt, because he has a deadline to meet.

Mr. LEVITT. Thank you.

Chairman PATMAN. We promised to accommodate ourselves to his situation.

Senator O'MAHONEY. Before the transfer is made, will you permit me to ask another question of Mr. Bell?

Chairman PATMAN. Yes, sir.

Senator O'MAHONEY. This question is prompted by a desire to make absolutely clear your views as to whether or not tight money, otherwise known as the rising interest rate throughout the American economy, is or is not inflation.

I assume from what you say on page 8, and what you have said throughout the morning, that you do believe that the high interest rate is inflation.

You say at the beginning of the last paragraph on page 8 as follows:

The tight money policy thus far has hurt home builders, small business and municipalities that need to build schools and other improvements. It has not, as far as I can see, touched the capital goods boom.

It may actually have stimulated, rather than curbed, business borrowing because the prudent corporation executive, reading and hearing about tight money policies, has in many cases borrowed money he did not yet need just to be on the safe side.

Are we to interpret as an expression of your belief, that the increase in rate of interest throughout our economy is inflation?

Mr. BELL. Well, not without some modification, Senator.

I am of the opinion that the policy if persisted in will prove to be very deflationary, and if carried on far enough and long enough, I think it can halt any boom and bring you into a real depression.

I am sure there is no intention on the part of the Federal Reserve authorities to go that far.

What has happened in the present situation, it seems to me, is that an overall tight money policy has not operated very effectively or very smoothly to do what is claimed for it; namely to moderate this boom and to curb the excesses, because, as I say, it does not seem to me that it has as yet had any material effect upon the heart and driving force of the boom, which is the capital expansion program of corporations.

It has hit the fringes such as the home builder and the municipalities that Comptroller Levitt is going to talk about. I cannot answer your question "Yes" or "No," except the best thing I can say is that it does not seem to me up until this point that the overwhelming reliance upon quantitative credit control alone has proved to be a very successful device, and at the same time I think if we continue to rely upon that alone and to press it harder and harder we will at some point come to a point where the brake will grab and we are in trouble.

Senator O'MAHONEY. With that answer I agree. I realize that you come here with a paper which is largely confined to the discussion of the Federal Reserve policy, but when I find you pointing out as many of our correspondents have earlier pointed out, that the tight money policy has hurt home builders, small business, and municipalities, then it has been inflationary because it has increased the cost of building homes, of expanding small business or maintaining small business, and the efforts of local communities to build schools, thereby increasing the demand for Federal intervention in the school construction program.

That is all, it seems to me, inflationary. Do I misunderstand you in that regard?



Mr. BELL. That is a very ticklish problem because I think once upon a time when I was a newspaper man I counted up some 40 or 50 definitions of the word "inflation."

To me it means primarily a condition in which the money supply is expanding and that ultimately results in higher prices.

Chairman PATMAN. Wouldn't the phrase "undue expansion" be a good one?

In other words, what some people call inflation, is just necessary expansion.

But when you go beyond the necessary expansion, couldn't you call that inflation?

Mr. BELL. Well, I want to be very responsive here, Mr. Chairman, but I do not think I can quite follow your question.

I would like, if I may, to say this: I do not wish at all to give the impression that I am against efforts to moderate a boom. I do think this is part of the stabilization process.

Nor am I against quantitative credit control where it is useful and where it is supplemented by other things.

My difficulty with the present situation is that it does not seem to me to be working in the way it should work.

Senator O'MAHONEY. Let me interrupt you, because I know Mr. Levitt is coming; just to boil it down to one question.

Mr. BELL. Yes, sir.

Senator O'MAHONEY. Do you not agree that if the price of money goes up, it is equally inflation of it as when the price of food goes up?

Mr. BELL. No, sir. I am afraid I could not agree with that.

Senator O'MAHONEY. And why?

Mr. BELL. Well, because when the price of money goes up it is a reflection of the fact that the supply of money is smaller or is not expanding. And the ultimate results of that are bound to be deflationary, because if we are to have an expanding system as we hope for, we have got to have expansion in our money supply.

There comes a time when if you limit the money supply you won't get growth any longer. I think that is deflationary. The temporary effect of these higher interest rates may be, it is true, to add to costs, the costs of doing business, but the longer run—

Senator O'MAHONEY. We are not talking about the long run, but about the immediate effect. I have no disagreement with the theory that if this policy of tight money is carried on an ad lib and permanent basis, it would be deflationary. You say that; do you not?

Mr. BELL. Yes.

Senator O'MAHONEY. But, certainly, temporarily, it is increasing the cost of operating for our full economy, as you have so well pointed out here with respect to home builders, small business, and municipalities.

Mr. BELL. Well, I think that is correct; temporarily it does increase their costs.

Senator O'MAHONEY. Thank you very much.

Thank you, Mr. Chairman.

Chairman PATMAN. I had conferred with Mr. Bell before the meeting. He suggested that Mr. Levitt had to get back and he would be glad to yield. That is why I suggested that a minute ago.

Mr. Arthur Levitt, State comptroller of the State of New York, Albany, N. Y. We are very delighted to have you here, and we shall await your testimony, and we know we will profit by what you say.

**STATEMENT OF HON. ARTHUR LEVITT, COMPTROLLER OF THE  
STATE OF NEW YORK, ALBANY, N. Y.**

Mr. LEVITT. My name is Arthur Levitt. I am the comptroller of New York State.

As chief fiscal officer of the State, I am responsible for the accounting of the receipts and disbursement of all State moneys, for the issuance of all State obligations, and the investment of all State money and moneys, such as trust funds, which are under the jurisdiction of the State.

The constitution and laws of New York State also assign the comptroller a number of duties affecting municipal finance. These duties include, but are not limited to, the following:

The examination of the fiscal affairs of all municipalities except the cities of New York, Buffalo, and Rochester, and the counties within the city of New York; enforcement of constitutional tax limitations; approval of the exclusion from the constitutional debt limitation of the bonds issued for certain revenue-producing purposes; and approval, together with that of the board of regents, of certain school debt in excess of the constitutional limitation.

In order to facilitate the performance of these duties, the law requires municipalities to submit annual financial reports to the comptroller, and to prepare such other reports as may be required.

A great deal of information about local finance and the problems of municipalities is gathered by the comptroller's office as a result of these duties. One of the divisions of my office, the division of municipal affairs, in addition to handling the municipal responsibilities of the comptroller, provides legal consulting services for local officials, and does research relating to municipal problems.

My duties and the services provided give me, as comptroller, a broad and thorough knowledge of current municipal financial problems.

My acquaintance with the problems which the present restrictive credit policy has created for the municipalities and school districts of New York State is based upon the facts which are continually being reported to me.

School districts are particularly affected by the Federal Reserve Board's policy, because school building cannot be postponed until a more favorable moment for financing arrives.

One indication of the urgency of the school-building problem in New York State is the anticipated expenditure during the next 2 years of over a half billion dollars in school construction.

School enrollments are expected to increase every year for at least the next 10 years. In 1952-53, there were 2,096,402 pupils enrolled in New York schools. Preliminary figures of the enrollment for this past September have just been announced—2,426,387 pupils.

By 1965 the New York State Department of Education estimates that we will need to provide for 3,184,500 schoolchildren. New schools must be built to house the anticipated growth.

The cost of borrowing to finance school construction has been rising alarmingly. In 1951-52, capital outlay for schools was \$170,123,548, and the average interest rate on the money borrowed by the school districts was 2.285 percent.

In June of 1956 the average interest rate on school borrowing was 2.760. Evidence that the tight money policy is placing more and

more pressure upon the money market is found in the interest rate which prevailed in school borrowings the past month.

In November 1956 the average rate was 4.078. Over the life of the bond issue it will cost school districts and taxpayers \$2,729,842 more for the \$13.8 million borrowed in November than it would have cost them in June.

During 1957 and 1958 school districts in upstate New York plan to spend \$314 million in school construction. The borrowing to finance this construction will cost \$62,077,800 more at the November rate than at the June.

The \$5.5 million bond issue of Union Free School District No. 5, in the town of Hempstead, was sold on November 15 at an interest rate of 4.30 percent.

Four years ago this same district sold its bonds at 2.70 percent. If the 1952 rate had continued, the difference in interest payments over the life of the bond issue would be \$1,383,767—enough to build a school for 900 pupils.

On November 28 another district in the town of Hempstead rejected all bids on a bond issue of \$2 million because the school authorities felt that the 4.30 bid was too high.

This is not an isolated instance. It is happening all over the State. But it is particularly revealing in Hempstead, which is located in the heart of Nassau County's rapidly growing, urban population and which possesses extensive tax resources.

Eventually, if the high cost of borrowing continues, I believe that some of the money which normally would be used to support classroom programs will be diverted for the payment of debt service in order to ease the tax burden. The quality of education will suffer if the cost of providing educational facilities rises excessively.

High interest rates do not reflect the soundness of the school bonds. The municipal securities market does not offer any safer investment than the bonds of New York State school districts.

Generally, the laws provide that schools always realize their tax levies because the taxes uncollected at the close of the tax period are turned over to the proper authorities, either county or town. These authorities pay the district the full amount of taxes due and then enforce collection in the regular manner.

School districts, in addition to being assured of receiving the full amount of taxes needed, receive substantial amounts of State aid. While I will not describe all the education aids given, I would like to point out that two are earmarked for debt service: the so-called building quota and the emergency school building advance.

The building quota provides central school districts with substantial amounts of State aid for the payment of debt service. The emergency building quota is intended to assist those districts which have to expand their facilities because of unusually rapid population growth.

During the school year 1955-56, the State paid \$8.6 million in building quota aid to control districts and \$2.6 million emergency building aid. The amount is expected to increase this year as more districts qualify.

Senator O'MAHONEY. What is the specific authority for that?

Mr. LEVITT. It is under the State education law.

Senator O'MAHONEY. How long has the State of New York been providing State aid for the building of schools?

Mr. LEVITT. Oh, for many years. Longer than I can remember. Always has been regarded as a function of the State to provide a sound system of education for the children of the State, and the medium through which the State exercises that function is the overall supervision of State aid through its department of education and the granting of financial aid to the school districts.

Senator O'MAHONEY. In other words, that has been the policy of the State for some time, for many years?

Mr. LEVITT. Yes, sir.

Senator O'MAHONEY. That the school districts are not wealthy enough to raise the taxes necessary to build the schools that the children ought to have; and, therefore, contributions from the State are required.

Mr. LEVITT. Yes, sir. It has been the policy of the State that each child, no matter where he lives, is entitled to an equal opportunity of education, and in the poorer districts the State makes up the difference.

Senator O'MAHONEY. Could you, at your convenience, after you have gone back to New York, furnish the committee with a table showing the amount of State aid for schools contributed by the State of New York since the program was first initiated?

Mr. LEVITT. Yes, sir; I will do that.

Senator O'MAHONEY. Thank you very much.  
(The table referred to follows:)

*State aid for school buildings—Total paid in New York State for school years 1926-27 through 1955-56*

School fiscal year	Central school building quota	Additional aid for debt service <sup>1</sup>	Emergency building advances	School fiscal year	Central school building quota	Additional aid for debt service <sup>1</sup>	Emergency building advances
1926-27	\$4,983			1942-43	\$680,667		
1927-28	31,203			1943-44	703,408		
1928-29	67,139			1944-45	699,046		
1929-30	82,535			1945-46	700,865		
1930-31	102,685			1946-47	739,628		
1931-32	172,211			1947-48	700,819		
1932-33	294,482			1948-49	796,106	\$278,073	
1933-34	260,791			1949-50	811,590	330,770	
1934-35	310,909			1950-51	1,749,505	333,448	
1935-36	341,563			1951-52	2,821,685	324,230	\$169,356
1936-37	381,900			1952-53	3,849,691	324,807	91,458
1937-38	442,161			1953-54	5,446,161	282,997	748,377
1938-39	480,486			1954-55 <sup>2</sup>	6,971,378	313,649	933,383
1939-40	536,503			1955-56 <sup>2</sup>	8,570,344	171,260	2,610,175
1940-41	603,478						
1941-42	688,345			Total	40,022,267	2,359,234	4,552,749

<sup>1</sup> Additional aid for debt service on former debt to districts which have become centralized.

<sup>2</sup> Preliminary figures.

Mr. LEVITT. The State is attempting to do all that it can to help to bring the costs of school borrowing to reasonable levels. My office is preparing a brochure explaining the merits of investment in New York State school bonds. I expect to distribute this brochure to banks and investment houses for the information of their clients.

The Governor has appointed a committee, of which I am chairman—of which Mr. Bell is a member—to study ways to cut the interest cost of school bonds. This committee will explore alternative ways of financing school construction.

While the State government will do everything possible, some remedies are beyond our power. Federal action can enhance the municipal bond market and encourage the flow of funds, thus reducing interest rates.

The current demoralization of the tax-exempt bond market has created a serious problem in local government finance. Special consideration by the Federal Government is fully warranted in order to alleviate the results of this restrictive credit policy.

Without passing on the merits of that policy, I want to point out that there is a sharp distinction between public financing and private financing so far as the burden of increased interest costs is concerned.

Local government borrowing must bear the full brunt of the steady increase in interest rates which we have all witnessed in the course of this year. On the other hand, when private industry borrows, the burden of the higher interest rates is less than half of that which is borne by local government units.

This is so because the Federal corporate income tax rate of 52 percent means in effect that the Federal Government is sharing to that extent the increased interest costs of private business which are deductible from taxable income.

For example, when Hempstead School District No. 5 has to pay \$2 million more interest it means that the taxpayers of the school district must dig out of their pockets \$2 million more to pay the cost of the new school building.

But when a business corporation has to pay \$2 million more in interest, the stockholders of the company are out of pocket only \$1 million and the United States Treasury contributes the other million dollars through a tax deduction.

There is ample justification for considering the problem of local government financing separately from the overall problem of the consequences of the present monetary policy upon borrowing in general, business loans in particular.

Public finance is a special and separate subject, not only because of the cushioning effect of the Federal income tax law on private borrowings, but also because of the urgent social necessity of proceeding with the prompt construction of schools, hospitals, highways, water and sewerage systems, and other public works as a matter of high priority.

For one thing the Federal Reserve might require member banks to hold a certain reserve in municipal obligations. At present, in New York State the municipal holdings of State chartered banks range from one-tenth of 1 percent to 20 percent of the bank assets.

The average held by the State banks is 5 percent. I presume that there is a similar range in the municipal holdings of nationally chartered commercial banks and savings banks.

I recognize that individual banks have individual situations to meet, but consideration might be given to a modest requirement of investments in municipal bonds which would not significantly curtail their other loan activities while being of substantial benefit to the municipal bond market.

At the present time savings and loan associations under Federal charter lack the power to purchase municipal obligations. This should be remedied.

One of the proposals before Senator Robertson's banking subcommittee, now working to revise the Federal banking laws, would permit

Federal savings and loan associations to invest in municipals, subject to the rules of the Home Loan Bank Board.

This recommendation seems well taken and I respectfully urge your approval when a bill embodying such investment powers comes before Congress.

Another proposal which I believe demands serious attention is that of amending the Internal Revenue Code to permit share owners of investment companies which invest in tax-exempt bonds to receive tax free the interest earned on such bonds.

This is in line with the recommendation of the President in his 1955 Economic Report. Passage of such legislation, which is merely an extension of the conduit theory of taxation that now applies, would open an entirely new buyer's market for municipal bonds, one of major importance.

I will have more to say on this very important measure when changes in the Internal Revenue Code are considered by the House Ways and Means Committee.

Senator O'MAHONEY. In order that your testimony may be clear to those who read it, would you define the conduit theory? You have used that phrase.

Mr. LEVITT. The conduit theory, as I understand it—

Senator O'MAHONEY. For those engaged in finance, etc.

Mr. LEVITT. It is that which attaches to the particular security when it comes into the hands of the investment company, and follows it so that the benefit rebounds to the advantage of the shareholder in the investment company.

That is to say, that when the investment company purchases a tax-free security, the income from that security, is tax free, to the investment company, and the tax-free quality follows it into the hands of the participant in the fund. And to the extent that the fund holds tax-free obligations, the participant in the fund benefits pro rata.

Senator O'MAHONEY. Thank you, sir.

Mr. LEVITT. There is one more suggestion that I feel must be made. If the tight money market continues for some months, and most of the people whom I have consulted agree that it will, conditions in the municipal bond market may be expected to worsen.

There is a great backlog of municipal bond issues which have been postponed. Circumstances may force these issues on the market. Then interest rates on municipal issues may be expected to continue to rise at the accelerated pace we have witnessed during the last 6 months.

Under these circumstances, I believe that the possibility of giving the Federal Reserve power to exercise selective credit controls, should be carefully studied. Selective credit controls, if feasible, would allow us to satisfy our needs for hospitals, mental institutions, highways, and schools without inflicting an unwarranted burden upon the taxpayer.

I appreciate this opportunity to discuss the problems which New York State school districts are encountering in marketing their bonds. I hope that this committee will find the time to give consideration to some of the remedies which I have suggested.

Senator O'MAHONEY. What do you mean by "selective Federal control"?

Mr. LEVITT. I mean the selective controls as distinguished from the quantitative controls that Mr. Bell spoke of. Selective controls

such as the power to control consumer credit, power to control investment buying, the power to control mortgage credit and the like, as distinguished from the broadside all-inclusive form of control that is in operation today. Quantitative, all embracing control.

Senator O'MAHONEY. Thank you.

Mr. LEVITT. Thank you, gentlemen.

Chairman PATMAN. Thank you very much, Mr. Levitt.

Now, since Mr. Bell is a member of the committee selected by Governor Harriman to study this question, I wonder if Mr. Bell would like to supplement the statement that has been made by Mr. Levitt.

Mr. BELL. No, Mr. Chairman. I think that Mr. Levitt has stated the case very well indeed.

I would like to say this, that the plight in which municipalities find themselves, particularly with respect to the financing of schools at a time when we all recognize the urgent necessity for more schools is to my way of thinking merely another illustration of the perplexities which surround our present condition, and another proof of the fact that we need to reexamine it and to give it a lot more thought.

Chairman PATMAN. Concerning the tax-exempt bonds, Mr. Levitt, I have always been opposed to removing the tax exemption but over the years I have had studies made and I find that the people in the school districts and States, counties and cities and political subdivisions, who have been beneficiaries of the tax-free income from those bonds get very, very little out of it. Have you come to any conclusion on that?

And possibly not enough to justify it being such a fine storm cellar for extreme wealth.

Mr. LEVITT. I would be very much interested in looking at those statistics. It has been my observation, though, that the tax-exemption feature does confer upon these securities an advantage in marketability which is appreciable.

My experience in the field does not extend beyond the 2 years that I have been in office, but I have noted a considerable margin of difference between the tax exempt and the nontax exempt, which it seemed to me redounded to the advantage of the issuing agency.

I confess that the advantage is not as great as it ought to be and I sometimes wonder why the market for these obligations is not as broad as it should be.

Chairman PATMAN. You mentioned savings and loans purchasing these obligations. Any organization that is built upon the cooperative principle, naturally, would not have the inducement to buy these tax-exempt bonds—

Mr. LEVITT. No.

Chairman PATMAN. That a commercial bank would have.

The commercial banks now hold about \$14 billion worth of tax-exempt bonds. Do you know that? I mean of local State school districts, cities, and political subdivisions.

Mr. LEVITT. I understand that.

Chairman PATMAN. Isn't it \$14 billion? It is right around \$14 billion.

Mr. LEVITT. I understand that the amount is large.

Chairman PATMAN. Furthermore, they hold about \$7 billion in addition to that, \$6 or \$7 billion, of Federal securities that are tax exempt, or partially tax exempt.

So the commercial banking system now holds approximately \$20 billion of tax-exempt or partly tax-exempt bonds. So they are not behind on the program, Mr. Levitt.

Mr. LEVITT. They are interested primarily in the early maturities.

The amazing thing to me is that when school district bonds of the quality I am speaking of are offered on the market at a rate of better than 4 percent that unless I support the market by buying them for the funds of which I am trustee, they have a hard time getting a bid from the bankers.

There are not enough takers for this fine security even at the prevailing rate.

Chairman PATMAN. Don't you think, Mr. Levitt, that the Reconstruction Finance Corporation performed a great public service when that organization purchased these bonds from all over the Nation and kept them and "cured" them for the market and then fed them out to the market, without anybody losing any money or taking any discount?

Don't you think that was a great service?

Mr. LEVITT. I think that is a tremendous service and that is the principle that the committee that Mr. Bell and I are on, is going to consider very carefully in connection with the plan we hope to devise for New York State.

Chairman PATMAN. I read very carefully what you have said about this and was impressed with it except I think you should broaden it out, since education is the whole Nation, it involves the whole Nation, including our military powers.

You know so many young men are excluded from military service because of the lack of ability to even read or write. And so education is a national issue, at least to that extent.

And I am hopeful that you will embrace in your recommendations, if you can confine it to the State of New York, what the Federal Government should possibly consider doing in that direction, to help the entire Nation including the State of New York.

Mr. LEVITT. We will be very glad to do that.

Senator O'MAHONEY. Mr. Chairman, may I ask Mr. Levitt if he will amplify the statement which he made on page 4 in the second from the last paragraph of that page that "there is a great backlog of municipal bond issues which have been postponed."

Were you speaking of New York alone or other States?

Mr. LEVITT. Yes, sir. There are school issues from districts which are fearful to come to the market with their bonds. And that fear I might add, is amply justified.

Senator O'MAHONEY. How many schools do you suppose are included?

Mr. LEVITT. In that category, sir?

Senator O'MAHONEY. Yes; in New York State.

Mr. LEVITT. It is difficult to estimate the number of school districts which postponed the building of schools because of the bond-market situation. We know several instances where boards of education rejected all bids on proposed bonds because of the high interest rate, but we also know that there were numerous districts which decided to delay the borrowing for school-building purposes. Because no formal announcement of intended bond issues was made by these latter districts, it is not possible to tell the number of school districts affected.



Senator O'MAHONEY. Because of the difficulty with marketing the bonds?

Mr. LEVITT. In my own position as State comptroller, I have State obligations which I hope to market but I have kept out of the market because of these conditions.

I have been obliged in July, to call off an offering of bonds for the thruway, because of adverse marketing conditions, in the hope that I would be able to market those bonds at a later date. But that time has not yet come.

So I am somewhat in the same position as the school districts, awaiting a better market.

Senator O'MAHONEY. My attention is called by Mr. Moore, to a story in the Wall Street Journal of Wednesday, December 5, bearing the headline, "Michigan fails to get any bids for \$52 million highway bond offering."

Perhaps it would be well, Mr. Chairman, to have that story made a part of the record.

Chairman PATMAN. Yes, sir. That will be made a part. They have a State limitation of 3½ percent. Even 3½ percent is quite high for tax-exempt securities. That is equal to 4.7 percent.

(The article is as follows:)

[From the Wall Street Journal, December 5, 1956]

**MICHIGAN FAILS TO GET ANY BIDS FOR \$52 MILLION HIGHWAY BOND OFFERING—SPOKESMAN FOR GROUP THAT HAD OPTION ON ISSUE NOTES COUPON LIMIT, BID REQUIREMENT**

By a Wall Street Journal staff reporter

LANSING, Mich.—A 3½ percent coupon limit and a required bid of par wert cited as key reasons for the State of Michigan's failure to receive any bids for its proposed \$52 million highway bond revenue issue yesterday.

Spokesmen for a seven-manager group that had planned to enter a bid for the bonds said, "Because of the coupon limitation and the bid requirements, we are unable to underwrite a bid for all or any part of the issue."

The syndicate had an option to purchase the entire \$52 million of bonds or any combination of three issues, one each for \$25 million, \$17 million and \$10 million.

Blyth & Co., Inc.; Smith, Barney & Co.; Lehman Brothers; Halsey, Stuart & Co., Inc.; Drexel & Co.; Harriman Ripley & Co., Inc., and First of Michigan Corp., had been scheduled to manage the syndicate.

Charles M. Ziegler, Michigan State Highway Commissioner, said the issue will be reoffered for sale at the present 3½ percent coupon rate if there's a sufficient improvement in market conditions.

Mr. Ziegler added that if present market conditions continue, steps will be taken toward making the "necessary adjustment in the maximum interest rate to permit their sale."

As measured by the Dow-Jones municipal average of 20 representative 20-year bonds, tax-exempt prices are at 19-year lows. The index, which moves inversely to prices, stands at 3.29 percent, the highest point since early 1937.

The State last marketed a comparable issue on September 13 when a total of \$25 million bonds were sold at an interest cost of 3.04 percent. The Dow-Jones average then stood at 2.93 percent.

The bonds offered yesterday were authorized in proceedings that began last August and September. At that time, Mr. Ziegler said, the maximum rate of 3½ percent seemed "more than ample."

Senator O'MAHONEY. I think that it would be appropriate to insert in the record at this point, also a clipping from the New York Times, written for the Associated Press by Warren Bennett, on the continuation of the drop of United States bonds.

Chairman PATMAN. It may be inserted.

(The article is as follows:)

[From the New York Times, Sunday, December 9, 1956]

CORPORATE BONDS ADVANCE WHILE TREASURYS DROP

(By Warren Bennett, Associated Press Financial Writer)

NEW YORK, December 8.—Corporate bond prices advanced this week for the first time in 2 months. Government bonds continued to decline.

Corporate bond trading was heavy with volume of \$38,160,999 par value on the bid board, highest weekly total since December 17, 1954. This compared with \$35,020,000 last week and \$21,222,400 for the corresponding week in 1955.

Rails, investment quality issues and foreign dollar bonds wound up higher. Industrials were slightly lower while utilities, despite gains Thursday and Friday, were sharply lower for the period. Japanese issues climbed major fractions, with Oriental Development Co. 6s of 1963 posting an advance of 1½ at 95½ Friday.

Treasury obligations continued to drift lower on somewhat heavier volume in the over-the-counter market. Dealers said much of the activity stemmed from tax-swapping.

For the week the Government 2½s of 1963 dropped 1½ to a new low of the year, 93½ bid. The Victory 2½s of December 1972-87, declined 1½ to 89½. The 30-year 3¼s last ½ at 98½ while the 40-year 3s were ½ lower, at 93½ bid.

At these prices the 2½s of 1963 yield 3.64 percent, the "rics" 3.34, the 3¼s 3.35, and the 3s 3.31 percent.

Chairman PATMAN. May I suggest, Senator O'Mahoney, the bonds of the British Government—you know about this, Mr. Bell—that are paying 3½ percent, are now selling below 60.

You know our bonds, 2½ percent, are selling below 90.

Do you not think that it creates a very unstable and unreliable situation when people have no way in the world to invest their money in a security that will always be at par, and to have the benefit of the knowledge that they can rely upon an interest rate within bounds of some kind?

How can they prepare and plan and contract for the future?

Don't you think it is rather a bad situation for us to be in, Mr. Bell?

Mr. BELL. Mr. Chairman, I am afraid I will have to take a little bit different viewpoint. We do have through our savings bonds, of course, an instrumentality for small savers, which is always at par, where they do not have to take any loss.

Chairman PATMAN. I will take issue with you on that.

Senator O'MAHONEY. The situation is this: A small saver who has a thousand dollars may buy a long-term bond today which will yield more than 3 percent.

Mr. BELL. Yes.

Senator O'MAHONEY. But if he invests in savings bonds, before he gets 3 percent he must have held them for 10 years.

Mr. BELL. Yes, sir. That is true. There are other avenues of savings, though,—you have the savings banks, for example, many of which in my State pay three percent.

I would just like to make it clear, sir, that I do not think as a practical matter we can or should think in terms of pegging Government bonds at a fixed rate. I really don't think that that is a good plan. I don't like to see our Government bond market bounce around the way it has in recent years.

Senator O'MAHONEY. I am not suggesting—

Mr. BELL. I am not in favor of pegging it.

Senator O'MAHONEY. I am not suggesting that, Mr. Bell. But I do call your attention to the fact that at the beginning of this administra-

tion the first act of the Treasury Department was to issue the long-term 30 year bonds at, what was the rate of interest?

Chairman PATMAN. Three and a quarter percent.

Mr. BELL. Three and one-quarter.

Senator O'MAHONEY. It sold immediately at a premium, and remained at a premium for some time.

Mr. BELL. Excuse me, didn't it go down first? I think it went down.

Senator O'MAHONEY. It might have gone down first. Yes, it did go down first, then went up to a premium, and now it is selling below 99.

Chairman PATMAN. Ninety-eight something.

Senator O'MAHONEY. It may be 98 but I know it is below 99.

Chairman PATMAN. Ninety-eight and twenty thirty-seconds.

Senator O'MAHONEY. That is below 99. This is the situation in regard to our Government bonds which on television shows, in factory campaigns for the sale of savings bonds, we are constantly telling the people are the most certain security that they can get for their savings.

And yet we are following a policy which has resulted in the steady decrease of the value of those bonds upon the market. Even though they may be maturing in a few years, they are still below par. That is a serious condition, is it not, Mr. Bell?

Mr. BELL. Well, sir, I think it is a serious condition when you have the degree of instability that you have seen in recent years in the Government bond market and when you have the thinness of the market that now exists.

Chairman PATMAN. And an unregulated market, too. It is unregulated.

Mr. BELL. I am not against that, sir.

Chairman PATMAN. The Securities and Exchange regulates the private securities market pretty well.

Mr. BELL. But I think that this, again I do not like to be monotonous about it, is simply another point that illustrates the weakness of this tremendous reliance we have had upon one thing, the quantitative credit control.

I think we ought to see if we can't be ingenuous enough to find another arrow to our quiver than just this one that seems to have certain boomerang qualities to it.

Senator O'MAHONEY. I am sure that the committee has not reached any decision, nor has any of its members, as to what should be done. But the fact remains that your Federal bonds are going down, at the same time the administration is suggesting new expenditures for economic aid abroad, while following a tight money policy which restrains economic development at home. It is a most serious question.

Mr. BELL. I think you are quite correct there.

Chairman PATMAN. May I suggest, Mr. Bell, that I have before me Mr. Lanston's statement about the bonds table based on yield and so forth. The  $3\frac{1}{4}$  that Senator O'Mahoney mentioned are just now barely below 99— $98\frac{20}{32}$ , but that is a yield of 3.34.

And now there are several bonds here in the list of Mr. Lanston's, where the return will be 3.59, 3.69. How can we with a straight face go out and try to induce people, small savers, to put their money into bonds that will only yield them 3 percent after 10 years, when they can go right in the market right now and buy bonds that will pay them up to much over  $3\frac{1}{2}$  percent?

Senator O'MAHONEY. It is worse than that, Mr. Chairman, because of the huge issue of Government bills and notes which are given out by the Treasury and which yield more than 3 percent now.

Chairman PATMAN. Short term.

Senator O'MAHONEY. Ninety day bills are being sold only to a very limited group, namely, the banks and big corporations. The little fellow cannot invest in those. They are not available to him.

There is talk now about a new issue of certificates of some kind to be applicable on taxes which will be due in April. In other words, that means that the Treasury is proposing to issue certificates to those who have the idle money to buy them, certificates which may then be used to pay their taxes when these fall due for the current year. Meanwhile the certificates will draw interest during the period from now until the taxpayment is made.

Mr. BELL. I think that has been a fairly standard instrument.

Chairman PATMAN. It has been.

Senator O'MAHONEY. It has been adopted and dropped.

It was largely available only for the big taxpayers. It is difficult for the little fellow to get that.

You agree, of course, with the policy of the savings bonds which is its great virtue, that it is not affected by the market, and the holder of the savings bond may get the full amount that he paid plus a little interest whenever he wants to.

Mr. BELL. Yes, sir

Senator O'MAHONEY. The price of the bond in that respect is not affected by market fluctuation.

Mr. BELL. I believe that many people who invest in the savings bonds do so as a regular program, too, by buying a bond a month or something of that sort. And they are not so concerned with that.

Senator O'MAHONEY. That is true.

Mr. BELL. With the interest rate, I mean.

Senator O'MAHONEY. It is also true—and this I have read from the charts in Business Week, that the redemptions of those bonds have been rising at a very sharp rate.

You recall that, do you not?

Mr. BELL. I believe I do.

Chairman PATMAN. Have you finished, sir?

Senator O'MAHONEY. Yes.

Chairman PATMAN. Mr. Levitt, in your group, and Mr. Bell's group, too, I hope you gentlemen consider these trust funds to be used in investments like school bonds and even housing, guaranteed by the Government.

The social security fund, of course, is more than \$40 billion. The national service life insurance fund is \$5½ billion.

There is an ironical situation where the veterans who contribute to that fund, who paid into it, are not able to get home loans at a reasonable rate of interest at all. Yet their NSLI funds are only drawing 3 percent.

It is one of these pigeonhole devices where the Treasury uses money and puts its I O U in the lockbox and they only get 3 percent, and if they were privileged to invest in housing loans guaranteed by the Government, they can get a minimum of 4½ percent.

It occurs to me that these trust funds could be used that way.

I hope you keep in mind and consider that in your deliberations.

Mr. LEVITT. Yes, sir.

Chairman PATMAN. Any more questions of Mr. Levitt.

Senator O'MAHONEY. No.

Chairman PATMAN. Mr. Frischknecht, would you like to ask some questions for Senator Watkins?

Mr. FRISCHKNECHT. No.

Chairman PATMAN. We will excuse Mr. Levitt.

I would like to ask Mr. Bell just a few more questions, if you please.

Do you think, Mr. Bell, that the brakes are working well or do you think we may be headed through the windshield as you said one time?

Mr. BELL. I am sure I don't know the answer to that question, except that as for the first part of it, I don't think that the brakes are working as well as they should.

The thing that bothers me is that I think we are in danger of building up certain distortions in our economy as a result of this overall credit restriction policy. As I have pointed out it seems to take hold rather sharply in some directions, and up to this point it does not seem to take hold at all in other directions.

I think this is bad for two reasons: First, when you have brakes that grab unevenly you develop distortions.

And second, you develop a resistance, it seems to me, on the part of the public to this type of instrumentality that seems to fall so inequitably.

We know perfectly well that you can't have any policy of restraint that is going to be painless. Surely, if you are going to try to moderate a boom, it is going to go against the grain with a lot of people.

But it does not seem to me that the present policy has been ideal.

Chairman PATMAN. Mr. Bell, where is this boom and where is this inflation? It certainly is not on the farm or on the ranch. Certainly not in small business. It is not in the home building. Where is this inflation that the Federal Reserve is trying to stop?

Mr. BELL. Well, I think it is really up to them to answer that question, sir, but I do think that we have had a period of long sustained activity, certainly in the capital goods field.

Chairman PATMAN. I know but this does not restrain capital goods. That is where the inequities come in and discrimination is—

Mr. BELL. That is right.

Chairman PATMAN. And injustice is.

You see the capital goods industry, they rely not on bank loans, except to take some short loans, which denies the little fellow funds, but two-thirds of their investment capital comes from—two-thirds from retained earnings and depreciation.

Mr. BELL. That is right.

Chairman PATMAN. So they don't have to look to the market. They don't have to look to anybody.

And then if they need more they can go to the bank. They have entry there that the other people don't have and they can get what they want in short term loans which denies the little fellow that opportunity.

So the capital goods market that you mentioned, the present policy is not restraining the capital goods market at all. They will go right ahead expanding. They are not restrained a bit. Don't you agree with that?

Mr. BELL. Not at the moment. I think there is very little evidence there has been any restraint there.

Chairman PATMAN. It is the little fellow that is hurt, and the big fellow is not hurt at all.

Mr. BELL. I think that is about right.

Chairman PATMAN. Yes, sir.

Let me ask you this question: What do you think has contributed most to the recent rise in prices, capital goods investment, consumer spending, wage increases in excess of productivity, profit margins, or high interest rates?

Mr. BELL. Well, I think that a great many of those factors have contributed. Mr. Chairman, it seems to me that when you have an economy like ours that is going ahead at such an active rate, with full employment or very high level employment, with an expanding tendency it is hard to imagine that prices will remain completely level.

I would hope that no one would mistake me for a fellow who is reconciled to or an advocate of perpetual inflation. But I frankly don't get terribly alarmed at what we have had in the way of price increases in the past few years.

Chairman PATMAN. Mr. Bell, you may recall that when the campaign was on, to take off all of the controls, the argument was made that will lower prices; you recall that.

But it did not lower prices. They kept prices up. And whispered around, you would hear this suggestion, that they could not afford to lower prices because it was possible we would have another emergency and they might be frozen like they were one time at a low level. They didn't want to be caught again.

So they kept prices up. Then we were told that if we repealed the excess profits tax, you recall that, prices would go down.

But prices didn't go down. They stayed up. Because of that the big fellows got plenty of money through retained earnings, and depreciation, to carry on any expansion program that they wanted.

But that makes it harder on the others, because of the limited supply of materials and labor.

Mr. BELL. Mr. Chairman, I would not describe the situation in quite the terms that you have used. It seems to me actually that we had a rather remarkable price stability here for a number of years, and indeed, in the light of the type of economy that we have had, with the great expansion that has taken place, my own feeling is that it is quite remarkable that prices haven't gone up more, rather than that they have gone up somewhat recently.

Chairman PATMAN. After all, there is conscience involved in these things. I don't see how they could put them up in good conscience.

Mr. BELL. I am sorry. I don't quite get that.

Chairman PATMAN. I don't see how they could in good conscience put them up higher than they have, because they have collected from the consumer enough to pay all of their expenses, and had enough to pay a good dividend to their stockholders, which they should, and enough left to put over into retained earnings, which is costless capital to them, a very large amount. I don't see hardly how they could in good conscience take more.

Mr. BELL. I don't quite visualize the process as you are describing it, sir.

Chairman PATMAN. Mr. Bell, the hour is getting late.

Senator O'MAHONEY. Before you dismiss him, may I call his attention to several matters?

Chairman PATMAN. Yes, sir.

Senator O'MAHONEY. I have before me the November issue of the Economic Indicator. This, as you know, is prepared for the Joint Economic Committee by the Council of Economic Advisers. Dr. Burns, until recently, was the Chairman of the Council and had a large share in the preparation of these statistics.

On page 28, there is a graph and tables on consumer credit. For the purposes of this question, I will just read the increase in consumer credit beginning at 1950:

The total consumer credit then outstanding in 1950 was \$21,395 million. In 1953, the total outstanding was \$31,243 million. In 1955, \$38,648 million. The latest figure for 1956 is for the month of September, \$40,074 million.

In other words, since 1950, to September 1956, outstanding consumer credit had almost doubled.

That means that in many instances purchasers of consumer goods are obligating themselves for a long time in the future, and may be obligating themselves for more than the income they can actually expect for the period of the credit.

That frequently results in the recovery by the seller of the goods that was sold. That was one of the marks which preceded the depression of 1929, the extension by business beyond the capacity of the people to whom the credit was made to repay.

In your statement on page 8, discussing the last paragraph, this question of the tight money policy, you pointed out that so far as you know, as you have seen, tight money has not affected the production of capital goods.

Your language is this:

It has not, as far as I can see, touched the capital goods boom. It may actually have stimulated rather than curbed business borrowing, because the prudent corporation executive reading and hearing about tight money policy has in many cases borrowed money he did not yet need, just to be on the safe side.

Do you think in the face of this picture of the consumer credit such an executive who borrows money that he does not need can be called a prudent corporation executive?

Mr. BELL. Oh, yes, sir, because he knows he is going to need it but he may not actually need it for another year.

Let us say he is the head of a corporation that is expanding as most of our corporations are. He has got a program ahead of him. He knows that in 1957 he is going to enlarge his plant, in Dubuque and in 1956 he thinks he will perhaps put a plant in the Midsouth or something like that. He knows he will need money.

Senator O'MAHONEY. But, Mr. Bell, if as you say in the sentence before that, the tight money policy has hurt homeowners, small business, and municipalities, does that not raise the question as to whether there will be a market for the capital goods which the prudent corporation executive is borrowing money in order to have the plant to produce?

Mr. BELL. Yes, sir. This is what hangs like the sword of Damocles over the economy.

Senator O'MAHONEY. You will acknowledge, will you not, there is a serious danger in it?

Mr. BELL. Yes. I have stressed that, but can I say a word with respect to these consumer credit figures?

Senator O'MAHONEY. Yes, I wish you would.

Mr. BELL. I would like to say that I certainly am not wise enough to know whether \$40 billion of consumer credit is too much, whether this Nation can afford it or not. I don't know that anybody else can.

Senator O'MAHONEY. May I suggest that as the editor of Business Week, you assign someone from your staff to go into that question and—

Mr. BELL. Sir, I think this is like the question of what is truth and what is virtue. It is not susceptible to a positive answer.

But what I think you can say, you can ask yourself whether the trend seems to be excessively sharp. And I think that on the basis of the figures you have cited there is room for concern in this thing.

Chairman PATMAN. There is what?

Mr. BELL. Room for concern. Certainly, there has been a remarkable expansion of consumer credit. I won't say that this creates a disastrous situation.

But I will say it is something to be concerned about. I say again—

Chairman PATMAN. One premise is wrong.

Mr. BELL. What is that?

Chairman PATMAN. That is, that people have obligated themselves beyond their ability to pay. That was the premise that Senator O'Mahoney had. I think that is incorrect, Senator.

I think you will find that people are paying their bills regularly, that there is no evidence of inability to pay, there is no evidence that people cannot meet their terms and conditions.

Do you know of any evidence like that?

Mr. BELL. Not at this point; no, sir.

Chairman PATMAN. As long as people can carry out their obligations, why should we be alarmed about it?

Senator O'MAHONEY. Are there not television sets and other commodities of that kind for sale in secondhand stores which have been taken back from the original purchaser by the seller?

Chairman PATMAN. Yes. And automobiles. But it is not alarming. What I mean, generally, they are keeping up with their payments.

Senator O'MAHONEY. We are talking about trends here. They have to surrender the television set or automobile—they are not paying.

Chairman PATMAN. People generally who have installment obligations are meeting them and meeting them satisfactorily.

Senator O'MAHONEY. I think it is important for us to get the facts.

Mr. BELL. The thing that worries me about it is a tendency on the part of people who are selling things on credit to extend the terms further and further as they meet with resistance.

I think if you sell a man a car, on a term of payment, that is going to outlive the usefulness of the car or going to leave him more money owing on the car than he can get in trade-in value, it seems to me that clearly is not to his interest, or anybody else's.

Chairman PATMAN. We don't want to be his guardian.

Mr. BELL. No.

Chairman PATMAN. No reason why we should try to regulate. That is private enterprise. You see the fellow who buys should have some say and the fellow who sells should have some say.

Mr. BELL. Yes, sir.



Chairman PATMAN: But when they come together, why should we object?

Mr. BELL: I think in the Securities and Exchange Act we do modify the free market.

Senator O'MAHONEY: I am afraid that the point of my question has been lost. The question was based upon the fact that the witness has testified that some prudent corporation executive is borrowing more money than he needs because he is afraid the interest rate will go higher.

And there is a business boom, according to the witness, on the construction of plants for the production of commodities to be sold.

At the same time we have the definite report that the consumer credit is steadily increasing. I didn't say it was at the danger point. But it is a trend, which did precede the collapse of 1929, when people were encouraged by businessmen to pledge themselves and their incomes and their families' incomes for things for which they could not pay. Overstraining credit brings about such a situation.

Chairman PATMAN: I agree, when credit is overstrained. I look upon consumer credit as the healthiest part of our economy.

The people who sell these television sets and radio sets have to take some of them back, but they do pretty well in the business. They get pretty good profits.

Senator O'MAHONEY: Sometimes they have to pay high rates of interest.

Chairman PATMAN: We like to see people have the benefit of those comforts of life and those conveniences. I would rather see people buy what they want and pay cash; that is preferable, of course, and I am not encouraging people to go into debt.

But the reason I say installment credit is the healthiest part of our economy is that at one time when we were considering the OPA, in 1941, before Pearl Harbor, we had Leon Henderson on the witness stand, one of the smartest witnesses I ever heard in my life—he always had a good answer to every question—and it came up, and it was appropriate for me to ask him, that in our capitalistic system that our money is based on debt. If everybody paid their debts, we wouldn't have any money. No debts; no money.

And I asked Leon what he would do about that if we paid all of our debts. He said, "Well, anybody that paid his debts ought to go right back into debt." In other words, create debts, pay them off.

And that is our economy.

And the reason I think that installment buying is about the healthiest part of it, is because the people actually pay those installments. And they go into debt. They pay their debts, and they go into debt again. It is their method of saving, in many instances. And I am not afraid of it at all. I look with favor on it.

As long as people are substantially meeting their payments, I do not think we should be disturbed about it. But I am willing to keep watching it, just like Senator O'Mahoney suggested, we should not have it get to alarming proportions.

One other question, Mr. Bell.  
Senator O'MAHONEY: I thought you turned the questioning over to me for a minute.

Chairman PATMAN: Do you want to ask some more?  
Senator O'MAHONEY: We reserve our debate for executive session.

Chairman PATMAN. That is right.

Senator O'MAHONEY. Mr. Bell, I wondered what reaction you have had from that very fine speech you made to the American Bankers' Association at Los Angeles. What have you heard with regard to that suggestion for a combination of the Council of Economic Advisers and the Federal Reserve Board?

Mr. BELL. Well, sir, I have had a great many letters from people who wrote in and said that they had thought well of the speech and that they thoroughly agreed with me and wished something would be done about it. I also have been denounced, it seems to me, with a great deal of heat by some of my good friends among the more orthodox economists and financial writers.

And I have also had the curious experience of various highly placed people coming up to me like conspirators and whispering in my ear, "I am all for you, I think you are exactly right."

Senator O'MAHONEY. "But don't quote me"—was that also a part of the response?

Mr. BELL. Well, it seems to have stirred up quite a lot of conversation.

Senator O'MAHONEY. Is there any official interest in the matter, may I ask?

Mr. BELL. Not to the best of my knowledge. There was no official connection of any sort with the speech, sir. This was simply the case of a fellow who had an assignment to make a speech, before a bunch of bankers, and tried to make it interesting.

Senator O'MAHONEY. You certainly did make it interesting. In fact, the opening of it was very interesting to me, because I was in charge of the Employment Act when it was passed by the Senate, in a Democratic Congress, and it was signed by a Democratic President.

I understand that the slip you made was in saying that it was passed by a Republican Congress—

Mr. BELL. Yes, sir, I remember that.

Senator O'MAHONEY. Has been corrected by you—

Mr. BELL. Yes, sir.

Senator O'MAHONEY. In other fields. I thank you for that, but I felt it ought to be corrected on the record here.

Mr. BELL. Quite right.

Senator O'MAHONEY. It was a Democratic Congress which passed it.

Mr. BELL. I regret that a Republican Congress did not.

Senator O'MAHONEY. That is one thing I can properly state, I think, with respect to it. I was the first chairman of that committee, and Senator Taft was the second chairman, because the 80th Congress came into existence immediately after this became an effective law.

I want to say that, both on the part of Senator Taft and on the part of myself, and those who have succeeded as chairman of the committee, there was always an effort to secure a staff which would be competent, and which would be concerned not with merely partisan arguments but with the objective study of the economy of the country.

And I am happy to say that that has been the policy throughout the life of the Joint Committee on the Economic Report.

Members of the staff, which were selected at the beginning, still are with the committee, no matter what the turn of the wheel of fortune was at the ballot box.

Mr. BELL. I think that it has been generally recognized.

Chairman PATMAN. Frankness compels me to admit, too, Mr. Bell, that I was the author of the bill in the House. We had bipartisan support for the Employment Act.

In fact, I was amazed at the strong support we had from both sides of the aisle. And I think that is to the credit of both major political parties.

And I think it has worked out quite well. This question that I wanted to ask you, you discussed a little with Senator O'Mahoney, a matter of this great importance, and in view of the fact that there are differences between the administration people about certain things, I just had an idea that you discussed this proposal with some of the administration people before you made it.

For instance, Arthur Burns. I wonder if you did discuss it with him.

Mr. BELL. I have known Arthur very intimately since long before he came down here, and I have discussed a great many things with him. And the answer to your question, sir, is "Yes," but the speech was entirely my own—everything in it was my own, my own concept.

You recognized there are a great many ideas there that are not new, and that have been discussed before, and nobody in the administration at any point either said, "This is fine, go ahead," or, "Aye, yes, or no."

Chairman PATMAN. Mr. Bell, in rounding out the record or for any other purpose if we should want to submit to you questions to be answered before the record closes you would be willing to do that?

Mr. BELL. Yes, sir.

Chairman PATMAN. Do you know of any other questions?

Senator O'MAHONEY. No.

Chairman PATMAN. Would you like to ask any?

Mr. ENSLEY. No.

Chairman PATMAN. Thank you very kindly. Your testimony has been very helpful and we appreciate it.

Mr. BELL. May I thank you? It was a great courtesy.

(Supplementary questions later asked of Mr. Bell and his answers to them are covered in the following letter from him:)

McGraw-Hill Publishing Co., Inc.,  
New York, N. Y., December 18, 1956.

Hon. WRIGHT PATMAN,  
House of Representatives,  
Washington, D. C.

DEAR MR. PATMAN: The two questions you have asked me are not easy ones and I am not sure that my answers are very good ones; but they are about the best I can produce at the present moment without going to inordinate lengths. Here they are:

Question. First, assuming that, at any particular time, economic forces are recognized and accepted as predominantly inflationary, warranting thereby some measures of restraint on the supply of credit, what type of borrowers should get the available credit and, under our present system, who actually does get it? In other words, what form of machinery should we look for rationing the curtailed supply?

Answer. Except in time of war or extreme national emergency, I would not favor any overall system of rationing credit. My objection to the present tight-money policy is that it does in effect provide a discriminatory rationing of credit by making credit difficult to obtain in certain areas such as housing, municipal

financing, and small business, while it places very little restraint upon large corporations. Credit restraint, as I see it, is justified merely as a means to an end. That end is the prevention of a runaway boom in the economy that could lead to a subsequent collapse. Accordingly, my approach to the problem would be as follows: First, when there is a predominantly inflationary condition, overall measures of restraint should be applied but they should include not only quantitative credit restriction but also appropriate fiscal measures, including refunding of the debt from short-term to long-term obligations, restraint of Government expenditures and tax measures. This overall restraint should be supplemented by selective credit controls directed toward particular areas of the economy which appear to be advancing at too rapid a pace.

*Question:* Second, what policies or institutional setups should we have, if any, to insure that certain social demands for schools, housing, highways, etc., do not get lost in the scramble for the relatively scarce credit resources?

*Answer:* This is the type of question that needs to be examined by a national monetary commission such as I have suggested. It is clear to me that by congressional action in the past we have accepted as national policy the proposition that certain types of economic activity, such as housing, represent a social good that entitles them to special consideration not accorded to other types of economic activity. It is a fact, however, that many conservative-minded people do not recognize that such national policies exist and see no reason why housing, for example, should get any special consideration in a period of credit stringency. Such people can see nothing wrong in the fact that a veteran may not at the present time be able to get a GI mortgage to finance the purchase of a \$12,000 home, while a big corporation has no trouble in borrowing millions of dollars to set up a new finance company. Before we can have appropriate policies or national setups to protect these social demands, we need, I think, a clear statement of what our national policies are.

Sincerely yours,

ELLIOTT V. BELL.

Chairman PATMAN. The subcommittee will stand in recess until 2 o'clock when Mr. Robert Young will be the witness.

(Whereupon, at 12:30 p. m., the subcommittee stood in recess, to reconvene at 2 p. m., this day.)

#### AFTERNOON SESSION

Chairman PATMAN. The subcommittee will please come to order.

Mr. Robert R. Young accepted the invitation of this committee to be our witness this afternoon. Mr. Young is chairman of the board of the New York Central Railroad Co., in addition to which he has many other interests.

We are mighty glad to have you, Mr. Young, and you may proceed as you desire.

Mr. YOUNG. Thank you, Mr. Congressman.

Chairman PATMAN. You may take your seat, if you desire.

#### STATEMENT OF ROBERT R. YOUNG, CHAIRMAN OF THE BOARD NEW YORK CENTRAL RAILROAD CO.

Mr. YOUNG. My invitation here today came, as you gentlemen know, as a result of some remarks I made before the Economic Club in New York on the night of November 19 when I was requested to address myself to the problems which business will face during this coming administration.

While the subject of my talk was "inflation," I had time to deal only with its three most important causes: Wages, taxes, and the export of our capital. I did this at some risk of being painted as an enemy of labor, which I am not; an enemy of the administration.

which I am not, an enemy of Congress, which I am not, and an enemy of our allies, which I am not.

I was prepared to take this personal risk for the sake of labor, the administration, Congress, and our allies, and I hope that as I amplify these remarks today, consideration will be given to the fact that time limits continue to make it impossible for me to elaborate on all of my views with which, if I had the time to fully explain them, I believe every well-meaning American citizen would agree.

I started as a day laborer in the days when a man could rise out of the ranks of labor through his superior productivity without offending its seniority rules. I have been associated with big business. I have even been in Wall Street. And, while I have never been in government, I have frequently been before it and understand its problems and the tremendous handicaps and pressures under which all of you work.

The problems you face today are so complex and the imponderables so interminable that it seems presumptuous for me to attempt to diagnose our mounting illness. Some of those who imagine they benefit from this illness may think I exaggerate its critical nature.

I appear here only because I was urged to. And nearly 2 years elapsed before I accepted the repeated invitations of the Economic Club, so sure I was that any honest expression of my views would only make me new enemies, with which I am already well supplied. Yet, as controversial and complex as the total situation is, there are a few basic principles on which maybe even my critics and I can agree.

Our economy in its abundance is the eighth wonder of the world. Any threat to that abundance is inflationary and retrogressive. Monopoly in all its forms, because it hamstring and corrupts enterprise, is the greatest threat to this abundance, whether it be monopoly of government, agriculture, labor, production, distribution, transportation, communications, or credit.

Judging from the background of your other witnesses here today and tomorrow, it is this last problem of credit which presently engages you. On this subject: Under a Government-managed plethora of money, our banks and other lenders suffered many years of famine. It is hard now to begrudge them a few years of clover! But if, as it did in 1929, the whole house comes tumbling down about their ears as a result of a famine or panic of credit, what will the benefit in earnings have been to the moneylenders if it is ultimately to be measured in terms of dollars that are worthless?

It is not hard to see why you are concerned with the recent increases in the cost of credit and the rapid shrinking of its supply. Further increases in interest rates can make the already enormous carrying charges on our Government debt more than we can bear, to say nothing of what might happen to confidence should the bottom drop out of Government bond quotations.

British Consols, their prime Government security, which once sold for par, are now selling at 50. Can we be sure of where the kind of a run such an eventuality could start in our economy will end?

It is adaptability and versatility which are the peculiar American genius. They have made our country great, and our highest achievements have had the tiniest beginnings. It is an alarming trend, therefore, when so many new developments today seem to favor bigness at the expense of the little fellow.

I have been both, and can see the value of both. Only the big corporations, which already enjoy many competitive advantages over their smaller rivals and which interlock through their boards of directors with the big sources of credit—banks, insurance companies, investment houses, pension and charitable funds, trust funds, ad infinitum—seem to be able to get credit today.

Yet, our productive resources are more than just this close-knit web of big business. Some of our finest products and best citizens are found in the thousands of middle-size and smaller enterprises which are progressively being squeezed out of the credit they so badly need. The mortality of such independent enterprises can lead to further inflation and concentration of power in still bigger business.

Just as the inflation of wages, taxes, and the export of capital threaten to beggar the white-collar classes, agriculture, the pensioners and the service industries, so is the concentration of big business driving a large segment of our population out of small business and into the rank and file of big business, subject to all of the rules of the "club," and you can define "club" either way.

Therefore, the most important domestic problems facing the new Congress are the rising interest costs and shortages of credit which add powerful new inflationary forces to an already hardship situation. There is not only the direct cost of higher interest, but also the reduced productivity that must eventually flow from postponed capital projects.

There are other far more inflationary forces, however, which are ignored by most of our fiscal authorities. Indeed, there seems to be a calculated effort to suppress the facts about inflation.

Mr. George Humphrey, in a recent speech, boasted of the stability of the Republican dollar, implying that the rise in the cost of living under the Democrats was due to, I quote him, "arbitrarily cheap and plentiful money."

Dissenting from this view as a businessman, and not as a partisan, my experience is that easy money under the Democrats encouraged increased capacity and automation which made operations less costly, thus slowing the rise in the cost of living.

If you knock automobile sales down by restricting consumer credit, all you accomplish is to reduce factory volume which, by increasing overhead, forces an increase in selling price.

The same inexorable law operates in housing, furnishings, appliances, and elsewhere; for ours is an economy of abundance, not scarcity, in which prices can only be held down in the face of spiraling wages by increasing both volume and productivity. Only thus can the huge capital costs of automation be absorbed.

Business today must have volume to meet its overhead just as our Federal Government, dependent on income taxes, must have a vital and prosperous economy. It is only through a continuation of recent growth trends that either business or Government can keep from going broke if we go on inflating wages.

Surprising as it may seem to most businessmen, it looks now as though our Federal Reserve has brought the mature economy fallacy of Keynes and Hopkins, long after the Democrats themselves abandoned it; for in all their mummery about controlling inflation through the manipulation of the rediscount rate, I have not heard our fiscal

authorities once mention the real inflationary force, the wage spiral, taxes, and the export of capital, which go on unabated.

Here is a gathering typhoon of inflation beside which the policies of the Federal Reserve are no more than an electric fan; they cannot possibly check, but might start the cyclone.

Wage increases have not been a necessary adjustment to inflation, as they would have us believe, but are its prime cause. Since 1932, wage rates have risen an enormous 320 percent, while the increase in consumer prices has been only 100 percent. Thus, it is plain that wages have led and prices only sluggishly followed.

The only possible way to maintain this favorable relationship if wages continue to be forced up is to still further increase productivity. Tight money discourages it.

And as for the export of our savings, which now threatens to check our domestic expansion on which the defense of the world depends, Republicans were once so high-principled, they said, that they opposed Democrats on a few millions of badly needed relief for the unemployed.

Last summer they bemoaned an appropriation of \$4 billion of foreign relief for Heaven-knows-whom because, as they alleged, it was not enough. Any economist knows why the "handout" overseas, because it does not fill a domestic need, is more inflationary than a "handout" at home.

For example, I would guess that perhaps 25 or 30 percent of our steel production has gone overseas since 1940 in one form or another. The price of structural steel has tripled since 1929. Think how much lower steel prices, to say nothing of wages, might have been if that huge volume had been allowed to influence the price the other way in home markets.

Already Suez has caused our oil producers to talk about jacking up the price of oil. Only weeks ago they were restricting production to keep the price up.

If the oil the New York Central is about to carry to Boston—to take care of the foreign policy mistakes of France and Britain—were allowed to go into our furnaces at home, the cost of living this winter in Harlem and on Park Avenue would be correspondingly lower than inevitably it must now be.

Our fiscal authorities have correctly attributed our capital shortage resulting from these exports of capital to a deficiency in savings, but they behave like stern fathers pointing to our piggy banks; saying nothing about the fact that the old-fashioned American savings that once went into common stocks, bonds, life insurance, and time deposits, continue to be siphoned off in taxes to find their way eventually through foreign war lords, bureaucrats, and entrepreneurs into the Swiss banks and the gambling casinos and wine cellars of the Riviera.

You remember that wry line that came out of 1929, "Where are the customers' yachts?" Now, on those rare occasions when I can make the Mediterranean, I wonder "Where are the Americans' yachts?"

No; business cannot be made the scapegoat for inflation because of its abuse of credit or its failure to save. It has been as frugal in its demands on bank capital as it has been efficient in reducing costs; for we find that our gross national product since 1929 has risen nearly four times as fast as bank capital.

It has been mostly out of corporate savings that this vast expansion in production has been financed, while the Government has plowed under abroad what might have been our individual savings.

Savings, capital, and credit are synonymous. When you export capital gratis in the form of raw materials, wages, or currency, you disrupt the normal channels of trade, penalizing some foreigners while enriching others.

The unfavorable balance of trade which results is reflected in drains upon our bank balances and gold reserves, thus abnormally depleting the monetary expressions of savings here at home and depriving the home economy of exactly those same values in terms of local credit.

It is those shortages reflected in tight credit and higher interest rates which now block our smaller businesses and many municipalities from building sadly needed facilities.

Our money managers flatter themselves when they pretend that they check today's inflation by the orthodox measures which they should have used to stop the flow of credit into the stock market in 1929. It was those 10 percent margins which brought us Keynes and Hopkins; hence most of today's troubles.

Parenthetically, I would like on another occasion to present to your committee the reasons why banks and brokers even today should be prohibited by law from making demand loans on anything so intangible as current market prices, which inevitably must crash with the first bomb.

If it is sound to make a 30-year loan to the United States Steel Corp., why is it not equally sound to make at least a 3-year loan on United States Steel Corp. stock without the usual fine print sell-out clause?

Such a law might avert the next depression. If the Federal Reserve would really check inflation, it would call upon Congress to curb the excesses of labor and taxes. Only thus can our savings meet the capital needs of constantly growing demands.

There is no failure to appreciate the dangers of inflation; for, Mr. Humphrey has described it as—

the cruelest form of theft—a theft with the greatest harm to those least able to protect themselves.

Yet in a Treasury bond advertisement, built around his personal signature and photograph, the Secretary characterizes savings bonds as, "a reservoir of future purchasing power." Perhaps his legal advisers helped him with that word "reservoir"—a receptacle which can be drained down to the last drop—for half of the original purchasing power of these savings bonds has already gone down the drain.

Your congressional concept of truth in securities as expressed in the Securities Act is so sound that I have already urged that it should be expanded to deal with those in Government as well as those governed. Certainly Congress is inconsistent when it allows the Treasury Department to make questionable representations in the sale of government securities which the truth in Securities Act prohibits investment companies from making.

If it is moral for the Government to defraud pensioners to finance overseas adventures and placate labor, why does the Government find it any the less moral to allow a private corporation to mulct them?

To inflate labor at the expense of agriculture, housing, transportation, the service industries, and the white-collar class, all of those



income lags far behind labor's, is also a cruel form of theft; as cruel as it is to strip those who retire of their hard earned pensions.

It is only by such thefts that Mr. Humphrey's boasted honest Republican dollar has been temporarily sustained—to go aglimmering when these tardy segments catch up, as they must, if their wornout facilities and denuded purchasing power are to be renewed.

The alleged benefits of this built-in wage inflation in which most must lose for a few to gain are wholly immoral. And as Mr. Humphrey says, the losers inevitably are those least able to protect themselves.

Already some of our pensioners seek congressional relief and, frankly, they are entitled to it. It is doubtful if our economy, with all the genius of business, can remain vital many years longer, even with further sacrifices by the people, in the face of the imbalances created by the wage monopoly.

One by one the unprotected areas—housing, transportation, the white-collar class, and even many of our municipalities—will come to you for relief; and agriculture, already helped so much, will require even more of your scarce tax dollars.

Then, the philosophy of Karl Marx, as he predicted, will have won the crucial last battle through our own folly, and our monuments to Lincoln, Washington and Jefferson will be overturned.

Those who believe—or pretend to believe—that our present full economy is based on rising wages, lavish defense and careless foreign relief, should be reminded that we spent on our defense establishment in 1929 less than 2 percent of what we spent last year, and foreign relief was undreamed of.

The prosperous twenties were founded on falling prices and taxes, paradoxically accompanied by huge reductions in Government debt—three stimulants time-honored in their integrity, now widely feared as deflationary.

We might have expected our economic defeatists of the school of the "mature economy," still plagued by unemployment after 6 years of the New Deal, to tell us that to avoid a recurrence of 1929 we must accept wage inflation, wartime taxes and a foreign policy of universal meddling; but here in 1956 we hardly expected the Federal Reserve Board to imply that the dire consequences of these policies can be cured by a rise in the rediscount rate. Do they think that we are just country boys at a carnival?

The great depression was not, as many would have us believe, a normal phase of the old-fashioned economy, because the brief downswings of all but 1 or 2 out of our many economic cycles were more salutary in their aftermaths than otherwise.

With new legislation prohibiting the call feature of collateral loans that I urge, it is not a new 1929 crash we have to fear. Rather it is the creeping stagnation which accompanies wage inflation once it necessitates new subsidies, higher carrying charges on the Federal debt and higher taxes.

I am not an alarmist when I warn that it may come to a climax in price, wage, and credit controls; in loss of confidence in the Government debt; and finally in a flight from the dollar—then the printing press and a completely managed economy.

Our freedom, our wealth, our pride in achievement and joy of accomplishment—all will have gone with the wind.

Lest some of you think that inflation and foreign policy are of no concern to a railroad man, let me remind you of this: While our politicians in their subsidy and tax discrimination have held first-class passenger fares since 1929 down to a puny raise of only 18 percent, they have encouraged rail wages to triple. Coach fares are actually lower today than they were 27 years ago.

The big steel companies whose biggest easy-going customer is the United States Government, face no problem in absorbing these wage increases. They raise their prices and their profits the very same day they begin paying the wage increase.

But what about the railroads, on which the steel companies depend? We must endure the mockery of lengthy and costly hearings before the ICC months, even years, after our own wage increases have started running, in order that special and selfish interests who seek to sponge on the railroads by ICC license may have their wishes heard.

These protests have not the slightest relationship to the public interest, but since they lead clear to the Cabinet and Defense Department, they are too powerful for the ICC to ignore.

Our railroads no sooner stagger up from one of these perennial wage increases than they are met by the bludgeon of the next; payoffs to our congressionally licensed monopolists, a process of exploitation of the less-favored unctuously called negotiation.

And what could be more inflationary, more degrading, more destructive of the joy of accomplishment, than a work rule which requires 2 men where 1 is needed? To subvert man's enterprise is to corrupt his divine gift of aspiration, the quality which elevates him from the animals. Crush this precious gift entirely and we become no more than bovine chewers of the cud, easy prey to the voracious and insatiable State, police or patronizing.

Gentlemen, when Russia has most of the manpower of the world, this Nation cannot longer afford featherbedding any more than it can afford, as Congressman Patman has told me, the education of many more technicians and engineers in Russia than we have in our own country.

Chairman PATMAN. Mr. Young, may I interrupt you just a moment, since you mentioned that.

Our committee, I think, was the first congressional committee to go into the question of automation, in November of last year, and we were shocked to learn that the Russians are graduating engineers and scientists, about twice as many this year as in the United States, at least that number.

And the most disturbing and alarming situation was the fact that they are graduating 32 times as many technicians in Russia this year as we are graduating, 50,000 here compared to 1,600,000 there.

Mr. YOUNG. Well, I would like to take some of these surplus firemen in our locomotives and put them over into engineering school where they could do the country some good.

What is the end result to labor of these policies? War, galloping inflation, and eventually forced labor? Who then will be remembered as the friends of labor—those who furthered these policies, or those who warned against them?

If anything can be more inflationary than a wage monopoly it is taxes. Under the Monroe Doctrine our taxes were virtually nothing. Under present policies they eat up a third of the national income. As

a result, consumer prices are grossly higher than they would otherwise need be.

And those who think taxes, the price we pay for our constant failures in foreign policy, do not warp ambition and curb enterprise, have never sought to pry a man out of a good job by a big salary increase. Nor can I blame a family for not wanting to pick up and move just to serve as a conduit to the United States Treasury, and thence to some Greek syndicate.

So little is the material reward left for high attainment, I would pause before advising a young man to put a productive career very much ahead of that of a golf pro. Why should the family doctor respond to calls at all hours from neighbors who practice the organized slowdown and, consequently, yearn for Mr. Nixon's 4-day week?

And speaking of the idle rich, the big houses of the lords of England, who have just missed getting us into the third world war and who are asking us now to pick up the tab for their latest blunders, can be converted into museums without any loss to their economy. Yes; they can go; but we must preserve the material rewards of our pioneers of business if we are to go on enjoying their miracles. If they must be leveled down, let's be selfish about it and wait until their death, as God does.

The last cut of any consequence in the steeply graduated income tax, the joint return, came away back in 1948. It is one thing to work overtime in wartime, or from force of habit; but in this new peacetime culture of universal mediocrity imposed upon us by Mr. Humphrey's tax guillotine, will coming generations aspire to promotion with its accelerating responsibilities at decelerating rewards?

Just as the railroad man cannot forget inflation and taxes, how can you forget your dependence on cheap transportation when its urgency is registered in all the bloody pages of history?

Go back far beyond Suez to the legendary days of Troy whose site, at the entrance to the Dardanelles, dominated the dark waters that flow down out of Europe and Asia, the world's greatest land mass. The lading of ships, however, in those days was mostly light merchandise, and it was not until the last half of the past century, when the rails enabled us to tap our coal, cement, and ore, that heavy industry evolved.

Fortunately, our form of government, so wisely founded, was yet too young to hamstring business after the foreign fashion. Hence our native enterprise, stimulated by the prospect of unlimited and untaxed gain, took advantage of that cheap transportation and our natural resources to create a standard of living that can only be appreciated by traveling abroad.

We can be grateful that this combination of circumstances took form about the Great Lakes and not the Black Sea. Our ton-mile rate by rail is only a fraction of what it is in other countries; explanation in itself of the vast disparities in our standards of living.

Those Americans who loathe capitalism should be confined, say for 10 years, to some of these overgoverned and underrailroaded foreign countries they prod us into emulating.

Penalize Ford, Du Pont, General Electric, with British or French socialized rail rates and service, and their wonder products would wither into a fraction of their present volume, conceding that they could have been achieved in the first place.

It would take 450 truckdrivers to move the coal that can be moved by only 5 men in a 150-car train, and 2 of these 5 are featherbedded. Neither the truck nor the bus could possibly compete with the rails if they paid for their own rights-of-way; nor could our subsidized airports have been brought into being if their steel and concrete had not reached them by rail.

It is only because our harbors and waterways are served by the railways, built and dredged by the taxpayer and protected by our rate-makers, that even water can survive rail competition. The boat not only consumes more fuel, but it requires 34 men to move the ore that 15 men move by rail, and the rail moves it faster.

You would think, then, reward being a function of service, the railroads would be rich. Instead, since 1929 their rate of return on investment has averaged only 3.4 percent, and in no peacetime year since 1930 has it exceeded 4.3 percent, a shocking contrast to the 9.7 percent justifiably enjoyed by all other public utilities.

Because of political pressures from members of the Cabinet and Congress on the Interstate Commerce Commission, and because of the resulting timidity of railroadmen, the traffic of this rich country has not been made to bear its fair share of transportation costs—a sop to the pressure groups which in the end has meant only higher rates and poorer service.

This Republican year, supposedly favorable to business, was ironically not nearly so good for us as our last years under Mr. Truman. Could there be a greater warning against rapidly encroaching Government than this sorry record of our first big regulated industry?

More than one-third of the Nation's freight cars and two-thirds of its passenger cars are over 25 years of age. Many are 35 and 40; and the rust and rot advance. Superimpose a national emergency, and where would we be?

If current rate relief requests are not granted in full, your two largest railways may be forced to stop buying passenger equipment for all time. Already millions of passenger train-miles have been lopped off our mainline schedules.

Yet, in New Jersey and New York we are compelled to run trains some of which average only  $4\frac{1}{2}$  passengers a day, less than the train crew.

The Nation has just faced a shortage of at least 100,000 freight cars, \$1 billion worth, from which nearly every business suffers. To replace every car over 20 years of age would require \$12 billion, and it would pay for itself out of savings.

Large immediate expenditures in many other areas of railroad physical plant would be no less self-amortizing; but how can you borrow at  $5\frac{1}{2}$  percent to renew a plant which earns 3 percent?

A 10 percent decline in our carloadings and most of us would be at the brink of bankruptcy, so small are our reserves and narrow our margin of profit.

And in the face of all these well-known needs of our railroads, there are those who advocate defense and relief expenditures just as a means of keeping our people employed.

Local public servants pressured by selfish and special interests force us to continue marginal rapid transit services of a trolley car type which they themselves have long since abandoned. At the same time, other public servants under similar pressures grant subsidies to

the airways and highways which threaten the continuance of main line trains.

Our revenues in New York State have dropped 8 percent since the throughway was finished a few months ago.

Can such discrimination and regulation by any stretch of the imagination be in the public interest?

What a mockery these protracted and destructive public rate and service hearings, which Congress and our States intended to protect the public, have become in the face of our hazardous financial plight.

Yes, these hearings have been perverted into devices to protect the special interests at the expense of the public interest, as the record clearly shows.

So far has the will of Congress been perverted that the ICC publicly announced, with unconscious irony, that the recent hearings in Kansas City were to be held in order to hear shippers. What on earth do they expect the kind of shipper to say who puts his heel on our 3 percent rate of return so that he may earn 20 percent?

And at the top level, supposedly, of national enlightenment, Congress recently threw out the excise taxes on admissions to movie theaters, but continued them on admissions to passenger and freight trains, the one forced to carry more than 95 percent of our troops and the other more than 90 percent of our freight in the last war.

Imagine, imposing a special excise tax on our only all-weather freight and passenger service, essential to troop and civilian movement, which already loses \$700 million a year on its passenger trains.

The tax on freight is an added inducement to already rich industries, like those Mr. Humphrey came from, to go into self-transportation so that they get richer and the rails poorer. His former companies, as self-transporters by rail, belt, water, truck, and air, save this tax and hence enjoy that much of an advantage over their smaller competitors.

I am told that Mr. Humphrey opposes the lifting of this tax, in surprising contrast to his predecessors, Mr. Snyder and Mr. Morgenthau, who saw that the tax, in peacetime, was not in the public interest.

Cannot those responsible for such follies see that if the most remunerative traffic is skimmed off the rails by the truck and the private carrier, the traffic which the rails are left to carry must finally come to bear an intolerable burden?

This I know: sound railways in America are a hundred times more important to us than the Suez Canal, as is demonstrated by the fact that it is our railroads that now are called upon to carry oil to our ports for delivery to France and England.

Yet, the money to buy equipment is left to the mercy of these mock hearings. Indeed, Mr. Malenkov is smiling. How can the Department of Defense close its eyes to our Achilles' heel, our railroads? They know that current rates are not keeping our physical plant alive, particularly in the passenger field. Yet their own underlings come in and oppose our passenger fare increases in the face of a wage rate which has tripled.

They act as though the Defense Department had no higher obligation to the public interest than a coal operator, some of whom do not have enough judgment to see that if they do not pay fair rates the railroads cannot continue to provide cars with which to ship their coal.

A railroad without cars is as useless as a skyscraper without ele-

vators. Can it be that the Department of Defense has been taken over in the way in which the Carnegie Foundation was once taken over?

Yet, this great rail service that does so much for our defense, at no cost to the taxpayer, has been pauperized and made the butt of politicians, newspapers, taxing authorities, ambulance-chasers, college professors, and Government agencies for a full generation, while its rapidly growing competitors are subsidized and tax-exempted—even rescued by the United States Navy.

The rails being the very core of our capitalistic system, it is not hard to see why its enemies have made them their first line of attack, but it is difficult to see why the Defense Department and the Treasury Department should persecute them. Or do I see ghosts of Harry Dexter White?

Even if Defense and Treasury fail to see, you gentlemen concerned with economic stabilization will not fail to see the importance of strong railroads to the economy and defense of the Nation. If the railroads go, the rest will not be slow to follow.

Forgive me for using the railroads as my illustration. It is only because they are so symptomatic and I am most familiar with them. There are scores of other areas of our economy, such as our schools, in which the deterioration that results from wage and tax inflation has gone about as far.

Our inflationary troubles, then, are not of business, for it is the inflation and abuse of credit by Government, not by business, which threatens to stall our rising standard of living and to strike at the heart of private enterprise.

The miracles of transportation and business have so far checked the degenerative forces of progressively burgeoning Government, but the beginnings of capital shortage indicate that the string has about run out.

We can stop inflation, we can reduce taxes, we can stop squandering abroad our essential resources and the flower of our youth. Indeed, we can return peace to the world.

But we can do these things only if Congress and business join together and sell economic truth and a foreign policy of national sanity. Like charity, the voice of America should begin at home.

For it is as alarming as it is incredible that 61 percent of our high-school seniors, for example, do not believe in the need for profits; 82 percent do not believe we have competition in business. This can only reflect equally misinformed parents—or, are they precocious youngsters only anticipating the economy into which they may mature?

The President of the United States has already urged upon Congress the only constructive transportation legislation ever to originate in the White House. It remains to be seen if Congress will be as constructive as the President in trying to restore sanity to our national transportation system.

Again, forgive me for using our railroads as my illustration.

Chairman PATMAN. That is perfectly all right, Mr. Young, and we thank you for your very interesting statement.

What are the advantages or disadvantages to the alternative way of combating inflationary forces, Mr. Young, which are listed in the chairman's opening statement this morning, if you were here? Were you here this morning when I read it?

Mr. YOUNG. Unfortunately, I was not here.

Chairman PATMAN. Anyway, I mentioned increased taxes and general credit control through manipulation of the interest rate, open-market-policy reserve requirements, and selective credit control applying to specific segments of the credit structure, such as installment buying, real-estate financing, plant and equipment.

In other words, what are the advantages and disadvantages of those three in comparison with the present method that is being used by the Federal Reserve System?

Mr. YOUNG. Well, I would say that almost anything is better than our artificially tightening credit.

Chairman PATMAN. You mentioned a while ago something about the direct cost. It reminded me that if this is a short-run credit squeeze of tight money, as some would like to believe, then it means that during this short run we have still got to have schools, and we must vote bonds and sell the bonds in order to build the school buildings, but these bonds run 30 and 40 years, so it looks rather burdensome, does it not, Mr. Young, to make taxpayers pay higher interest rates for a 40-year period on account of what many of them claim is just a short-run credit squeeze.

They have got to do it for 40 years instead of just a short period.

Now, when you, as a big-business man—you stated that you were a big-business man. Of course, we all know that you are, and you were small business, too, and you know something about both—when you can see in the future that there is going to be a scarcity of credit, and possibly a higher interest rate, would you, using what you consider good business judgment, go into the market and borrow funds in advance of your actual needs, or would you wait and pay the higher rate?

Mr. YOUNG. Well, if I could foresee it surely, I would certainly go into the market and borrow.

Chairman PATMAN. And do you not think that that has caused a tighter money market, the fact that some of the larger concerns, knowing that interest rates are continuing on the way up, are not only anticipating it but, knowing it, they are going into the market and borrowing funds they do not actually need now, but expect to use a year from now or 2 years from now?

Mr. YOUNG. There may be some of that. I don't believe there is too much of it yet, sir.

And on that subject of schools, I would say that the national peril is going to increase rapidly over the next 10 or 15 years or over the next generation, certainly, and that certainly the last place we should economize is in our schools, for the very reason you mentioned, Congressman.

Chairman PATMAN. Yes, sir.

Mr. YOUNG. That we need technicians and engineers badly, and we must have them.

Chairman PATMAN. And we must encourage our school system.

Mr. YOUNG. Yes, sir.

Chairman PATMAN. And we need plenty of buildings.

Mr. YOUNG. Yes, sir.

Chairman PATMAN. Lots of school construction.

Mr. YOUNG. Yes, sir.

Chairman PATMAN. And on the interest rates in particular, Mr. Young, do you not think there are other ways of restraining an

inflationary condition, if there is an inflationary condition, rather than just arbitrarily raising interest rates there across the board?

Mr. YOUNG. Again, I think that is the last thing we should do—

Chairman PATMAN. The last thing we should do.

Mr. YOUNG (continuing). Is to artificially make credit tight in this Nation, because I am afraid that the policies that have already been followed and are still being followed are going to make it plenty tight enough without any artificial tightening.

Chairman PATMAN. The Federal Reserve Board—I believe you have served in the Federal Reserve bank as a director.

Mr. YOUNG. No, sir, that requires a banking invitation and I don't qualify.

Chairman PATMAN. I understand. [Laughter.]

Anyway, the Federal Reserve System—you are acquainted with that—and you know that, for instance, if they wanted to just make credit a little tighter to meet an inflationary condition which they really believed was in existence, they could increase the reserve requirements of banks.

In other words, instead of permitting banks to expand their loans by really creating or manufacturing money equal to \$6 for every \$1 in reserve, as they can do now, they could change that, they have the right to do it under existing law, to where they could only manufacture \$5 to \$1, or \$4 to \$1, or \$3 to \$1.

Mr. YOUNG. Correct; I believe that is true; yes, sir.

Chairman PATMAN. Would that not be preferable to just automatically increasing interest rates?

Mr. YOUNG. Well, of the two, I think it would—well, no, I am not sure that that would be preferable.

Chairman PATMAN. Anyway, that is one of the tools they could use.

Mr. YOUNG. I would say they are equally, they could equally be damaging.

Chairman PATMAN. They could be, I know they could be.

Mr. YOUNG. And equally inflationary.

Chairman PATMAN. But through rediscount rate increases the interest rate is raised immediately.

Mr. YOUNG. Certainly we know that is inflationary, because we know higher interest rates increases the cost of doing business.

Chairman PATMAN. And it comes immediately.

Mr. YOUNG. Yes, sir; I agree with you. I think I would agree with you; yes, sir.

Chairman PATMAN. And the other one is at least a lot slower if it comes.

Mr. YOUNG. There the effect would be several years later, not immediately.

Chairman PATMAN. Yes, sir, several years later.

Mr. YOUNG. I agree with you a hundred percent.

Chairman PATMAN. Now, another thing they have, another tool, is the open-market operations. They can buy and sell Government bonds to make money scarce and dear, or plentiful.

Mr. YOUNG. Yes, sir. I remember very well we embarked on a selling operation in 1953 which knocked Government bonds down to 90.

Chairman PATMAN. That is right.

Mr. YOUNG. Which hurt business.



Chairman PATMAN. And they can do it either way. They can make Government bonds worth more or Government bonds worth less.

Mr. YOUNG. Yes, sir, within limits.

Chairman PATMAN. Mr. Eccles testified—and Mr. Eccles should know something about the Federal Reserve System. He was Chairman longer than any other 1 person; 12 years.

Mr. YOUNG. I think his views on that have been very sound.

Chairman PATMAN. Yes, sir. And he said that the Federal Reserve System could keep the interest rate at any level it wanted to, if it wanted to keep the Government bonds at 2½ percent, it could do it, or 2 percent, or any other rate, by using the open-market operations.

Mr. YOUNG. That was certainly true during his administration.

Chairman PATMAN. Yes, sir.

I insist that arbitrarily increasing interest rates is certainly cruel and brutal in comparison to the use of the weapons they have at hand and are not using.

You know the danger of raising interest rates, because you mentioned about the school construction and about your own business. What incentive have you to borrow money at 5½ percent to earn 4 percent?

Mr. YOUNG. We have reduced our building of boxcars recently just because of the increased cost of money.

Chairman PATMAN. You have? How much would that run into, in dollars, Mr. Young?

Mr. YOUNG. Well, more importantly, it deprives the Nation of boxcars when there is a 100,000-car shortage of boxcars.

Chairman PATMAN. I believe you said \$12 billion would be required to bring the boxcars up to standard.

Mr. YOUNG. Yes, sir. Yes, sir.

Chairman PATMAN. Twelve billion dollars.

Mr. YOUNG. Yes, sir.

Chairman PATMAN. And you have canceled orders, or at least you have not—

Mr. YOUNG. We have slowed down the scheduling of our building of boxcars just because we cannot afford to pay 5½ percent for money when the Interstate Commerce Commission gives us a 3-percent return. It is just that simple.

Chairman PATMAN. Yes, sir.

Mr. YOUNG. If the figures were reversed, we would start building; if we paid 3 percent for money and we were allowed to earn 5 percent, we would cure the boxcar shortage overnight.

Chairman PATMAN. And other utilities, in the position that you are in, of course, they evidently are doing the same thing.

Mr. YOUNG. Well, since they earn 9.7 percent, they will not do it as quickly or as drastically as we are forced to do it; but I am sure their minds operate in the same way—as money gets tighter, they do not make improvements which they would make if money was easier.

Chairman PATMAN. Yes, sir. But all the railroads are in the same position that your railroad is in, I am sure.

Mr. YOUNG. The big passenger railroads are all in the same fix that we are in, and that includes such as the Pennsylvania and New Haven, most of the railroads in the Northeast, where we carry the heavy burden of mail, passengers, and freight.

Chairman PATMAN. As an investor, Mr. Young, with considerable experience in the money market, do you believe that banks and security dealers are able to anticipate Federal Reserve actions and thereby avoid the consequences that the Federal Reserve hopes to achieve by raising rates and causing bond prices to fall?

Mr. YOUNG. Well, I would say there are some influential bankers in New York who might know in advance what the Federal Reserve policy was going to be.

Chairman PATMAN. Again speaking as an investor, do you think it is possible for someone with access to restricted information about the intentions of the Open Market Committee, trading this, to make a lot of money speculating in the Government securities?

Mr. YOUNG. I would say that it was almost inevitable.

Chairman PATMAN. It is impossible to keep secrets like that.

Mr. YOUNG. Yes, sir.

Chairman PATMAN. Just like it is here on the Hill.

Mr. YOUNG. Yes.

Chairman PATMAN. If there are two people involved, why, it is not a secret any more.

Mr. YOUNG. Yes, sir; particularly when so many of these Government officials come out of influential New York law firms with many banking partners and affiliations.

Chairman PATMAN. In connection with that, you see, the person who actually runs the Federal Reserve open market operation is selected by the Federal Reserve Bank of New York. He is not selected by the Federal Reserve Board. He is not selected by the Open Market Committee. He is selected by a board of directors, six of whom are selected by the private banks, and he is placed in that position of running the desk, the open market operation.

Now, that is for the whole Nation. These banks, individual banks, they have no power over that. They have no control at all. The 1935 act made the system of a central bank, and they have practically no power now; and the one person there in New York, selected by the Federal Reserve Bank in New York, has complete control over running these operations, running into billions and billions of dollars a day sometimes, and you do not think that they can keep that information from leaking very well?

Mr. YOUNG. I would think it would be very difficult.

Chairman PATMAN. Very difficult.

You take the bond market, Mr. Young, you mentioned a while ago about 1953, 1954. What can a businessman do to protect himself in a situation we are faced with now, of such uncertainty? He does not know how low these bonds will go. They are already below 90.

In England,  $3\frac{1}{2}$  percent bonds are down below 60, and England, of course, has been following the same kind of hard money policy that we have been following; in fact, very similar. And this interest rate keeps going up and up and up. How can a businessman intelligently plan for the future, faced with a condition like we have right today?

Mr. YOUNG. It is very difficult. It is certainly a great temptation to go to Florida.

Chairman PATMAN. There is certainly no way that you can anticipate what is going to be done.

The Federal Reserve seems to be adamant; they just go ahead and let the bonds go down, interest rates go up. We do not know how far it will go. There is no way to tell.

They claim they are independent, of course. Independent from whom? They claim they are independent from the executive. You know, they seceded in 1951; but they cannot secede from Congress because they are the agents of Congress.

And Congress, realizing that the Members of Congress are responsible for their actions, I imagine will take definite action in the foreseeable future if something is not done to change this trend which is so devastating to the economy right now.

Mr. YOUNG. I think we will be forced to do something about it, sir.

Chairman PATMAN. Senator O'Mahoney?

Senator O'MAHONEY. Thank you, Mr. Chairman.

I am very much interested—

Mr. YOUNG. Mr. Senator, how are you, sir.

Senator O'MAHONEY (continuing). In your paper. I am sorry I was not here at the beginning, but I have been checking back on it before proceeding, and I find many stimulating statements in it.

Mr. YOUNG. Thank you, sir.

Senator O'MAHONEY. The problem which confronts us is undoubtedly one of the greatest that this country has ever faced, and not many people realize it, particularly, I think, in New York.

My questions are intended only to clarify statements which you have made today and previously, and to develop the facts that as a person holding the important position that you do, and having the important experience that you have, can help lay before the Congress and the country.

On the last page of your statement, page 18, I notice 2 or 3 statements which I would like to ask you to amplify.

Our inflationary troubles—

you say—

then, are not of business, for it is the inflation and abuse of credit by Government, not by business, which threatens to stall our rising standard of living and to strike at the heart of private enterprise.

Do you mean by this to place all the responsibility for the abuse of credit, which you find to exist, upon the Government and not on business?

Mr. YOUNG. Well, I wanted to exclude business in the sense of, let us say, productive business. I would not exclude certain monopolistic influences in business, which I regard more as banking influences than business influences.

Senator O'MAHONEY. I see. Well, then, you feel that the banking interests—

Mr. YOUNG. I think banking influences—

Senator O'MAHONEY (continuing). Have contributed a responsibility to this abuse of credit?

Mr. YOUNG. I do. I think, as a matter of fact, most, many of our Government policies, that the responsibility is fully shared by these, let us say, these monopolistic banking interests.

Senator O'MAHONEY. You spoke in your testimony today and previous testimony that you had given Congress, of men—sometimes lawyers, sometimes others—flitting back and forth between the law firms and the business houses of Wall Street and the Government.

Mr. YOUNG. Yes, sir. There is a constant path, well worn, between Washington and New York, between partners of these law firms and banking houses that made it their business to interlock in some of our big industrial corporations, all of which I spelled out in my last appearance before Congress, and gave Congress a chart at that time of how they interlock.

Senator O'MAHONEY. You are referring to your testimony at the hearings before a subcommittee of the Committee on Banking and Currency of the Senate in the 1st session of the 84th Congress?

Mr. YOUNG. Yes, sir.

Senator O'MAHONEY. In June or July?

Mr. YOUNG. Yes, sir.

Senator O'MAHONEY. I was aware of the fact that you were having a proxy fight at that time to gain control of the New York Central Railroad, and that you had testified at that hearing that the banks and investment houses and other railroads had combined against you—

Mr. YOUNG. Yes, sir.

Senator O'MAHONEY. (continuing). In the war to prevent you from gaining control of the railroad by the votes of the stockholders of the railroads.

Mr. YOUNG. Yes, sir. They organized against me, and almost unanimously, and that included the big insurance companies, the big banks, and all the railroads. They operated hand in glove to keep any independent stockholder interest from getting into this railroad field which they had dominated for two or three generations.

Senator O'MAHONEY. In order to get your language into this record, since you brought it up, I would like to read one or two extracts from your testimony. The first one is from page 1459.

Mr. YOUNG. Yes, sir.

Senator O'MAHONEY. You were speaking here of competitive bidding for bonds. You said:

The records on competitive bidding, railroad reorganization and the Pullman case, are as complete as they are revealing of corporate collusion against the public interest.

You meant that, of course.

Mr. YOUNG. Yes, sir; I meant that sincerely, and I think I have said that under oath.

Senator O'MAHONEY. And you still mean it?

Mr. YOUNG. Yes, sir.

Senator O'MAHONEY. "It is indeed shocking," you went on—

that while no two railroads can get together on such constructive things as through service at Chicago—

and since I am a citizen of Cheyenne, Wyo., I may say to you that I would like to have through service from Washington, through Chicago, to Cheyenne.

Mr. YOUNG. The Nation's security requires it.

Senator O'MAHONEY. What?

Mr. YOUNG. The Nation's security, if not your comfort, requires it, Senator.

Senator O'MAHONEY. Well, why don't we get it?

Mr. YOUNG. For the reason I gave you, the reason that you will soon read.

Senator O'MAHONEY. To resume:

It is indeed, shocking that, while no two railroads can get together on such constructive things as through service at Chicago, mechanical refrigeration, or sealed bidders, 131 of them can be brought into unanimous agreement to serve the bankers at the expense of their own railroad shareholders.

Mr. YOUNG. Yes, sir.

Senator O'MAHONEY. You found that to be the case?

Mr. YOUNG. I found that to be true, and I still believe that to be true.

Senator O'MAHONEY. You still believe that to be true?

Mr. YOUNG. Yes, sir; almost, I might make it, 129 instead of 131.

Senator O'MAHONEY. Another paragraph:

Here was the New York Central, America's second largest railroad, dominated by 4 personalities, all bankers, holding among them only 450 shares of Central stock, less than \$2,500 worth apiece, through their subordinates and fellow bank directors. As you see from this chart over on my left, they interlocked with the directors of 14 other railroads, including Central's most powerful competitors, and with 56 other mammoth corporations having assets of more than \$107 billion.

Mr. YOUNG. Yes, sir. It was against the law for me to serve on another railroad, but those bankers can interlock all over the lot with impunity.

Senator O'MAHONEY. You told this story:

Several great insurance companies—

I am reading from page 1462—

through their financial vice presidents, two of whom also served on the board of directors of railroads competing with Central, filed petitions alongside the old Central management in its frantic but unavailing attempt for Interstate Commerce Commission help against us, all to the accompaniment of wide publicity damaging to our cause.

Let me interpolate there and draw your attention to the effrontery of that action of these two insurance companies who had named boards of directors to 17 railroad reorganizations, and the directors of these companies interlocked with many railroads and interlocked with these corporations which interlock with all the railroads, and those gentlemen had the effrontery to come down to the Commission and demand that we be found in violation of the Clayton Act because I once knew Mr. Eaton and had once owned some stock in the C. & O. Imagine the effrontery of them, and compare that with the fact that a Mellon Bank president sat on the Central board when Mr. Mellon himself sat on the Pennsylvania board with another president whom he controlled, of the Pittsburgh Plate Glass Co.

You named the insurance companies.

Mr. YOUNG. Yes, sir.

Senator O'MAHONEY. A little while later you said they were the Metropolitan Life and the John Hancock.

And I would like to say this—

you went on—

I would like to say this, that I had the pleasure of dining at the White House during the proxy fight and President Eisenhower was so determined to maintain neutrality that he asked Mr. Vanderbilt to dine there first. And I discussed the New York Central proxy fight with members of the White House staff, and they said that the strictest orders had come down from Mr. Eisenhower to maintain the strictest neutrality in that proxy fight.

Do you attribute your victory to that intervention?

Mr. YOUNG. Well, I would say this—well, I couldn't say that, sir, but I would say that—

Senator O'MAHONEY. That was only—

Mr. YOUNG. That was a little light atmosphere I was trying to throw in there, sir.

Senator O'MAHONEY. Yes, sir. I so interpreted it. But what I am driving at is to find out whether you still believe that that condition exists.

Mr. YOUNG. I do, and it exists just as dangerously today. And I think it is that influence that is behind our tight money credit, at the moment. I think it is that same group that are behind this policy.

Senator O'MAHONEY. Well, now you see you jump ahead of me. You have given me the answer to the question I was about to ask. I was referring to men in Wall Street coming to Washington in Government and fitting back again. And then I was going to ask you whether you thought that Mr. Humphrey, the Secretary of the Treasury, and Mr. Randolph Burgess, the Under Secretary of the Treasury, who are issuing the bonds with the high rate of interest, are to be listed in that same category of big leaders of business coming to Washington to run the Government?

Mr. YOUNG. They are members of the club, sir.

Senator O'MAHONEY. You are much better than I am—much more succinct and much more direct, sir, in characterizing the situation that confronts us. You are concerned about monopoly.

Mr. YOUNG. Deeply, sir. I think that is the greatest threat we have to the great genius of American enterprise and we have got to curb it in all its forms.

Senator O'MAHONEY. And in this testimony which you gave some years ago—it was not so many—it was 1954 or 1955—2 years ago—you drew attention to the changing character of some businesses.

Once they were family businesses, and later in the "public domain," a phrase which I thought was very apt.

Mr. YOUNG. Yes, sir.

Senator O'MAHONEY. That is a correct statement of your views.

Mr. YOUNG. Yes, sir.

Senator O'MAHONEY. There are corporations now holding dominant positions in the trade and industry of the United States which are managed not by their owners or by their stockholders but by the bankers.

Mr. YOUNG. There is a group of men up there that make it their business to get and secure the control of the biggest business in the country. And they are allowed to interlock freely.

And the real owners, the voice of the owners is kept out. And I say that that kind of bureaucracy is far more dangerous than the kind of bureaucracy they like to criticize, because that bureaucracy does not have to answer to the electorate as the Washington bureaucracy does. At least, we get a chance to change them.

But I don't know of any great corporation in America that ever had to face the stockholders until it happened in the New York Central. And then—

Senator O'MAHONEY. Isn't it a fact that many of these corporations now are endeavoring to change the face value of the stock so as to get it in the hands of small stockholders—they reduce the face value of the stock?

Mr. ZELL. That may be one of their motives, sir. I know that they just hate to have a large stockholder. They just hate to have a stockholder walk into their office and ask them any questions.

Senator O'MAHONEY. Isn't that the case with the New York Central?

Mr. YOUNG. No longer, sir. No, sir. As a matter of fact, the management of the New York Central has me walking into their offices every day. And I ask them a lot of questions.

Senator O'MAHONEY. Then you wish this committee to understand, so far as the New York Central is concerned, the latchstring is always out for the stockholders?

Mr. YOUNG. Yes, sir; it is, indeed.

Senator O'MAHONEY. He is treated as an owner?

Mr. YOUNG. Yes, sir.

Senator O'MAHONEY. Where do your stockholder meetings take place?

Mr. YOUNG. In Albany.

Senator O'MAHONEY. But in the State of New York.

Mr. YOUNG. I want to say there with pride that—this was 2 years after this heated proxy fight—at the annual meeting there last May, despite the fact that many of them voted against me and hated me during the proxy fight, for the first time that I ever knew it to happen, there was not a single dissenting vote in 60,000 shareholders of the New York Central against a single New York Central director.

Senator O'MAHONEY. Let me read another paragraph from your testimony of 2 years ago. This is from page 1467:

To repeat, a vice president of 1 of the 4 banks represented on Central's board who was also chairman of the executive committee of Central's competitor, the Erie, took a leave of absence from his bank to give the Central full time assistance in its fight to prevent our victory which he publicly declared would be a national calamity.

The Central has since cut the cost of transportation \$70 million in 10 months.

Was that the national calamity he foresaw?

Let me ask you, has there been any other calamity under stockholder-office management?

Mr. YOUNG. The only calamity was, sir, we paid \$2.75 in dividends last year and we continuously have paid a dividend since we took control. And the Central had not been on a regular dividend basis under the bankers for 25 years.

We are improving service on the Central. And I want to tell you some of the things we found in the Central were disgraceful. I want to give full credit for what is happening up there to Al Perlman.

Senator O'MAHONEY. Returning to your statement, on page 18 of your testimony today, would you say that the abuse of credit by the Government is the responsibility of the Government itself and not of the business, or by the intervention in directing the Government of men who have come from this category of interlocking banks and directors and producers of materials that have fallen under monopolistic controls?

Mr. YOUNG. Well, sir; I think I had better say that that kind of monkey business I did not include in the productive side of business which I have reference to there, sir.

Senator O'MAHONEY. Further, down on page 18, you say of the students of the high schools, high-school seniors:

Eighty-two percent do not believe we have competition in business.

Do you believe we have?

Mr. YOUNG. I believe that we have in the vast areas of business, sir.

Senator O'MAHONEY. What are the "vast areas of business"?

Mr. YOUNG. Well, I would say that we have it in virtually all small businesses.

Senator O'MAHONEY. Do you realize that many people in the category of small business are complaining?

Mr. YOUNG. They are complaining—they are probably complaining about these big businesses. And to the extent that we do not have competition in these big businesses it is due to this interlocking and there is a lot of that.

And I think it should be eliminated.

Senator O'MAHONEY. They are complaining about the high cost of money, too.

Mr. YOUNG. That affects small business as well, sir. And there the effects of noncompetition in business affect all businesses, small as well as large.

Senator O'MAHONEY. What would be your suggestion to this committee as to the best way for Congress to act to bring about the stimulation and growth of privately owned, as contrasted with collectively owned, private enterprise in the United States?

I ask you that question because you made a very pertinent remark here about the danger that unless these abuses of which you speak are not eliminated we may lose our system—

Mr. YOUNG. Yes, sir.

Senator O'MAHONEY. To others other than the Communists.

Mr. YOUNG. Yes.

Senator O'MAHONEY. What did you mean by that?

Mr. YOUNG. I think that first—one of the things that we must eliminate is this imbalance in our economy created by these perennial wage increases.

Two, I think that we have got to reduce our taxation from a third of the national—

Senator O'MAHONEY. Which is the worst, the wage increases or the credit increases—the interest rates that lie at the basis of all tight money?

Mr. YOUNG. I would say they are equally bad.

Senator O'MAHONEY. Would you reduce wages?

Mr. YOUNG. No. No. On the contrary, now, I do not think you can do that. I would just stop increasing them until these other areas catch up.

I believe—believe me, understand I am in favor—

Senator O'MAHONEY. You are not making the fight on wages?

Mr. YOUNG. No, sir. All I am making the fight on is the constant hiking of wages. In other words, I thoroughly believe with Mr. Ford, what I would like to see is the other areas catch up with labor.

It is the fact that we have a turtle and rabbit here. And most of us are turtles.

Now, I would like to see us all rabbits.

Senator O'MAHONEY. I beg your pardon?

Mr. YOUNG. I would like to see all of us rabbits. When it comes to this wage inflation I'd like all of us to have more money. But—

Senator O'MAHONEY. I suppose that anybody who has anything for sale, whether it be services, commodities or transportation, wants to have a purchasing power?

Mr. YOUNG. That is what I mean, sir. I think it is very dangerous to the economy to throw agriculture out of balance—to throw the



white-collar class out of balance—or to throw our aging out of balance.

I think it is very dangerous to have all of our aged sometime in the next 10 years suddenly find that the money they had from their pension and their savings is not going to keep them.

Senator O'MAHONEY. I remember very well when I was a youngster, in the State of my nativity, Massachusetts, living in a community where a dollar a day was about the customary pay for a wage worker. You remember those?

Mr. YOUNG. Yes, sir. I started out at 28½ cents an hour.

Senator O'MAHONEY. I started out at about \$10 a week.

Mr. YOUNG. Yes, sir.

Senator O'MAHONEY. That—

Mr. YOUNG. But your \$10 probably bought as much as my 28½ cents an hour.

Senator O'MAHONEY. Absolutely.

Mr. YOUNG. Yes, sir.

Senator O'MAHONEY. The value of money as a purchasing medium has constantly declined, has it not?

Mr. YOUNG. Yes, sir.

Senator O'MAHONEY. According to all of the theories it has.

Mr. YOUNG. It certainly has.

Senator O'MAHONEY. So it is probably a question of how we will manage the money, rather than how much the wages will be or how much the interest may be.

It is the question of seeing that no one group gets more than its share.

Mr. YOUNG. There is the point. I would say that if the white-collar class, agriculture, transportation, service industries, the pensioner had all gotten 300 percent increase with labor since 1929, I would be all for it.

And it would not make the slightest difference to anybody if the prices were 3 or 2 or 5 times higher than they were, so long as we all had the same currency with which to buy it.

It is only when one gets more than another that I think that the situation becomes dangerous. And that goes for bankers as well as laborers.

Senator O'MAHONEY. What is the attitude, according to your experience, of the leaders of business in New York, a central city of business activities of the United States, with respect to the existence of monopoly and its bad effects upon our whole economy?

Mr. YOUNG. I think that the officers of the very institutions which are part and parcel of this great banking monopoly disapprove of it and resent it. I know that I found that some of these railroad officers resented the fact that they had to come down here to Washington when the bell rang and help the bankers fight competitive bidding.

But since, so long as they know that this interlocking control has the power to hire or fire them or promote them, they are going to let their true feeling be subordinate to their own personal good.

And I think that you would free, let us say, the General Electric Co. tomorrow, if you saw that no one served on that board who interlocked with any bank or insurance company or any other corporation. And that all of the directors of that corporation were substantial shareholders.

Senator O'MAHONEY. And you are saying in effect then—

Mr. YOUNG. And I think the president of the General Electric Co. would be the man who would be most highly gratified.

Senator O'MAHONEY. You are saying that the board of directors of the General Electric Co. has interlocking directors among its members?

Mr. YOUNG. I would rather say that I would rather not use that as a specific example, but let the chips fall where they may and let us say the XYZ electric company.

Senator O'MAHONEY. I can understand your unwillingness to specify one.

Mr. YOUNG. But I would say I would be surprised if the General Electric did not interlock all over the lot as most big corporations do. And on my chart I think you will find that General Electric there, but I would rather call it here today, say, the XYZ company.

Senator O'MAHONEY. In spite of your successful fight to win control of the New York Central from banker control, you still believe that banker control operates in the country among the big corporations?

Mr. YOUNG. I know it does.

Senator O'MAHONEY. You know it does?

Mr. YOUNG. Yes, sir.

Senator O'MAHONEY. What are we going to do about it?

Mr. YOUNG. Well, I think that the way to cure it is the one I have suggested, that no one should be allowed to serve on the board of one of our great American corporations and serve on any other great corporation board or on any bank, or insurance company board. It is just that simple.

I think that a man can have only one master, and that he should not be allowed to serve on several great corporations. Some of these investment bankers do on the boards of sixty companies.

Senator O'MAHONEY. And you would support legislation which would prohibit any banker or investment banker to sit upon the board of directors of any corporation with which his bank did business?

Mr. YOUNG. Well, I would go a little further than that perhaps. There was once a law passed which prohibited a banker from serving on an insurance company board.

Well, that was all very simple. The banker went on the General Electric board and they then put the president of the General Electric on their insurance-company boards.

It is that kind of thing that you have to stop.

So I would say that you ought to keep bankers, brokers, and insurance-company executives off of any board. I just do not believe any man is going to get—any corporation is going to get a square deal from a banker if the banker sits on the board and makes the deal with himself.

That was the way they tried to operate and did operate until we broke it up with the competitive bidding.

Senator O'MAHONEY. These are the words in which you made the suggestion in your previous testimony, and I am reading from page 1472, paragraph 7 of your suggestion at that time:

Prohibit the interlocking of directors and officers of banks, investment bankers, investment companies, insurance companies, mutual savings banks, pension funds and endowment funds and foundations with or through other large corporations.

Mr. YOUNG. Yes, sir.

Senator O'MAHONEY. That is your recommendation?

Mr. YOUNG. I would amplify that to say that no one should serve on the General Electric board and on the Du Pont board; and on the Du Pont board and on the General Motors board.

Senator O'MAHONEY. Do you think —

Mr. YOUNG. I would like to strike that last out, sir, because of being a former Du Pont man. Let us say on the General Motors board and on the General Electric board.

Senator O'MAHONEY. Thank you very much.

Mr. YOUNG. I correct my statement about Du Pont and General Motors so long as that 30 percent interest is there. That stockholder interest, I think, entitles them to interlock.

But where there is no stockholder interest, I do not think one great corporation should interlock with another, for example.

Senator O'MAHONEY. Am I correct in summarizing your opinion by saying that in your belief the abolition of monopolistic practices would be an effective way of stopping the abuse of credit and of stimulating actual free independent enterprise in the United States?

Mr. YOUNG. Yes, sir. And I would go so far as to say it might straighten out our whole foreign policy. [Laughter.]

Senator O'MAHONEY. Thank you very much.

Chairman PATMAN. Concerning the foreign policy, Mr. Young, I notice you said this, and I will just read the two sentences from your statement on page 5:

Last summer they bemoaned an appropriation of \$4 billion for foreign relief, for Heavens knows whom, because as they allege, it was not enough.

Any economist knows why the handout overseas, because it does not fill a domestic need, is more inflationary than a handout at home.

Under present conditions, big concerns in the United States can get plenty of money for overseas operations. That is correct, isn't it?

I refer to the World Bank, to the Export-Import Bank, its capital wholly United States funds, and the new International Finance Corporation, through those three big organizations, sponsored by the United States Government, they can get unlimited funds, up to billions of dollars, right now?

Mr. YOUNG. Yes, sir.

Chairman PATMAN. To deal with foreign countries overseas or to permit foreigners to have the loans?

Mr. YOUNG. Yes, sir.

Chairman PATMAN. And to make loans to big business and little business in foreign countries?

Mr. YOUNG. Yes.

Chairman PATMAN. But that same service is not available to the people here in the United States.

Mr. YOUNG. The American citizen is getting to be the forgotten man, sir.

Chairman PATMAN. For instance, I know a place where they have a perfect location for a cement mill. They have the natural limestone—they have everything. But you know, the cement people, they are on these boards of directors, too, of these insurance companies, and do you think they can get that loan?

Of course they cannot get that loan. They do not have a chance of getting that loan.

Mr. YOUNG. I know how it operates.

Chairman PATMAN. You have been through it.

Mr. YOUNG. It has been used against me, sir.

Chairman PATMAN. And you mentioned a while ago about the "Club" and about the members of the "Club" and how they operate and so forth.

May I remind you that when Mr. Humphrey came in as Secretary of the Treasury of the United States, he brought with him to run the monetary policy which meant deflation in 1953, bonds going up in 1954 and a few banks making \$260 million by buying low and selling high—he brought down here 5 of the 9 directors of the 1953 directors of the Federal Reserve Bank of New York, headed by Mr. Burgess to be the architects of this monetary policy.

And that is the policy that has made this system so uncertain.

Do not the bankers thrive on uncertainty? Do not they make more money that way by everybody being doubtful about what is going to happen and trying to protect themselves? Is it not better for the bankers and money lenders to have uncertainty than security and stability?

Mr. YOUNG. They are certainly the only ones that make money out of tight credit.

Chairman PATMAN. And the only ones making money out of this high interest. And what I can't understand is out of all of the different methods and vehicles and tools that the Federal Reserve System could have used to fight inflation, if there is actual inflation—I am not saying there is inflation, I don't think there is—and if there is, I am willing to do anything because we do want to stop it—but out of all of the tools that they have, they picked out the only one that would automatically increase, and arbitrarily increase interest clear across the board, in every household in America.

It will unbalance every budget in America, the higher interest rate. Six times they have raised interest rates and six times they must have considered it. "This is the only way we can do this." And six times they have agreed on the method that would unbalance the Federal budget, the State, the county, the city, the political subdivisions, all corporations, individuals, partnerships, even the household budget. Whenever you increase interest rates 1 percent the ultimate effect of that is over \$7 billion annually. Divide that by the number of people we have, over 160 million, and you will find that it costs \$40 a year for every man, woman, and child to have a 1 percent interest rate increase.

Now, that higher interest is paid by them, whether they know it or not. Talk about hidden taxes—this is the worst sort of a hidden tax. If they own a home, they have to pay increased taxes to the city in which they live, because the city is having to pay more interest.

And that is reflected in the tax bill, whatever the person pays. Every utility serving that city is having to increase its rates, because of higher interest. It goes all over the Nation in every home.

I cannot conceive of anything that is halfway as detrimental and destructive to the economic interests of our country as an arbitrary interest increase.

Would you like to make any additional statement?

Mr. YOUNG. All I can say is that it has increased the cost of our running the New York Central Railroad.

Senator O'MAHONEY. May I merely make this comment, Mr. Chairman?

I think it ought to be in the record at this point.

As I remember the statistics of the interest upon the national debt and the appropriations of Congress, the estimated interest on the national debt made by the Bureau of the Budget for the fiscal year 1957, which will be the period terminating on the 30th of June next, will be \$7,200 million.

That estimate was made before the President had recommended the cancellation of all interest upon the payment on the British debt which is presently to be made, and before it was released from the White House that the administration is planning to ask for a substantial expansion of economic expenditures abroad.

It was made before the request for a new loan which was announced last Saturday by the Treasury was contemplated.

So that it is quite evident that the interest upon the national debt of the United States for fiscal 1957 will be much more than \$7,200 million.

Before we became involved in World War II, the entire appropriation—this I would say was for fiscal year 1939—the appropriation for the entire cost of the Federal Government (the legislative branch, the executive branch, the judicial branch, all of the boards and commissions, and all of the services, including the Interstate Commerce Commission in which you are so personally interested) amounted to less than \$11 billion.

And now our interest upon the national debt alone is almost three-fourths or two-thirds of what the entire cost of Government was only 15 or 16 years ago.

The national debt, it was estimated in the papers yesterday, as the result of this new proposed issue, would be about \$278 billion.

The national debt was limited by Congress, by law, to \$275 billion under the Truman administration. The Congress on several occasions within the last 2 years has had to pass special legislation in order to permit the Treasury to go above the debt limit.

The debt of the United States is greater than the national debt of any country or people in all history.

And it is evident now that nobody can predict what the national debt will be for fiscal year 1958. Not only is it planned to make these additional expenditures abroad, but it is also planned to increase the appropriation for national defense.

Guesses upon that from Secretary Wilson and others in the Pentagon are rather vague as to what the exact amount will be. As a matter of fact, the President has gone so far as to prohibit any of the people in the Pentagon from giving out any information with respect to that.

But Congress will receive the information when the budget message is received. I have no hesitation in saying that it will be much greater because of this crisis than was dreamed possible when the Budget Bureau gave out its report just before the election.

But this thing I am quite sure will result from the facts which have been developing with respect to tight money. Unless we find a way by which the Federal Reserve Board will cooperate with the Government in financing the added debt which it seems as though it would be impossible for us to avoid, the burden upon the people and upon the economy will be greater by far than what was estimated.

The effect will be felt by every branch of the economy, from top to bottom. And the big banks, the big insurance companies, will not escape the bad effect, if this is permitted to go on.

I have been creditably advised that the Federal Reserve Board has held 3 or 4 executive hearings with economists—economists from the universities, economists from one group and from another group.

That is a very good sign. It indicates that the Federal Reserve Board realizes that the trouble is at hand.

But one thing, certainly, it seems to me to prove, Mr. Chairman, and that is, that restraint upon monopolistic practices by big business to gain control over all business of the United States must be found and imposed.

Chairman PATMAN. Thank you, sir.

I wonder how many automobile manufactures there were 14 years ago. I notice they only have 3 or 4 now from the last night's automobile show?

Mr. YOUNG. If you will go back 40 years you would find 50 or 60. There has been a constant attrition since then.

So there is almost a straight line.

Senator O'MAHONEY. Some of these automobile manufacturers, Mr. Chairman, are dependent upon the award of Government contracts to exist.

Mr. YOUNG. Correct. Really—really 2 or possibly 3 are able to survive in the automobile business so concentrated has that business become.

Speaking of your point, Senator, this may sound a little fantastic, but I do not believe we would have gotten into World War II had it not been for this banking control in New York.

It is that banking control that endorses these international policies and puts the stamp of approval on them.

And I say that our foreign policy is made more by that international group up there, than it is here in Washington. And we consistently blunder in all of our—the whole foreign policy area.

And I put the blame right up there in this interlocking.

Chairman PATMAN. Do you see any interlocking between the people you speak about and the dollar-a-year men in Washington?

Mr. YOUNG. They are virtually the same crowd.

Chairman PATMAN. Virtually the same crowd?

Mr. YOUNG. Yes.

Chairman PATMAN. Senator O'Mahoney—

Mr. YOUNG. That went for both administrations.

Chairman PATMAN. Yes, sir. I understand.

Of course, we had them under the Democrats, the same as under the Republicans.

Senator O'Mahoney brought up a point I think should be mentioned about the national debt, where it is doubly cruel to increase the interest on the national debt, it is because the national debt probably will never be paid.

In our capitalistic system, which is the finest and best system on earth that we have ever been able to find—and we all agree that it is the best—we must have debt in order to have money.

And we cannot afford to pay off the national debt. It would just cancel that much money and cause hard times.

And until the slack can be taken up by other loans, by other debts, in business or in industry or by the big folks, it would be detrimental to the country to reduce the national debt.

Therefore, considering the expansion, the next expansion and the natural expansion we will have, it is very doubtful that we will ever pay any part of this present national debt.

There is no sincere desire being manifested now to pay it—no effort made, because everybody knows it would be highly deflationary. That is the way to answer your inflation problem, if you have one, is to pay some on the national debt. That will help a lot.

But nobody is suggesting that, because we are keeping this debt in order to have a sufficient medium of exchange. Plenty of money.

And since this is for the convenience of the people only—and that it what it is—certainly, the Government should not be required to pay these excessive rates of interest on it—2½ percent is enough, because it is used for the convenience of the people.

Mr. YOUNG. It is certainly burdensome.

Chairman PATMAN. Yes, sir; it is burdensome. And it is getting more burdensome. Imagine paying 3¼ percent and then imagine going out here and asking these people to continue these savings bond drives, by getting 3 percent, if they keep their bonds 10 years, when they can go in the open market today and buy bonds, the bonds which they will receive 3.69 percent on.

So it is unstabilizing and uncertain and confusing everything.

Mr. Young, we certainly appreciate your testimony and your coming here. And if after reading your remarks, you desire to make changes or additions, why you may do so.

So again the committee thanks you very much for your attendance and testimony that you gave.

Mr. YOUNG. Thank you both.

Chairman PATMAN. The subcommittee will meet tomorrow at 10 o'clock. Mr. Martin will be our first witness and with him there will be the Open Market Committee.

(Thereupon, at 3:55 p. m., the subcommittee adjourned, to reconvene at 10 a. m., Tuesday, December 11, 1956.)

## MONETARY POLICY: 1955-56

TUESDAY, DECEMBER 11, 1956

CONGRESS OF THE UNITED STATES,  
SUBCOMMITTEE ON ECONOMIC STABILIZATION OF THE  
JOINT ECONOMIC COMMITTEE,  
*Washington, D. C.*

The subcommittee met, pursuant to recess, at 10:10 a. m., in the Old Supreme Court Chamber, United States Capitol Building, Washington, D. C., Hon. Wright Patman (chairman) presiding.

Present: Representative Patman (chairman), and Senator O'Mahoney.

Also present: Grover Ensley, executive director; William H. Moore, staff economist; and Reed L. Frischknecht, legislative assistant to Senator Watkins; John W. Lehman, clerk.

Chairman PATMAN. The subcommittee will please come to order.

At the start of yesterday's hearings I made a statement on the background and purpose of these hearings, which I shall not repeat since I understand that you all have had an opportunity to look it over.

I pointed out that this is only one of a series of studies made by the Joint Economic Committee, and emphasized that the determination of monetary policy is an important public function to be exercised in the public interest by public-minded servants.

I pointed out, moreover, that we must guard against the danger of making high interest rates and tight credit a permanent habit in the United States.

Now, Mr. Martin is here. We have with us Mr. Martin, Chairman of the Federal Reserve Board, as our first witness this morning, accompanied by the other members of the Federal Open Market Committee.

Without asking you to go into a complete analysis and giving your reasons, would you say whether you regard the forces in the current economic situation as predominantly inflationary—I will get back to that, Mr. Martin, if you please.

As today's hearings begin, I presume it is safe for us to continue on the assumption that the Open Market Committee and the Reserve authorities are currently pursuing a policy of monetary restraint in line with the policies of the past year or 18 months.

Perhaps you have answered these questions in your statement, Mr. Martin. I have not had the time to examine it. It has just arrived here. But we want these questions answered before you conclude your testimony.



You have supplied us with brief biographical sketches of the present members of the Federal Open Market Committee which I believe should be included in the record at this point, but I think it would be desirable for you to introduce for the benefit of those present each one of the gentlemen accompanying you, Mr. Martin, if you please. (The material referred to follows:)

**BIOGRAPHICAL SKETCHES OF MEMBERS OF FEDERAL OPEN MARKET COMMITTEE AS OF DECEMBER 11, 1956**

**MEMBERS OF BOARD OF GOVERNORS**

**William McChesney Martin, Jr., Chairman.** Effective date of appointment, April 2, 1951. Reappointed effective February 1, 1956. Term expires January 31, 1970. Formerly president of New York Stock Exchange, chairman and president of Export-Import Bank, and at the time of his appointment was Assistant Secretary of the Treasury.

**C. Canby Balderston.** Effective date of appointment, August 12, 1954. Term expires January 31, 1966. Formerly director and deputy chairman of Federal Reserve Bank of Philadelphia, and at the time of his appointment was dean, Wharton School of Finance and Commerce, University of Pennsylvania.

**M. S. Szymczak.** Effective date of appointment, June 14, 1933. Reappointed effective February 3, 1936, and February 1, 1948. Term expires January 31, 1962. Formerly professor, College of Commerce, DePaul University, Chicago, Ill.; officer and director of bank; and at the time of his appointment was comptroller of the city of Chicago.

**James K. Vardaman, Jr.** Effective date of appointment April 4, 1946. Term expires January 31, 1960. Formerly engaged in business and banking in St. Louis, Mo., and at the time of his appointment was naval aide to the President of the United States.

**Abbot L. Mills, Jr.** Effective date of appointment February 18, 1952. Term expires January 31, 1958. Formerly engaged in banking since 1920, and at the time of his appointment was first vice president of the United States National Bank, Portland, Ore.

**James Louis Robertson.** Effective date of appointment February 18, 1952. Term expires January 31, 1964. Formerly special agent of FBI; counsel to the Comptroller of the Currency; and at the time of his appointment was First Deputy Comptroller of the Currency.

**Chas. N. Shepardson.** Effective date of appointment March 17, 1955. Term expires January 31, 1968. Formerly director and chairman of Houston branch of the Federal Reserve Bank of Dallas; and at the time of his appointment was dean of the School of Agriculture of Texas A. & M. College, College Station, Tex.

**PRESIDENTS OF FEDERAL RESERVE BANKS**

**Alfred Hayes, Vice Chairman.** President, Federal Reserve Bank of New York since August 1, 1956. He was engaged in banking activities since 1933 and since 1949 he served as the vice president in charge of the Foreign Department of the New York Trust Co.

**J. A. Erickson.** President, Federal Reserve Bank of Boston since December 15, 1948. At the time of his appointment as president he was executive vice president of the National Shawmut Bank of Boston, having been associated with that institution since 1920.

**Wilbur D. Fulton.** President, Federal Reserve Bank of Cleveland since May 14, 1953. He began his service with the System as an examiner at the Federal Reserve Bank of Cleveland in 1933, advancing through the positions of chief examiner, vice president in charge of the Cincinnati branch, and first vice president.

**Delos C. Jones.** President, Federal Reserve Bank of St. Louis since February 1, 1951. He was in general law practice in Kansas City until 1945, when he was appointed general counsel and secretary of the Federal Reserve Bank of Kansas City.

**Oliver S. Powell.** President, Federal Bank of Minneapolis since July 1, 1952. He has been associated with the Federal Reserve Bank of Minneapolis in various official capacities since 1920, except for his service as a member of the board of governors from September 1, 1950 to July 1, 1952.

**STATEMENT OF WILLIAM McCHESNEY MARTIN, JR., CHAIRMAN, BOARD OF GOVERNORS OF THE FEDERAL RESERVE SYSTEM; ACCOMPANIED BY ALFRED HAYES, VICE CHAIRMAN, FEDERAL OPEN MARKET COMMITTEE, AND C. CANBY BALDERSTON, J. A. ERICKSON, W. D. FULTON, DELOS C. JOHNS, A. L. MILLS, JR., OLIVER S. POWELL, J. L. ROBERTSON, CHARLES N. SHEPARDSON, AND M. S. SZYMCAK, MEMBERS OF THE FEDERAL OPEN MARKET COMMITTEE**

Mr. MARTIN. All right, Mr. Patman.

I would like to say that Governor Vardaman, a member of this committee, is unable to be here today.

Chairman PATMAN. He advised me of his reasons, and I think they were valid and good ones, and he was excused.

Mr. MARTIN. Right.

On my left, I have Alfred Hayes, president of the Federal Reserve Bank of New York, and Vice Chairman of the Federal Open Market Committee.

Going counterclockwise, to my left is Leif Erickson, president of the Federal Reserve Bank of Boston, member of the Federal Open Market Committee.

D. C. Johns, president of the Federal Reserve Bank of St. Louis, member of the Federal Open Market Committee.

Oliver Powell, president of the Federal Reserve Bank of Minneapolis, member of the Open Market Committee.

Wilbur Fulton, president of the Federal Reserve Bank of Cleveland.

Coming to the right side and down toward me, Governor Charles N. Shepardson, of the Federal Reserve Board.

Governor James Louis Robertson, of the Federal Reserve Board.

Governor Abbot L. Mills, of the Federal Reserve Board.

Governor M. S. Szymczak, of the Federal Reserve Board.

And Vice Chairman of the Federal Reserve Board, C. Canby Balderston.

All of these are members of the Federal Open Market Committee.

Chairman PATMAN. You do have a prepared statement, Mr. Martin?

Mr. MARTIN. I have one.

Chairman PATMAN. Would you like to present it first?

Mr. MARTIN. I would like to present it first; and I would also like to say that it encourages me to have these gentlemen here, because it demonstrates that this is not a one-man operation.

Chairman PATMAN. That is right, and you may do it in your own way. And let me see if we can come to this agreement.

Mr. MARTIN. Fine.

Chairman PATMAN. We will have 2 hours this morning, and then we will recess for 2 hours and then we will come back this afternoon, after a recess of 2 hours, and continue on until we finish.

I believe that on the agenda we have you for 10 o'clock, and have Mr. Hayes for 2 o'clock this afternoon, but I think we can very well just go along, all of it together, and make it a continuous thing. Is that all right with you?

Mr. MARTIN. Perfectly all right, sir.

Senator O'MAHONEY. Mr. Chairman, may I ask a question?

Chairman PATMAN. If you please.

Senator O'MAHONEY. Does the statement of Mr. Martin that this is not a one-man operation, mean that the paper you are about to read, sir, is unanimously supported by all of those who surround you?

Mr. MARTIN. I can't truthfully say, Senator, that every word of it has been, but the gist of it is unanimously supported.

Senator O'MAHONEY. There is no important disagreement?

Mr. MARTIN. No important disagreement of any sort.

Senator O'MAHONEY. Thank you.

Mr. MARTIN. On behalf of my associates of the Federal Reserve System I want to express our appreciation for these periodic opportunities to appear before committees of the Congress. The Congress has placed a great responsibility upon the Federal Reserve System—a trusteeship, as I conceive of it, over money.

The Reserve System has always benefited from thoughtful inquiry. These hearings are not merely a public forum—and that all to the good. They provide a means of keeping the monetary machinery of the country abreast of the times. The Federal Reserve Act provides that we shall report directly to Congress and thus, through it, to the country.

The task of the Federal Reserve System, under today's conditions, is to determine the volume of credit that needs to be made available in order to keep the economy running in high gear—but without overstrain.

Too much credit would intensify upward pressures on prices. Too little could needlessly starve some activities. We have to rely on human judgments in this determination. There are bound to be differences in judgment—sincere differences.

We do not undertake—and I do not see how it could be otherwise, short of some form of dictatorship—to say how a given supply of credit shall be allocated.

Experience would seem to demonstrate that allocations of credit determined through the market process are to be preferred to judgments—or guesses—of public authorities, however well-intentioned.

I was told recently of a tongue-in-cheek sign that hung in a Washington office some years ago. It read: "Our guess is always best." It may be that collective judgments expressed through the market process are not always best, but that process is consistent with our heritage and our institutions under which direct governmental intervention in economic affairs is confined largely to broad, general policies necessary to protect and promote the public interest.

At any given time the economy is capable of producing a volume of goods and services limited by currently available resources, human and material. The difficulty throughout this year has been the attempt to crowd too much into a given time period—demand, in brief, has been pressing strongly against the supply of labor and materials.

Creating more money won't produce more things when the economy is running at peak levels. A choice has to be made—and the public in the end has to make the choice of whether we shall have more of this and less of that.

We can have, in a given period, just so many houses, automobiles, household appliances, schools, manufacturing plants, and a myriad of other things, including ships, planes, submarines, and other essentials of defense. Under present conditions, something has to be given up at least for a time.

Throughout this year the combined demand for funds—for credit—coming from virtually all sectors of the economy has been at an all-time high. It has outrun the available supply.

Contrary to some impressions, the Reserve System has not reduced the money supply; in fact, the money supply has continued to increase this year though at a lesser rate than in 1955.

Moreover, the turnover—that is, the velocity—of the existing money supply has greatly increased. Although the so-called tightness of credit is often attributed to an insufficient supply of money, the fact is that the tightness results from the volume and intensity of demand.

The great bulk of loanable funds represents savings of the community made available to borrowers directly or through financial institutions other than commercial banks, such as mutual savings banks, insurance companies, savings and loan associations, private and public pension funds, finance companies, corporations, and individuals.

It is often forgotten that when the commercial banking system expands its loans and investments, it generates new money. When, as has been the case this year, aggregate demands for credit have exceeded savings, the only way to finance them all would be by an even greater expansion of bank credit—that is, by generating still more money.

And, as I have emphasized, creating more money will not create more goods. It can only intensify demands for the current supply of labor and materials. That is outright inflation.

The Reserve System—and it is a nationwide system of 12 Federal Reserve banks with 24 branches having all told some 260 directors representing varied walks of life—is united in the conviction that the best course is to do what the System can do, to restrain excesses arising from monetary causes.

It has been estimated that a rise of only 1 point in the consumer price index, Bureau of Labor Statistics, would cost the American public \$2½ billion a year.

The Federal Reserve System has been devoting its efforts, through varying times and circumstances, to assuring monetary and credit conditions that would help to foster high levels of business and employment, maintain the stability of the currency, and promote sustainable growth in the economy.

The System has sought to keep constantly alert to changes in economic and financial conditions, and to adapt its operations accordingly—leaning against the breezes of inflation and deflation alike, as I have put it a number of times.

Thus, when the economy had a downturn in 1953; the Reserve System acted promptly to stimulate credit expansion to help halt the decline and foster the recovery that began in 1954 and carried through into 1955.

As we moved from recovery to boom in 1955 and on through 1956, and as the economy in general pressed against the limits of immediate capacity, the System took steps to keep expansion of credit within the limits of the growth in resources so as to discourage excesses that would inevitably produce higher prices and severe economic maladjustments.

Focusing more closely on the events of 1956, it was apparent there were positive inflationary dangers inherent in superimposing a mas-

sive increase in business investment on an economy already featuring high utilization of resources and upward price pressures.

In this situation, to supply on easy terms all of the credit desired by prospective investors would have increased inflationary bidding for available resources, especially in the sectors of capital equipment and construction. It also would have involved a rise in the volume of outstanding credit, and in commercial bank credit and demand deposits in particular, that would compound the threat to economic stability and sustained growth.

Despite the restraint on credit growth and spending capabilities imposed by monetary policy, demands in many sectors have risen more rapidly than was consistent with price stability. The price advances that began in 1955, after several years of stability, continued during 1956, as output in a number of key areas pressed against the limits of capacity.

Price increases have been particularly marked in sectors affected by investment expenditures, in machinery and construction lines and, affected in part by them, in metals and metal products.

These are the areas in which the restraint imposed upon current expenditures by monetary policy was, quite possibly, the heaviest. It is in these sectors that such additional demand as would have resulted from easier credit would have been concentrated.

Despite the strength of credit demands, growth in total commercial bank credit was limited to a moderate rate, below the average of the postwar period.

Thus, the increase in total loans and investments of commercial banks in the 12 months ending with October was held to 2 percent, and growth in the privately held money supply—demand deposits and currency—to about 1½ percent.

Restraint on expansion in bank credit and the money supply this year contrasts with the rapid increase that occurred from mid-1953 through 1954, even though loan demands then were generally less active. During that period, policy was directed toward assuring ready availability of credit in the economy generally, and toward creating liquidity conditions favorable to revival and expansion.

In part, the developments since 1954 should be interpreted as a transition from a time of ready availability of resources, reduced demands for credit, and a monetary policy of active ease, to a time of intense utilization of resources, very strong credit demands, and a monetary policy directed to restraint of inflationary forces.

Just now, the year is coming to a close with demands still outpacing savings, with personal income at a new high annual rate of over \$332 billion in October—\$21 billion above the rate a year ago—and international disturbances that could add to further overstraining of our resources.

It is a situation that calls for alertness, as well as prudence and restraint, on the part of Government, business, finance, labor, and agriculture.

Basically, the problem confronting us now—in contrast to that of the early 1930's—is not one of creating millions of jobs overnight to cure mass unemployment, but one of sustaining the millions of jobs we have today and fostering new job opportunities for an expanding working force tomorrow.

Meeting that problem requires that the efforts of all of us be directed to preserving the stability of the economy, and the stability

of the dollar that underlies it, so that we may move steadily along the road to a higher standard of living for all of us.

That concludes my prepared statement, Mr. Chairman.

Chairman PATMAN. Complying with your suggestion that you want to make sure it is not just a one-man organization, I think it would be well at this point to suggest if any member of the Federal Open Market Committee, including members of the Board, have a substantial difference, if they would like to present that, they will be recognized at this time.

If they do not have a substantial difference that they want to bring up, they can either not say anything about it or wait and prepare something for the record. That will be acceptable.

But if either a member of the Board or of the Open Market Committee wishes to be heard in opposition to anything which has been said, the Chair would be very glad to entertain anyone who desires to do so.

I assume it meets with the approval of the Board.

Now, Mr. Martin, I read a statement the other day, I wrote it down, as coming from the Federal Reserve Board. It said the Board, through its control over the supply of money available to banks, has sought to discourage borrowing in an attempt to control inflation. It feels the labor force already is fully employed, and that further expansion in business activity would push up prices.

Is that a fair statement of the policy of the Board at this time?

Mr. MARTIN. I want to say on policy, Mr. Patman, that our policy is adapted from day to day, and that the policy of the Board at the moment is alertness to the general situation.

That has been a policy statement which would generally apply to the period we are coming up to, the year-end money market, and I don't want to in any way forecast what the policy of the Board may or may not be with the money market in the present condition, but I want to point out—

Chairman PATMAN. I did not ask for the future.

Mr. MARTIN. Our job—

Chairman PATMAN. I am asking for the past, if that has been the policy.

Mr. MARTIN. That has been the policy in the past.

Chairman PATMAN. That has been the policy in the past.

Another statement was that the Board felt that if the production of housing was increased by easier credit or easier terms or by making loans available which are not now available, that it would not cause an increase in housing because there is only a limited supply of labor and materials anyway, being fully utilized at this time; is that correct, or not?

Mr. MARTIN. Our feeling has been that the price of labor and materials would be—the price element is such that you would not create, by money, additional housing or any other—

Chairman PATMAN. You would just take it away from other production?

Mr. MARTIN. That is right.

Chairman PATMAN. That has been your feeling in the past?

Mr. MARTIN. That is right.

Chairman PATMAN. You state that you are trying to stop inflation, is that correct, that your activities have been directed in trying to

stabilize the dollar and the economy, and particularly by stopping inflation?

Mr. MARTIN. We have been trying to prevent the gap between savings and investment from being covered by bank credit, and adding to the money supply in a way that would produce upward pressure on prices.

Now, inflation comes from demand, not from costs, you see.

Chairman PATMAN. Yes, sir.

Wait just a minute. Say that again, please.

Mr. MARTIN. I said inflation, in its essence, comes from demand factors, not from cost factors. When the demand exceeds the supply, then—

Chairman PATMAN. When there are too many dollars chasing too few goods, I believe you said.

Mr. MARTIN. That is right. That is another way of saying that.

Chairman PATMAN. Well, you have said that.

Mr. MARTIN. Yes; I have said that.

Chairman PATMAN. Yes, sir.

Mr. MARTIN. Yes, sir.

Chairman PATMAN. Now then, if you have been fighting inflation, just name where the inflation, indicate to us where the inflation, has been. Naturally, we know it is not in the small business, it is not in agriculture, it is not in home building. Where is this inflation that you have been resisting?

Mr. MARTIN. Prices, Mr. Patman, have risen far more than I would have liked to have seen them rise in the last year and a half.

Chairman PATMAN. All right. Let's break that down. What kind of prices? Monopolistic prices, fixed prices, or prices in the open, free market, like agriculture? Certainly agricultural prices have not gone up. Which prices do you mean?

Mr. MARTIN. Well, recently agricultural prices have gone up slightly, but that is a demand-supply situation.

But in the overall economy, as evidenced by the general price index, the pressures on prices have tended upward for the last year and a half.

Chairman PATMAN. And you have been fighting the price increases?

Mr. MARTIN. We don't want those price increases to come about through credit expansion.

Chairman PATMAN. Through credit expansion.

Now, do you feel that in fighting inflation, you have all the weapons or tools that you need to do an effective job as an Open Market Committee or as a Board of Governors?

Mr. MARTIN. Well, we have general monetary controls which we apply. I think there are selective controls, such as housing credit and consumer installment credit, which we had at one time which could be used as supplements, but certainly not as alternatives to general controls.

But in an overall sense, the Federal Reserve Board has at the present time authority which we have been exercising in the field of overall money policy.

Chairman PATMAN. Do you feel that is adequate, Mr. Martin, to do an effective job?

Mr. MARTIN. Well, it is not adequate to do an effective job if the budgetary policy and the fiscal policy of the Government run com-

pletely counter to it, because money and credit policy is only one of the factors, important factors, in the problem.

I think fiscal and budgetary problems are—

Chairman PATMAN. Equally important?

Mr. MARTIN (continuing). Equally if not at times more important.

Chairman PATMAN. In your conferences with the Treasury, and since you have mentioned housing in particular, do you have in your conferences Mr. Cole, who is head of the Federal Housing Administration?

Mr. MARTIN. I have conferred with Mr. Cole once or twice. I have not recently had the privilege.

Chairman PATMAN. Once or twice.

You confer with the Treasury regularly?

Mr. MARTIN. I confer with the Treasury regularly, that is correct, sir.

Chairman PATMAN. Well now, if your object is not increasing interest rates, No. 1, which I am not charging but I think it has resulted in that, but if your object is to reduce the demand for housing, why did you not prevail upon Mr. Cole and the administration to raise downpayments, which they had the authority to do, on homes, and also shorten the term of the mortgages which would increase the monthly payments and certainly retard the production of homes? Why did you not consider that, instead of just arbitrarily raising interest rates, Mr. Martin?

Mr. MARTIN. Well, we have no responsibility, direct responsibility, in the mortgage field or the housing—

Chairman PATMAN. Did you try to do that? Did you try to reach Mr. Cole and try to do that?

Mr. MARTIN. No; I can't say that I directly talked to Mr. Cole; but the Board has from time to time, in our conferences with the Government, expressed its general point of view that in a time like the present, we should be careful.

I want to point out we don't want to reduce the level of housing at all. We merely want to have as much housing and as much of everything as we can have without producing inflation.

Chairman PATMAN. I know. But your statements, your statements, Mr. Martin, do not—of course, they do not contradict your desires or wishes, but they make them impossible.

Mr. MARTIN. Well, it is a complex operation, and what we are trying to do here—

Chairman PATMAN. And your statement is that you have not made an effort to get the administration to stop the housing boom, if you call it a boom, in the way and manner that I have indicated, by shortening the terms of the mortgages, which they have the right to do, or raising the downpayments, which they have a right to do.

Mr. MARTIN. Mr. Patman, in several meetings with administration officials, I have stated that to be one of the desirable objectives, in my opinion. But again, it is not my specific responsibility.

Chairman PATMAN. I realize that.

Mr. MARTIN. And only an opinion that I am basing—

Chairman PATMAN. Mr. Martin, what you have done every time has been to raise interest rates. Now, you mentioned over here that it has been estimated that a rise of only 1 point in the Consumer Price Index would cost the American public \$2½ billion a year.



May I invite your attention to the fact that the only weapon that you have used has been to arbitrarily and automatically increase interest rates, and with the knowledge that a 1-percent increase in interest rates on debts of \$700 billion, means ultimately an increase to the American people of over \$7 billion a year, not just \$2½ billion a year on a 1-point cost of living increase. It means a \$7 billion increase, which amounts to a \$40 increase for every man, woman, and child in America. For a family of 5 it is \$200 a year, in hidden taxes—in hidden taxes—the worst kind of hidden taxes, and that means that purchasing power has been diverted from the purchase of necessary things, conveniences and comforts, and even luxuries of life, to the payment of interest and service charges. I cannot see why you would not try to find some other tool to use, some other weapon to use, which would not be so devastating or destructive to the economy and to the individuals.

Did you try to find other weapons to use, Mr. Martin?

Mr. MARTIN. We have always avoided endeavoring to see interest rates go up. I have repeatedly stated—

Chairman PATMAN. You have raised them 6 times in the last 2 or 3—how long has it been since you raised the interest rates?

Mr. MARTIN. The interest rates were not raised by us specifically, Mr. Patman.

Chairman PATMAN. What is the discount rate?

Mr. MARTIN. The market process—the discount rate is the rate we charge member banks, Mr. Patman.

Chairman PATMAN. I know. You are not expecting us to be that naive. Now, what is it done for? You raise the discount rates to raise the interest rates; do you not?

Mr. MARTIN. We have tried very hard, Mr. Patman, to let the interest rates follow the course of supply and demand, and to see that money was available, but at a price so that we did not vitiate the forces of the market.

Now, when the demand became so much in excess of the supply of savings, there were obviously pressures on interest rates. I would like to see interest rates as low as it is possible to have them at all times. I am not in favor of high interest rates. I want interest rates as low as it is possible to have them without producing inflationary pressures.

But you must remember that when the demand and supply factors, which are always with us, are tipped in the direction of demand exceeding supply, that the saver, as well as the borrower, has some influence and some rights in the economy, and that the interest rate, the role of interest rates, comes into play at that time in terms of a higher interest rate.

Our discount rate has tended to follow the market, not to lead the market, in my judgment. We have attempted minimum intervention in the market, not trying to make the rates.

We do not believe we make business; we do not believe that we make interest rates.

Chairman PATMAN. All right. Let's see.

The President, at a news conference during the election, told a reporter that his administration did not set interest rates. You remember that; do you not?

(The article referred to follows:)

[From the Washington Post and Times Herald, December 6, 1956]

IKE DISCLAIMS ANY ROLE IN FRB CREDIT MOVES

(By Bernard D. Nossiter, staff reporter)

President Eisenhower yesterday disclaimed responsibility for the Federal Reserve Board's credit-tightening moves, declaring that the agency is independent.

He did not comment directly on a reporter's statement that the administration had helped lift interest rates. But he said at his news conference, "The Federal Reserve Board is not under my control, and I think it is proper that the Congress did set it up as an independent agency."

He thus reaffirmed a position he took last April. Mr. Eisenhower characterized a suggestion that he could influence the Board as a "premise that isn't quite correct."

DEMOCRATIC CHARGES

He thereby sought to blunt Democratic charges that his administration had fostered tight money policies hurting local governments, home buyers, small business, farmers and other.

The President's replies dealt with a relationship that has troubled congressional committees.

Legally, the Board is responsible solely to Congress. The President's only formal connection is the appointment of the 7 Reserve Governors to their 14-year terms. The present Chairman, William McChesney Martin Jr., was named by Mr. Truman and renominated by Mr. Eisenhower.

As a practical matter, close links are maintained between the Board and the executive branch. Martin has testified that "in taking any important action, the Board gives careful consideration to policies indicated by the executive \* \* \* in order that its policies and those of the Government as a whole may be integrated to the fullest extent practicable."

Martin lunches with Secretary George M. Humphrey at the Treasury on Mondays; Under Secretary W. Randolph Burgess returns the call on Wednesdays. In between, there are continuous consultations between the Treasury and Reserve staffs. Martin also consults frequently with Arthur F. Burns, Chairman of the President's Council of Economic Advisers.

BOARD'S INDEPENDENCE

But a dramatic example of the Board's independence was displayed in April when it approved increases in discount rates despite administration opposition. The discount rate is the charge paid by commercial banks on loans from Federal Reserve banks.

Both Humphrey and Burns questioned the move before it was taken. The President's economic aide, Gabriel Hague, was present at one of these talks. Secretary of Commerce Sinclair Weeks and Secretary of Labor James P. Mitchell criticized the rate rise later.

When the rate was raised again in August, the administration maintained a discreet silence, although it is believed it approved.

In a speech Thursday, Burgess pointed to the heavy loan demands and said if the Federal Reserve "encouraged an expansion \* \* \* the result would be inflationary." He added that "too freely available loans would make matters worse by encouraging even more feverish bidding for scarce resources at higher and higher prices."

While discount rate changes which affect all other rates get major attention, a major Federal Reserve influence over money supply today is achieved through its open market operations. By buying and selling Government securities with newly created money, the Board adds or subtracts to commercial banks' reserves. Since banks must keep a specified portion of their deposits on reserve with the Board, their power to lend depends on the amount of these reserves.

Mr. MARTIN. I think I probably do, yes, sir.

Chairman PATMAN. And you also remember that he had to accept the interest rates that you establish at the Federal Reserve. You remember that, do you not?

Mr. MARTIN. Well, I would have to have the President's statement directly in front of me. But, regardless of who said it, the interest

rates are not set apart from the forces of the market. If they are, we are not—

Chairman PATMAN. Well, the President thinks so.

Mr. MARTIN. What?

Chairman PATMAN. The President thinks so. He thinks the Federal Reserve establishes the rates.

Mr. MARTIN. Well, I won't comment on the—

Chairman PATMAN. He said he was not responsible because the Federal Reserve establishes the rates, and I think everybody else thinks the Federal Reserve establishes the rates. I think so.

And Mr. Eccles testified one time—I think he knows a little bit about the Federal Reserve System—he said that you could establish the rate at 2½ percent on Government bonds and keep it that way indefinitely if the Federal Open Market Committee had the same power it has now, just keep it there indefinitely.

Mr. MARTIN. Mr. Patman, as I have testified before, we could do that if we want to depreciate the dollar at the same time.

Now, I assume we are trying to have a dollar whose purchasing power is maintained in the interest of all of us.

Chairman PATMAN. Certainly.

Mr. MARTIN. The little man, the pension fund, the saver.

Chairman PATMAN. But in doing that, we do not want to create more injustices and inequalities and discriminations; and the view of many people right now is that this is creating more injustices and inequalities than necessary.

You have raised this rate six times, Mr. Martin.

Now, the first time, did you seriously consider other tools and methods that you had to deal with it, and without raising the rate?

Mr. MARTIN. Well now, again, we are not responsible or we have no direct authority in the field of the budget or fiscal policy or other instruments outside of the money and credit field. But I insist that in raising the rate, the rate was moving up—and don't forget, this is the rate at which we permit banks to borrow from us.

Chairman PATMAN. That is right.

Mr. MARTIN (continuing). The rate was moving up in response to the demand for credit.

Now we are living in a period of prosperity, and the problems of prosperity—I regret any injustices or inequities that occur at any time in the community, but the economic problems of prosperity are frequently more difficult than those of adversity.

I am awfully glad we are wrestling with the problem of prosperity, however, and not with the problems of deflation at the moment, but these inequities and inequalities we always regret. What we are dealing with is a highly prosperous economy, and we are trying to serve the interests of all of us by having a dollar which we believe underlies everybody's stability and which is of benefit to the little man as well as to the big man.

Chairman PATMAN. We do not argue with you about your objective. We are all in accord with your objective, Mr. Martin.

Mr. MARTIN. You and I are in complete agreement with our objective.

Chairman PATMAN. The only argument we have with it is the method used.

Mr. MARTIN. The method.

Chairman PATMAN. In other words, a lot of people think you are just doing it to help the money lenders and the bankers. I do not charge you are doing that at all. I think you are acting conscientiously and sincerely.

Mr. MARTIN. Right.

Chairman PATMAN. But at the same time, when you are doing it six times and you never can find any other method, there is a lot of corroboration to people who just want to make that charge.

Mr. MARTIN. Well now, let me just make one comment there, Mr. Patman, because you and I are seeking the same objectives.

Chairman PATMAN. That is right.

Mr. MARTIN. During the last year and a half, we have had a steady increase in the gross national product, and tight money, so-called tight money, which has been an excess of demand over supply, has not been a sign of bad times or of disaster or of collapse.

It has been one of the strengths in our economy, an indication that we could have rising interest rates and that the saver could benefit as well as others, and that the economy could go ahead.

At no time have we wanted to see the economy strangled or the standard of living reduced. We have tried to induce saving and to reduce spending so as to sustain our prosperity.

Chairman PATMAN. You have not exhausted all your methods by any means, to handle this thing without increasing interest rates, if I know anything about it at all.

You take, for instance, the margin requirements, although it is a minor matter, yet if you have inflation the first thing you want to do is to make your regulation so that people cannot speculate in the stock market, because that is certainly something which creates an inflationary condition.

That is number one. Of course, it is small, I will admit that.

Mr. MARTIN. We made two changes in margin requirements.

Chairman PATMAN. I know, but not lately, not lately.

Mr. MARTIN. But also, the volume of credit in the stock market has—

Chairman PATMAN. I say it is not a major one, but if you were really fighting inflation, that might show that you are not as much interested in that portion, you are not willing to stop that part of inflation; that you are willing for that to go ahead.

Mr. MARTIN. We don't think this—

Chairman PATMAN. We have from 4 to 6 billion dollars in the banks of the country at all times without interest. Now, if you want to stop inflation, why is that money not withdrawn? There is no reason for it being there, anyway, with the use of the Federal Reserve for that purpose, to take care of any tightness in the banking system. It is not necessary. They are not needed. They are not drawn on—from 3 to 6 billion dollars there at all times.

If you are fighting inflation, why do you not have that money withdrawn, because as it is, it is a basis for an expansion of six times that much in new money, and that is very inflationary. Yet you let that go ahead. You do not say a word about that, and the stock market; but you jump on the home builders and the small-business man and agriculture.

You talk about farm prices going up. They haven't gone up to the farmer; they have gone down for the farmer.

Mr. MARTIN. Well, I pointed out the demand-supply situation in farm products, and the—what we have tried to do is to let the forces of supply and demand have some play, and intervene to a minimum in the market.

Chairman PATMAN. I am talking about methods that you could use. You could suggest more taxes. That is the best thing against inflation.

Mr. MARTIN. Well, I have—

Chairman PATMAN. Or you could reduce the national debt. That is a good thing to stop inflation. And you have not suggested either.

In other words, the Board has arrived at only 1 conclusion, high interest, every time, 6 times—high interest. And you never considered any of these others, so far as I know.

That is what I am asking you, if you considered the taxes, reduce the national debt, reserve requirements. You have the power. It has been used by the Board a number of times. Reserve requirements; a good method.

Mr. MARTIN. Well now, take reserve requirements—

Chairman PATMAN. Let me name them all first, and then you can—if it is all right with you, Mr. Martin.

Mr. MARTIN. Yes.

Chairman PATMAN. And then the open market; it is a natural. You can do anything with the open market. You have unlimited power to buy and sell securities; you can make the money tight, money easy. You have complete control over it, and you have the Bureau of Engraving and Printing over here to back you up in it.

And not only that; these housing payments can be changed, and you have a number of ways.

But as it is now, if you make it hard for everybody by raising interest rates, the inequalities and injustices, the way I see it, are that the little man is hurt, the farmer is hurt, the home builder is hurt, but the big-business man who is expanding about 35 or 36 billion dollars a year is not hurt at all. He is going right ahead. He is not stopped for the reason that he has retained earnings, which is costless capital to them. He has depreciation. And then he can go into the banks; he can see that money is going to be tighter, and a prudent businessman will go into the bank and say, "Money is going to be tighter. I am going to tie up some funds for the next year or two." That is what they all do.

That makes it harder on all the other people. So it looks like you are favoring the big-business people who can get the benefit of all this; and the rank and file over the Nation are harmed and hurt by it.

Mr. MARTIN. Well, now, would you like me to comment on those, Mr. Patman?

Chairman PATMAN. Yes, sir; if you will. [Laughter.]

First, here is what I want you to comment on. I want your comments on why, every time, you just found the only weapon to use was to raise interest rates, and you could not at any time use one of these others.

That is what I would like you to comment on, in particular.

Mr. MARTIN. Well now, I want to start by saying that fiscal authority is not ours, and the budget authority is not ours. I have discussions with the Secretary of the Treasury in those fields, but those are important devices that can be used that are not within the control of the Federal, and I am limiting my remarks to the authority and respon-

sibility of the Federal Reserve, not to the whole gamut of devices that can be used.

Now, we have tried to approach this with a sincere desire to build as high levels of employment and as high a standard of living as is possible, recognizing that we have a responsibility in the money and credit field here, but that we are not all-controlling; that business has got to make its own decisions and develop its own technology.

Let's take the items that you suggest. We have operated in the open market—

Chairman PATMAN. You have what?

Mr. MARTIN. We have operated in the open market consistently.

Chairman PATMAN. But only in short-term securities.

Mr. MARTIN. We have tended to confine our operations to short-term securities.

Chairman PATMAN. How long have you confined your operations to short-term securities and not gone into the long-term market at all?

Mr. MARTIN. With very few exceptions, for a period of several years, because we have preferred to deal in the nearest equivalent to money that there is, so as to have the minimum of interference in the market itself, give the market an opportunity to have as much of a play as possible.

Let's take reserve requirements. Supposing we had, instead of raising the discount rate, supposing we had raised reserve requirements. We would have put much more pressure on the market. We would have forced interest rates higher.

Chairman PATMAN. It would not have automatically done it, Mr. Martin.

Mr. MARTIN. Almost automatically.

Chairman PATMAN. It would have been gradually in certain areas. It would not have hit every area at the same time.

Mr. MARTIN. Oh, yes; in my judgment it would, Mr. Patman. It would have been a blunter and a more severe instrument than the modest adjustments that we made in the discount rate, permitting the money supply to expand so that money continued to be available, but that the cost of it rose gradually in terms of the demand for money.

Now, if that demand slacks off, why, the interest rate will tend to go down also; and if the demand continues, it will go up.

Now the minor adjustments we have made through our open-market operations: We have been consistently and persistently in the open market trying to keep our operations to a minimum, but to see that the money supply had a reasonably steady flow.

That is why we avoided in this period the more blunt instrument of increasing reserve requirements. We want the banks to have adequate reserves. We do not want to starve the economy, but also we don't want this gap between saving and investment to be closed by bank credit, because that endangers the solvency of all of us, and is bound to have an impact.

Chairman PATMAN. All right.

Now, on that bank credit, the other day you authorized an increase to 3 percent in the payment of interest by commercial banks on savings and time deposits.

Mr. MARTIN. Yes.

Chairman PATMAN. Well, now, I do not see how you could consider that meeting and trying to stop inflation, because, No. 1, whenever

you raise it you induce people who have their money in a Federal savings and loan to bring it from the Federal savings and loan, where it can only be loaned 1 time, to put it in the savings department of a bank where it can be loaned 20 times, do you not? And not only that, you cause a race between the savings and loans and the commercial banks on the interest rates that they will pay, just like you have got it now on the housing loans; you have got the FHA in competition with the Veterans, raise one and then raise the other. You have got a race on between the savings and loans and the commercial banks.

How does that help to fight inflation, Mr. Martin?

Mr. MARTIN. Mr. Patman, that regulation Q had not been changed for roughly 20 years, as you know.

Chairman PATMAN. I am talking about the present situation right now, when you are fighting inflation.

Mr. MARTIN. All right. I welcome your interest in that as to whether it will fight inflation or not. We have to experiment a bit and see—by “experiment,” I mean we are not absolutely sure, ourselves, what will be produced by that adjustment.

But no change had been made in that rate for a period of about 20 years. Now, this is a permissible rate. The banks do not have to pay the 3 percent. This is a limit which they can authorize, or not, as they see fit.

But in 1933 and 1935, in order to protect the solvency of the banking system, we eliminated the payment of interest on demand deposits, and I think that should be retained.

Chairman PATMAN. Well, the law did that, Mr. Martin.

Mr. MARTIN. The law did that. I didn't mean the Federal; I meant the law.

Chairman PATMAN. I think it was just put in there for the emergency, and it has remained there ever since. I do not think it was ever intended to stay on the books.

Mr. MARTIN. Well, I think it has some advantage, but when you come to the time and savings deposit area, certainly the interest-rate structure has changed in the last few years, and to deny banks that want to pay more interest the right to pay rates that would be more in line with the current rate seemed to us to be an unwarranted intrusion on our part in their managerial capacity, and we felt that we were warranted in doing that.

Chairman PATMAN. For that reason.

Mr. MARTIN. Now, it may create some of the problem that you are talking about, and I welcome and share your apprehension as to whether it might not—it may not achieve all of the things that we think of it.

But our purpose there—and I am inclined to think in the long run it will—our purpose is to reduce spending and increase saving, with a little higher rates.

Chairman PATMAN. All right, I am going to ask about that later.

Mr. MARTIN. All right.

Chairman PATMAN. At this time I want to ask other members of the Board if they are in accord with your statement that the Federal Open Market Committee should only engage in buying and selling short-term paper, and not engage in long-term paper.

Mr. MARTIN. Well, any member—

Chairman PATMAN. If all members are in accord with you on that.

Mr. MARTIN. I won't speak for all the members. They are at liberty to speak for themselves.

Chairman PATMAN. Is there any member who wishes to be recognized on that point?

Mr. HAYES. Yes, Mr. Patman. I would just like to say this: As you know, I am brandnew in this System. I haven't had more than, much more than, 4 months to get acquainted with it.

I am aware, in a general way, of some of the discussion that has gone on in the past on that subject. But I certainly haven't had an opportunity to form any strong conviction on it.

I would like to add this: that in my observation during these months, the present policy of sticking to, practically sticking to, short-term securities has worked very well. There has been no occasion that I have seen to bring up the point.

It doesn't seem to me that it has been a practical consideration. I think things have worked well under the present technique of short-term issues.

Chairman PATMAN. All right. Thank you, Mr. Hayes.

One other point, and I want to yield to Senator O'Mahoney, because he has a crowded schedule today and he wants to ask some questions.

Mr. Goldenweiser was recognized as one of the greatest experts of the Federal Reserve System; was he not, Mr. Martin?

Mr. MARTIN. He was one of the top men.

Chairman PATMAN. Dr. E. A. Goldenweiser. And his writings and views are always respected by those in the banking fraternity.

Mr. MARTIN. Always respected; but Dr. Goldenweiser was not always infallible, any more than any of the rest of us.

Chairman PATMAN. You are anticipating what I want to read. [Laughter.]

You see, Dr. Goldenweiser said in this book on Banking Studies; he said:

It is generally true that a period of very high interest rates is followed by a business recession, while a period of low interest rates is likely to be followed by business recovery.

Now, where that is important—just like some of the businessmen here testified yesterday, that a prudent businessman, when he can see rising interest rates, goes in and borrows money in advance. Sometime you are going to reach the top; we do not know when it will be.

I want to ask you about that after Senator O'Mahoney gets through, but sometime we are going to reach the top, and then it is bound to be just like Dr. Goldenweiser says here, there is going to be a recession, because as you start down people will not be anxious to borrow funds, because they will pay more for them by borrowing them in advance; they will be anxious just to hold tight, sit tight, and wait and see how low they finally go, and this will tend to be a depressing situation.

Do you not agree to that?

Mr. MARTIN. Well, let me comment on that, Mr. Patman. If we think that the Federal Reserve Board, or any other agency of Government, has the power to eliminate all recessions in the economy, I think we are making a serious overstatement of our ability. Recessions come from a great many causes, among them being overcon-



fidence and incompetence and inefficiency, and all the other factors that human beings engage in that lead to maladjustments.

Now, those who attach so much importance to monetary policy as to think that it will destroy the economy and create a recession have more faith in monetary policy per se than I have, and they have less faith in the economy than I have.

It is my conviction that, with the normal ingredients of growth which we have in the economy today, and with the human fallibility of people such as we have, there may be mistakes made in money and credit policy from time to time; but that, as long as we provide a reasonable availability of funds, the demand and supply factors in the economy are such that the ingenuity and the ability and the competence of the American businessman will be able to overcome those mistakes, and that we will rebuild and go back up.

Now, I have a great deal of faith in the American economy. I don't think any of us has found a means of pulling a lever to make these adjustments.

You remember that you and I discussed the 1953-54 recession at length. Now, regardless of whether the Federal Reserve, and the Treasury had been perfect in their handling of the money market, and I don't think we were, as I testified before you, I still think there would have been a recession at that time, because there had been an ebullience in the economy in the post-Korean period which had to be corrected; it had to be corrected by the minor recession, inventory recession, that we had, because these forces of demand and supply are the only means we have —

Chairman PATMAN. You are overlooking higher interest rates, too.

Mr. MARTIN. That adjustment was made by the market. If business starts declining actively in this country, interest rates will start declining also. I hope it won't.

Chairman PATMAN. Let me make this statement; I want to yield to Senator O'Mahoney.

I am not objecting to the unavailability of money so much as I am to the fact that only a few people can get that money; and I am not objecting to the fact that construction money is not available so much as I am objecting to the fact that only a few people can get that construction money, and it is not for home building, it is not for small business, and it is not for agriculture; it is for the people who are spending for plant and equipment and who are getting their funds mostly from the consumers in the form of high prices.

I want to yield to Senator O'Mahoney.

Senator O'MAHONEY. Thank you, Mr. Chairman.

May I say first that I feel personally very grateful that all of the members of the Board and your associates have come to us today, Mr. Martin, to testify with respect to this problem. I think that there is probably no problem, save only the Middle East problem, that demands more public attention than this one.

That explains why television wanted to take your picture this morning while you were testifying.

In preparation for this hearing, I hastily sent out, toward the end of last week, a letter to the president of every bank in the State of Wyoming, in order that I might have the benefit of the advice of these gentlemen with respect to the problem.

I am not going to read all of these letters to you. I am going to read extracts from only two.

The first one which I choose comes from a banker whom I have known many years, in an agricultural area, and I read his because he is a Democrat, a riproaring Democrat, and a good supporter of mine. Now, this is what he says:

I have given this matter consideration, and in my opinion the Federal Reserve Board is taking the proper steps. A runaway inflation, probably followed by a bust, would cause more suffering and dislocation of business than will likely result from the policy of tight money now being pursued by the Federal Reserve Board.

I thought it might make you feel good if I should read that to you at the start. [Laughter.]

Now I am going to read an extract from a Republican banker [laughter] who takes a good deal of interest in politics. Some people seem to think there is a difference between politics and business and between politics and government; but, of course, under the American system, politics is only the art of making the Government do what the people think the Government ought to do in their best interests.

Now, this is the Republican banker. You see, I refrain from giving the names, but I will be glad to show the letters to you personally.

Mr. MARTIN. Right.

Senator O'MAHONEY. I have not received all of the letters yet.

A look at the statements—

I am reading now from this letter—

A look at the statements of commercial banks throughout the Nation will reveal that the relative percentage of deposits they have invested in Government securities is going down, and the amount of funds invested in loans is going up. In other words, our banking system is becoming less liquid.

It would be bad indeed if the time should arrive when, because of this stringency, the banks will be forced to resort to selling Government bonds on the present market in order to provide cash for their deposits.

These extracts I have read are just for the purpose of having a little interlude here before I refer to some of the statements made in your testimony, Mr. Martin, and some of the testimony which was offered to us yesterday.

I would like to ask you to turn to page 4 of your statement. In the middle of the page there is this paragraph:

The System has sought to keep constantly alert to changes in economic and financial conditions, and to adapt its operations accordingly—leaning against the breezes of inflation and deflation alike, as I have put it a number of times.

Now, what are the technical steps which you take to keep alert to the changes throughout this vast country of ours?

Mr. MARTIN. Well, every 3 weeks, and sometimes oftener, Senator, the Open Market Committee meets. They have economists in the 12 banks and the 24 branches that are reporting to them constantly. This committee meets as a committee of the 7 members of the Board and the 5 members of the Open Market Committee, and also the other presidents of the Reserve banks come in to those meetings. They do not have a vote, but we ask them to come in, also.

It places a particular hardship on those in the Far West, from San Francisco or Texas and other places, who fly in, but they have been very regular in their attendance.

We review, we have a Department of Research and Statistics in the Board, and we review all these reports that we are getting daily, and go over them and try to assess them, evaluate them, and try to bring to bear all of the best thinking that we have in the System.

We do that formally every 3 weeks.

The head of our Department of Research and Statistics is doing it daily. We also have directors from all of these banks. There are 12 banks and 24 branches, roughly 260 directors. We ask those men to send us, either to the Board or through their local Reserve bank, any straws in the wind that they see, because we are dealing with the future as well as present, you see.

Our statistics at the present may be very good, but there may be signs of danger in the future. So that we are trying to bring in, to get as many straws in the wind as we can.

We also have a Federal advisory council. Mr. Fleming, here in Washington, is the president of that. That is composed—that is a statutory group which is—

Senator O'MAHONEY. You mean Mr. Fleming, the president of the Riggs National Bank, or chairman of the board?

Mr. MARTIN. Of the Riggs National Bank, or chairman of the board.

Senator O'MAHONEY. We have several Flemings in the Government. This man is outside of Government?

Mr. MARTIN. That is right.

And this is a statutory group that was set up in the Federal Reserve Act. They are 12 men. They meet with us quarterly, and we ask them to send us any straws in the wind that they get.

Senator O'MAHONEY. Now then, Mr. Elliott Bell testified yesterday and expressed the opinion that the tight-money policy, so-called, has been injurious to the building of homes, it has been injurious to small business, it has been injurious to the building of schools by municipalities and local districts.

Has that been reported by your various members?

Mr. MARTIN. We have had constant comments on that, on those points, and there are differences of opinion.

Senator O'MAHONEY. I felt sure that, of course, you had the information about it.

Now, is it your opinion that if the high-interest rate on school bonds prevents communities and States and school districts from building schools which the schoolchildren of the Nation need, nevertheless you should follow a policy which would keep the rate on such bonds up?

Mr. MARTIN. Well, Senator, the point there is whether it would help to have a school issue financed, say at  $3\frac{1}{4}$  percent, and then, after the money was raised, to have the price of the materials that go into that school increased by, let's say, 15 percent?

Senator O'MAHONEY. Is it a necessary conclusion that they would increase?

Mr. MARTIN. Certainly that is the tendency—if the demand for credit—if there is intense utilization of resources, certainly that is the tendency. And it is happening all around the country.

Senator O'MAHONEY. I come from a State the resources of which have not begun to be developed.

I can say that for the whole Rocky Mountain area.

I can say for Texas that the resources of that State have not been developed.

Would it be inflationary if schools could be built to make a new demand upon those resources?

Mr. MARTIN. I am completely with you, Senator, in believing that the resources of this country have scarcely been tapped. It is a matter of time and in the way they are tapped, the business process.

Recently—I will give you one example on the school issue, since you have raised it, that came to my attention several months ago—in the State of Tennessee, a school issue could be financed in one place at 4 percent.

Actually they were limited by law to  $3\frac{1}{4}$  percent. I think that school issue would have done well to have taken the 4 percent money. And I think this has happened in hundreds of other places, if the demand for the school was there. Or they should have deferred it until a time when perhaps the cost of labor and materials may not be so rapidly rising.

Senator O'MAHONEY. Mr. Levitt, of New York State, testifying before our committee yesterday, said that there was a substantial amount of school building that had been postponed because of this high interest rate.

And in the New York Times of this morning on page 46, I find a story headed, "Employment Dips 900,000 in Month. Decrease is Almost Entirely in Agriculture. Number of Jobless up 550,000."

If it be true—and I think these are official statistics—that unemployment is beginning to appear, perhaps, it ought to be a signal to your Board that a change in policy is necessary.

Would you think so?

Mr. MARTIN. I certainly think we should be alert, Senator. And as I say, those are the forces in the economy that in my judgment are, in the long run, controlling.

I have a chart here which Mr. Young gave me on the cost of apartments and buildings, how they have been rising, which you might like to have for the record just as a matter—

Senator O'MAHONEY. Which Mr. Young?

Mr. MARTIN. Mr. Ralph Young, the head of our Department of Research.

Senator O'MAHONEY. Not Robert Young?

Mr. MARTIN. No, it was not. [Laughter.]

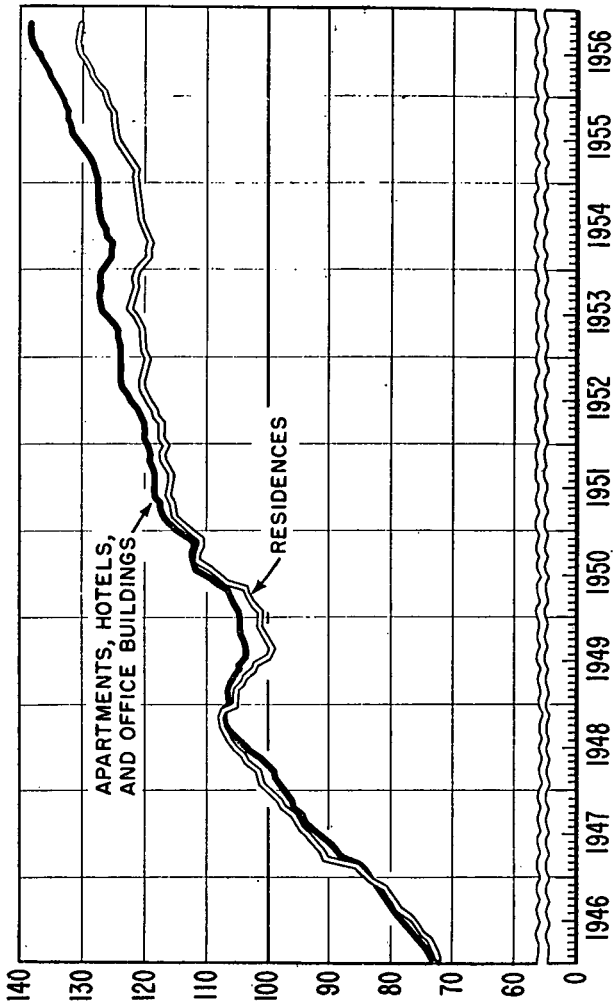
Senator O'MAHONEY. Now then, may we keep this?

Mr. MARTIN. Oh, certainly. Certainly.

(The chart is as follows:)

INDEX: 1947-1949=100

**BOECKH INDEXES OF CONSTRUCTION COSTS FOR: (1) RESIDENCES;  
AND (2) APARTMENTS, HOTELS, AND OFFICE BUILDINGS**



Prepared by Housing and Home Finance Agency

SOURCE: U.S. Department of Commerce

Senator O'MAHONEY. I would like to look at it again.

On page 57 of the New York Times this morning I find this heading— I haven't had time to read the article—Three Savings Banks Actually Increase Interest From 3 to 3¼ Percent.

I think it has been pointed out by the chairman that the savings and loan associations are competing for savings with much higher rates of interest. And of course, I know that the savings and loan associations operate under different circumstances from the banks. But this indicates, does it not, that there is a shortage of money, that is, money is less than is demanded?

Mr. MARTIN. That is correct.

Senator O'MAHONEY. Your judgment is that the demands are so great that we cannot allow them to be supplied, because it would drive

up the cost of living, the cost of materials and other things. You have no doubt about that at all?

Mr. MARTIN. Well, unless all previous experience is wrong, if our analysis is correct, the economy is trying to buy more than there is in the aggregate at a given time and additions to the money supply will put prices up.

Senator O'MAHONEY. But you change your opinion every once in a while?

Mr. MARTIN. Oh, exactly. And these articles that you are reading us will be considered by the Open Market Committee. We just had a meeting yesterday

Senator O'MAHONEY. Perhaps you will have one tomorrow.

Mr. MARTIN. We will consider that item that you refer to.

Senator O'MAHONEY. Can I wire my banks in Wyoming—

Mr. MARTIN. I would not.

Senator O'MAHONEY. That there will be such a meeting?

Mr. MARTIN. I would not be too precipitate about it. But it will be a factor that will be considered.

Senator O'MAHONEY. My point, Mr. Martin, is, that you gentlemen come to a judgment about this, and it is based upon the material that you gather through your staff. Is it not?

Mr. MARTIN. We come—

Senator O'MAHONEY. And necessarily, there is a time when you feel that interest could go too high. I understood you to say so in response to one of Mr. Patman's questions.

Mr. MARTIN. I do. I think—a modest rise in interest rates certainly tends to reduce this gap between saving and investment. And when that gap is eliminated why the pressures move in the opposite direction.

Senator O'MAHONEY. Well now, when we are unable to build schools enough to educate our increasing population, when it is known that Soviet Russia is concentrating upon the education of the youth and we find ourselves with less room than necessary to educate our children, do you think that that is a consideration which your Board ought to give considerable weight to in determining what the rate of interest shall be?

Mr. MARTIN. Well, again I return, Senator, to the fact that I do not think we make the interest rates. Mr. Patman and I have a slight disagreement on that, but I think that we do a lot of talking about administered prices.

Senator O'MAHONEY. You fix the discounts, don't you?

Mr. MARTIN. What?

Senator O'MAHONEY. You fix the discount rate?

Mr. MARTIN. We fix it in accord with supply and demand if the banks have no necessity to come to us to borrow funds then the discount rate does not mean anything.

Senator O'MAHONEY. Why don't we close up the Federal Reserve banks if you don't have any part in it? Why do we talk about tight money?

Mr. MARTIN. The Federal Reserve—

Senator O'MAHONEY. Let us get this straight. In your judgment do you or do you not have an influence upon the rate of interest?

Mr. MARTIN. We have an influence, but it is not in my judgment the controlling influence. If we make the controlling influence we are not performing our function, as I understand it.

Senator O'MAHONEY. Now then, let me ask you a question:

When this administration began, the Treasury Department issued the now 30-year bond, at  $3\frac{1}{4}$  percent interest. In a short time it was selling at a big premium. Now it is selling below par.

The theory was that the Federal Government could increase the rate of interest upon long-term bonds in order to reduce the amount of short-term obligations that were outstanding.

But there has been a great change and the market for these 30-year bonds has fallen off.

I find in the New York Times this morning on page 61, that the  $3\frac{1}{4}$  percent bond—that same long-term bond that I am talking about—is selling “demand 98.2.”

When the bonds of the United States are selling below par, isn't that a danger signal?

Mr. MARTIN. Senator, I hope that the United States issue can always in the open market sell at par and above.

But you have the finest security in the world when you have the United States security today. You know now—wait a second—you know when the interest comes—

Senator O'MAHONEY. I am glad to know that your answer is on the record.

Mr. MARTIN. When the interest comes due it will be paid. You know that. When the principal comes due it will be paid. You have no worry about that.

The only worry you have is depreciation of the dollar. We have a responsibility to people. It is unfortunate if they have to liquidate early but we have a responsibility to see that they are paid off in their interest and in their principal in terms of the dollar they put into it.

We have not always been successful in that, but our purpose with a Government security—if it becomes interest-bearing money—if it is fixed by fiat of the Government and has no market adaptability and if you depreciate the dollar to maintain it at par—

Senator O'MAHONEY. I am not talking about fiat money. We are not going to get into that debate. Lincoln fought the Civil War with greenbacks and Lincoln did a good job, but it is irrelevant here.

I am prompted to ask this question because the First National City Bank of New York, in its monthly economic and business letter of September 1956, expressed concern over the gold position of this country. It pointed out that:

The continued growth of foreign dollar holdings of interest to Americans is that, while these dollars constitute assets to their foreign owners, they are liabilities in the monetary system of this country.

The letter goes on to refer to the expansion of foreign holdings of short-term obligations of the United States Treasury and then it continues to the effect that—

foreign short-term dollar assets, including deposits and United States Treasury obligations, total around \$14½ billion, equal to 66 percent of our gold stock, presently standing at \$21.8 billion, compared with 31 percent in 1949.

Mr. MARTIN. I was—

Senator O'MAHONEY. I am interested—and I think it is important in discussing the amount of American dollars held in foreign countries. Do you know what that quantity is?

Mr. MARTIN. I do not have the figure offhand. I could get what our estimate is. It is probably several billion dollars.

Senator O'MAHONEY. Several million?

Mr. MARTIN. Several billion.

Senator O'MAHONEY. Several billion?

Mr. MARTIN. Several billion. I do not have it exactly.

Senator O'MAHONEY. Will you please put the accurate figure in the record?

Mr. MARTIN. I do not think we can get the exact figure. I will try to get the best figure.

Senator O'MAHONEY. Get the approximate. And let it be inserted in the record here.

Mr. MARTIN. I will be very glad to.

(The following was subsequently received for the record:)

Foreign holdings of United States currency have been variously estimated at amounts ranging between \$0.8 billion and \$2 billion. The lower figure (actually \$839 million for the end of 1955) is the estimate of the Department of Commerce; it is based on the Department's computation of the international flow of payments to and from the United States. The higher figure is an estimate made 3 years ago by some members of the Federal Reserve staff; it was based on the total United States currency in circulation and the estimated holdings of United States individuals, corporations, and public agencies. Both figures should be considered as very rough guesses. Exact estimates are impossible because, even if all domestic holdings could be ascertained without error, there still would be no way to find out how much of the remainder was actually held abroad and how much was lost and destroyed abroad during the recent unsettled periods of war and revolution.

In addition to these holdings of United States currency, foreign residents and governments held, at the end of October 1956, \$7.3 billion in deposits with the Federal Reserve banks and United States commercial banks.

Senator O'MAHONEY. As to American dollars, the fact is that they are in foreign hands at the rate of at least \$2 billion?

Mr. MARTIN. I would think that was a conservative estimate.

Senator O'MAHONEY. Is it not a fact that those dollars in foreign hands can buy gold in Europe?

Mr. MARTIN. That is correct.

Senator O'MAHONEY. Is it a fact, or is it not, that these American dollars are now being invested by foreigners in the issues, bonds, notes and bills of the Treasury which are selling below par?

Mr. MARTIN. If they hold—yes; some of them are; yes.

Senator O'MAHONEY. Do you know how much?

Mr. MARTIN. No, I don't.

Senator O'MAHONEY. Don't you think it is a serious question? The Government is talking about asking Congress to increase expenditures for foreign aid and yet the same countries to which this aid will go are holders, according to your testimony, of American dollars which they invest in depreciated securities of the United States? Isn't that a situation which should give you and your Board and your regional presidents pause for serious thinking on this question?

Mr. MARTIN. Well, I don't see any reason to differentiate between a foreign holder of United States dollars and the domestic holder.

Senator O'MAHONEY. This is the fact that I see to differentiate. It is that the national debt of the United States now stands at about \$278 billion, if this new borrowing is floated; isn't that correct?

Mr. MARTIN. That is correct. That is correct.

Senator O'MAHONEY. The ceiling is \$275 billion except for certain gimmicks to excuse it, to let it go above on the belief that before the fiscal year is out receipts will be such as to bring it down.



Well, if we are going to expand the expenditures abroad, if we are going to increase the appropriation for defense, as Secretary Wilson said the other day, coming from a conference with the President—he didn't say how much, but he said there would be an increase—and we are already in debt above the limit, does it not mean a great deal to us whether or not those who are to be the beneficiaries of our foreign economic aid are getting over 3 percent interest on the short-term and depreciated issues of the Treasury of the United States?

Mr. MARTIN. Well, you raise a serious problem. I am not trying—  
Senator O'MAHONEY. That is why I am worried about it.

Mr. MARTIN. Well, I am worried about the whole overall picture, also.

Senator O'MAHONEY. Has your Board given any considerations to that?

Mr. MARTIN. Our Board discusses this and all other aspects at every meeting, sir.

Senator O'MAHONEY. Then will you give us for the record the exact figures on these phases which we have just been discussing?

Mr. MARTIN. I will be very glad to do the best I can.

Senator O'MAHONEY. Let us have it all on the record, so the public may know, too, what the danger is.

Mr. MARTIN. I will be glad to get it. Our overall solvency is a matter of the greatest concern to all of us at all times.

Senator O'MAHONEY. Of course it is.

(The following was subsequently received for the record:)

At the end of October 1956, foreign residents and governments held \$4.7 billion in United States short-term Treasury paper (bills and certificates) and \$1.2 billion in United States long-term Government securities (notes and bonds).

Senator O'MAHONEY. And since we are engaged in an economic war with Soviet Russia, everybody, and particularly those of us who are in Government and those of us who are in the independent boards which think they are outside of Government sometimes, should pay a great deal of attention to what this situation is.

You will agree with that, won't you?

Mr. MARTIN. I certainly agree with that.

Senator O'MAHONEY. Perhaps now you will agree with me that there ought to be a meeting of the Board tomorrow?

Mr. MARTIN. Well, I may say, Senator, that the Board meets every day.

Senator O'MAHONEY. And will take this up.

Mr. MARTIN. This is not the Open Market Committee but the Board itself meets every day.

Senator O'MAHONEY. Let us get the Open Market Committee meeting at an early date.

Mr. MARTIN. We will try to keep them meeting.

Senator O'MAHONEY. Mr. Moore of our staff points out that in the Federal Reserve Bulletin for October 1956, there are the figures. Would you read those into the record?

Mr. MOORE. The significant ones are the purchases, the net purchases by foreigners of Government securities in bonds and notes in 1955, which were \$529 million.

Looking at the detail of that, it is largely accounted for by Switzerland, United Kingdom, and Canada.

During the current year there have been net sales in March of a substantial proportion, of \$236 million.

The last few months have been running net purchases of quite a small magnitude, 13, 16 and 27 million, respectively, in May, June, and July.

Senator O'MAHONEY. Switzerland and what other country?

Mr. MOORE. Switzerland, United Kingdom, and Canada: 1955 the Swiss bought 147.

Mr. MARTIN. We will try to bring it up to date for you.

(The following was subsequently received for the record:)

In August and September 1956, foreign residents and governments and international institutions made net purchases of \$81 million of United States Government notes and bonds; of this total, \$73 million was purchased by international institutions and 8 million by foreign residents and governments. In the same period, net purchases of United States corporate securities by foreign residents and governments and international institutions amounted to \$36 million, of which \$2 million was purchased by international institutions and \$34 million by foreign residents and governments.

Total net purchases of United States Government and corporate securities by foreign residents and governments (excluding international institutions) thus amounted to \$42 million; Switzerland accounted for net purchases of \$27 million, the United Kingdom for net purchases of \$21 million, and all other countries together for net sales of \$6 million.

Senator O'MAHONEY. It is my understanding that the banks of Switzerland give no information of any kind with respect to the actual beneficial holder of such trust accounts, so that this refusal to reveal the names and the identities of the holders of these dollar accounts, affords a cloak behind which those attempting to avoid public scrutiny can hide.

If you will, please, let me point this out: Earlier in the present year a writer for the Scripps-Howard Newspapers chain wrote an article which was based upon the assumption that there might be a danger that Soviet investments were being made in these securities of the United States.

If that be true, it is a matter of serious concern underlying that everybody who has any interest or power over our financial system should know exactly all of the time the course of foreign investments in our depreciated securities.

The United States today has the greatest debt that was ever undertaken by any Government in all history. There is no question about that, is there? And the debt is not decreasing.

The world crisis is so great that we do not know how much more the President will ask Congress to authorize to be borrowed in order to defend ourselves in this crisis.

So that it is not a matter of what speculators in Wall Street think about it, nor those who wish to sell real estates, nor corporate executives who want to expand plant facilities, nor financiers who want to get a larger income from their loans than they are now getting.

You will not demur to the statement, will you—

Mr. MARTIN. The questions you raise are very pertinent.

Senator O'MAHONEY. Let me add this further statement. You will not demur to the statement that the banks have profited upon tight money.

Mr. MARTIN. To the extent that they have made loans at higher interest rates, yes. To the extent they have had to sell Government securities at a loss that has been diminished somewhat.

Senator O'MAHONEY. You will let me ask you to answer this question. Do you think that the fiscal policy of the Government of the United States should be carried on exclusively for the interest of the banks?

Mr. MARTIN. Certainly not, sir.

Senator O'MAHONEY. I knew your answer would be "certainly not." But throughout the history of this Government and every other Government, there always has been a struggle between the money power and the people.

And the question is where to determine to draw the line. The Federal Reserve Board was set up to try to do that. It is your authority and it is your responsibility.

But the record is here clear that a substantial part of the American people are suffering because of high interest rates and all of my questions have been in the attempt to determine what factors enter into your judgment in the rules and in the decisions that you make.

Will you be good enough to comment upon that now?

Mr. MARTIN. Well, the factors that we consider outside of the statistical indices of business at every meeting have to do with the basic requirement of Government finance. We have to consider the needs of the Treasury.

We are not authorized by the Congress to ignore the appropriating authority of the United States Government. We are here to help the Treasury without giving the Treasury an automatic rate adjustment to the market.

Senator O'MAHONEY. The questions which I have asked you have come to the peak of the most importance one with which you agree.

I have a lot of other minor questions which I could ask you but I do not want to take that time.

I thank you for your very frank responses to the queries I have made. And I hope that the other members of the Board who may feel moved to make any comment now will do so.

Mr. MARTIN. May I make a concluding comment on what you said, Senator?

Senator O'MAHONEY. There is an invitation to all of you to speak, gentlemen.

Mr. MILLS. Mr. Chairman, Senator, you have posed—

Senator O'MAHONEY. This on the record?

Mr. MILLS. A very—yes, sir—a very important question and raised concern about the problem of international investment. You have focused your discussion on investment within the United States by foreign nationals, a type of investment which in the opinion of many people is to be welcomed in that it represents a compliment to the security of and faith in the obligations of the United States Government.

But against the investment of foreigners in securities of the United States, I am sure you have in mind that there are offsetting investments of a considerably greater magnitude on the part of United States citizens and United States businesses in foreign lands that are contributing to the development and the benefit of those nations to the same degree that investment by foreigners in the United States has in the past and continues to be beneficial to the economy of the United States.

In other words, the concern that you express, in my humble opinion, has two facets. And I do not share it, frankly, in the way that you do that we should not welcome and may not have benefited from the investment that you refer to.

Senator O'MAHONEY. I hope I haven't given you the impression that I am against foreign investment in the United States. I certainly am not.

I am merely pointing out to you the condition that admittedly exists at a time when communism is waging an economic war against us and when the leaders of communism are leaving no device unused to weaken our economy.

And I am urging you gentlemen to beware and to give it more consideration than apparently it has had.

Mr. MILLS. Senator, I must apologize for not getting the intent of your discussion, but it might be inferred that foreign investment in the United States was a tool of communism to undermine our economy. Rather—

Senator O'MAHONEY. I said that the Scripps-Howard chain of newspapers published during the past few months a serious article by one of its staff writers who was assumed to be an expert, at least, who made an examination into the question and who intimated that the Communists were doing precisely that. It is not my statement. I am just looking at the facts which are presented to me in the daily press and the facts which I gather when I ask questions of gentlemen like yourself.

Mr. MILLS. If I might say so, when you have the advantage of the statistical records that can be presented to you, it is my belief that you will reach the conclusion that foreign investment in the United States is a small factor in the overall magnitude of our economy.

Senator O'MAHONEY. May I interrupt you to say, Mr. Mills, that I hope that you will keep an open mind until you yourself have looked over these statistics again. I am only asking for information.

Mr. MILLS. Indeed I will, sir.

Senator O'MAHONEY. I am not arguing with you as to whether you are right or the Scripps-Howard writer was right, but if there is any basis for what he placed in that article it is a very serious matter.

Mr. BALDERSTON. Senator, may I express appreciation of the point that you have made that the soundness of our economy is our first bulwark in the cold war you have mentioned and that the integrity of the dollar is an essential part of maintaining that soundness.

(Question posed to Mr. Martin by Senator O'Mahoney, by telephone, December 17:)

Senator O'MAHONEY. The First National City Bank of New York in its economic letter of September 19, 1956, expressed concern because of the gold position of this country. It pointed out that "The continued growth of foreign dollar holdings of interest to Americans is that, while these dollars constitute assets to their foreign owners they are a liability in the monetary system of this country.

The bank letter goes on to refer to expansion of foreign holdings of short-term Government obligations of the United States Treasury; then refers to statements "that foreign short-term dollar assets, including deposits and United States Treasury obligations, total around \$14½ billion or 66 percent of our gold stock presently outstanding at 21.8 billion, compared with 31 percent in 1939." This can be found on page 104 of the bank's September letter. It would be helpful in furnishing the material that I requested if you would deal with this also. There is a lot of rumor that should be corrected. I am concerned about the general aspect of this business.

(The material requested follows:)

## BOARD OF GOVERNORS OF THE FEDERAL RESERVE SYSTEM,

Washington, December 19, 1956.

HON. JOSEPH C. O'MAHONEY,

United States Senate, Washington, D. C.

DEAR SENATOR O'MAHONEY: This refers to your telephone call to me the other day raising a further question with respect to the relation between United States gold reserves and foreign dollar holdings.

Attached is a brief memorandum, prepared by the Board's staff, which I think will answer the question you have in mind. A copy of this memorandum has been sent to Mr. Lehman, clerk of the Joint Economic Committee, for inclusion in the record of the hearings last week.

Sincerely yours,

WM. MCC. MARTIN, Jr.

As to the problem of the relation between United States gold reserves and foreign holdings, the following facts may be noted.

First, it is not quite correct to compare all foreign dollar holdings directly with our gold reserves, since only foreign governments and monetary authorities are permitted to purchase gold from the United States; private foreign dollar holdings cannot be converted directly into gold. On September 30, 1956, foreign dollar holdings (including not only deposits with United States banks but also holdings of short-term Treasury paper, bankers' acceptances, and other short-term assets) amounted to \$13.2 billion, of which \$7.9 billion were held by governments and monetary authorities, and \$4.3 billion by private individuals and corporations.

Second, it is true that foreign dollar holdings have increased considerably since the end of the forties, while our gold reserves have slightly decreased. Table I shows the development of our gold reserves and foreign dollar holdings between 1919 and 1956. It will be observed, from the table, that our gold reserves have not changed much since the end of 1953 and that the ratio between our gold reserves and foreign dollar holdings, although it is now smaller than it was during the thirties and forties, is about the same as during the last twenties.

Third, the increase in foreign dollar holdings and in foreign gold reserves is in line with expansion in the volume of international trade, the restoration of more normal international financial and commercial relations, and the growing importance of the United States as a world banker. Table II shows the imports and the gold and dollar reserves of foreign countries (excluding the Soviet bloc) in 1928, 1938, 1948, and 1955. It will be observed, from this table, that the ratio between foreign reserves and imports in 1955 was not much larger than in 1928 or 1948, and much smaller than in 1938.

We are watching these developments continually. In my judgment our international gold position will not prove embarrassing so long as we pursue effective monetary policies. Confidence in our currency and in the stability of its purchasing power is crucial abroad no less than at home.

TABLE I.—United States gold stock and foreign dollar holdings

End of year	United States gold stock (millions of dollars)	Foreign dollar holdings (millions of dollars)	Ratio (2) : (1) (percent)	End of year	United States gold stock (millions of dollars)	Foreign dollar holdings (millions of dollars)	Ratio (2) : (1) (percent)
	(1)	(2)			(1)	(2)	
1919	2,707	1,214	45	1939	17,644	3,221	18
1925	4,112	1,281	31	1945	20,083	6,880	34
1927	4,092	2,889	71	1946	20,706	6,010	29
1928	3,854	2,756	72	1947	22,868	4,850	21
1929	3,997	2,673	67	1948	24,399	5,850	24
1930	4,306	2,335	54	1949	24,563	5,960	24
1931	4,173	1,304	31	1950	22,820	7,120	31
1932	4,226	734	17	1951	22,873	7,660	33
1933	4,036	388	10	1952	23,252	8,960	39
1934	8,238	670	8	1953	22,091	10,020	45
1935	10,125	1,301	13	1954	21,793	11,150	51
1936	11,258	1,623	14	1955	21,753	11,700	54
1937	12,760	1,893	15	1956 (September)	22,032	13,227	60
1938	14,512	2,158	15				

TABLE II.—Imports and reserves of foreign countries (excluding the Soviet bloc)

Year	Imports (c. i. l.) (billions of dollars) (1)	Gold and dollar reserves at end of year (billions of dollars) (2)	Ratio (2) : (1) (percent)
1928.....	29.39	8.53	29
1938.....	21.07	13.40	64
1948.....	52.06	14.55	28
1955.....	75.98	25.84	34

Senator O'MAHONEY. Thank you very much, Mr. Balderston. Thank you, Mr. Chairman.

Chairman PATMAN. Thank you, Senator O'Mahoney.

You mentioned a while ago, Mr. Martin, in answer to Senator O'Mahoney, when he asked you if the banks did not profit more than any other group by reason of higher interest rates, that the banks also suffer harm or losses.

And you mentioned specifically that they were compelled to sell Government bonds at a loss in order to provide reserves.

I think you should point out, Mr. Martin, that the banks are pretty well protected on Government bonds. If they buy them at par they can always keep them on their books 100 cents on the dollar for all examinations. That is correct, isn't it?

Mr. MARTIN. That is correct.

Chairman PATMAN. If they go down to 75 they can still carry them for 100. Therefore, it does not jeopardize the capital stock of the bank.

But that is not the important part. You failed to mention the fact that our tax laws are so written that if the banks are compelled to sell a bond at a loss, the net of capital losses over capital gains fully offset against the banks taxable income.

In other words, the losses on the sale of their bonds can offset the profits the banks make from higher interest rates. This reduces their current year's tax liability.

Furthermore, the bank has this advantage. When the bonds go down and they sell, they can immediately buy another issue. They do not have to wait 30 days like people have to wait on stocks. They can immediately buy another issue right close to it. And as that bond goes up in value, and goes back to par, and they sell it, their profit is taxed at the 25 percent rate. Losses are offset against income taxable at 52 percent. Gains are taxed at 25 percent.

So they are not hurt so much.

Furthermore, another point which you did not point out, was that they obtain these powerful dollars when they sell the bonds which are used as reserves. Upon each dollar of reserve they can extend \$6 in loans.

So that the banks are not crippled too much in this operation.

You did not intent to leave the impression that they were greatly harmed, did you, Mr. Martin?

Mr. MARTIN. No, I merely made the comment, Mr. Patman, that while they were getting more interest on loans, if they made the conscious choice of selling a security in order to make a loan because they didn't have adequate reserves, and if those securities had declined that would to some extent offset their return.

Chairman PATMAN. But don't you think you have an unusual advantage there when they can use that loss that they have on that bond to offset any gains that they have in the way of profits?

Mr. MARTIN. Individuals can do that also.

Chairman PATMAN. On short term?

Mr. MARTIN. Yes.

Chairman PATMAN. They cannot do it on long term, can they?

Mr. MARTIN. I would make—

Chairman PATMAN. But the bank is not restricted either way, long or short, makes no difference.

Mr. MARTIN. Well, I am really not competent to testify on the tax aspect.

Mr. HAYES. Could I say something?

Chairman PATMAN. Yes, sir.

Mr. HAYES. If I may at this juncture, because you raise the question of the banks profiting from it, I should like to point out the effect on the banks of the sales of Government securities.

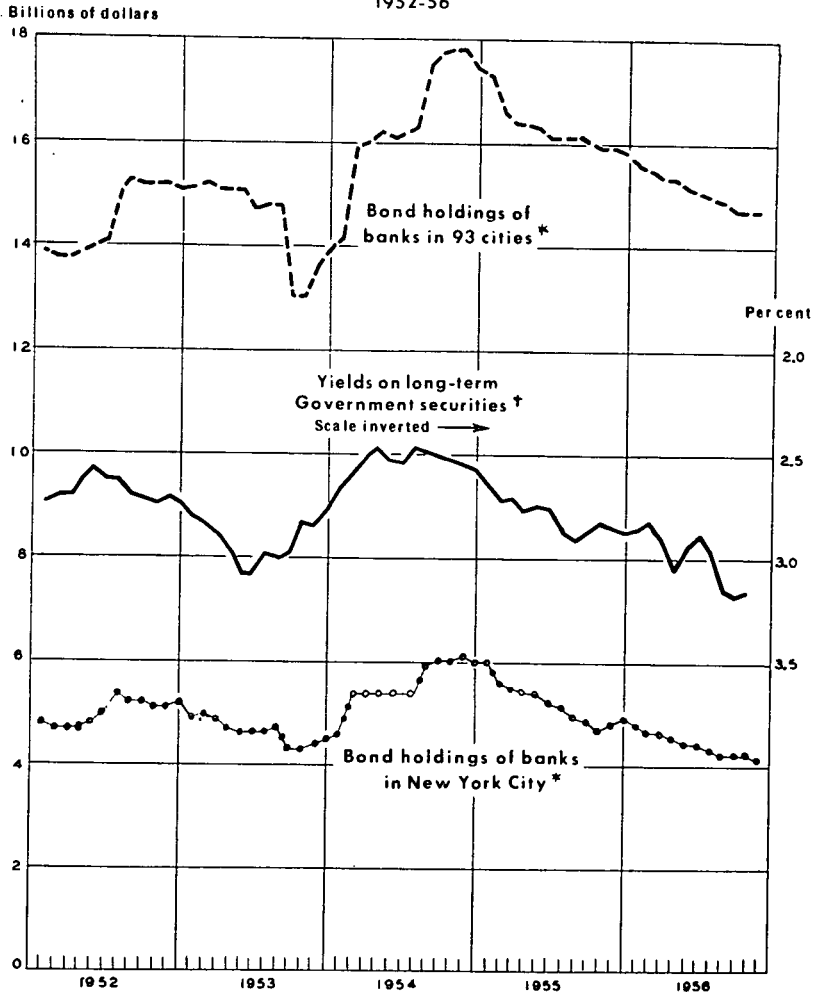
I am impressed by the fact that the banks have bought most of their Government bonds during the periods of relative ease, when interest rates were relatively low and prices have gone relatively high, and have had to sell them when prices were declining in order to raise funds for loans.

And I have here some interesting charts that show that very graphically, if you are interested in them.

Chairman PATMAN. What does it show, if you don't mind summarizing it for us? And we will insert it in the record at this point.

(The charts are as follows:)

U.S. GOVERNMENT BOND HOLDINGS OF WEEKLY REPORTING BANKS  
AND AVERAGE YIELDS ON LONG-TERM GOVERNMENTS  
1952-56

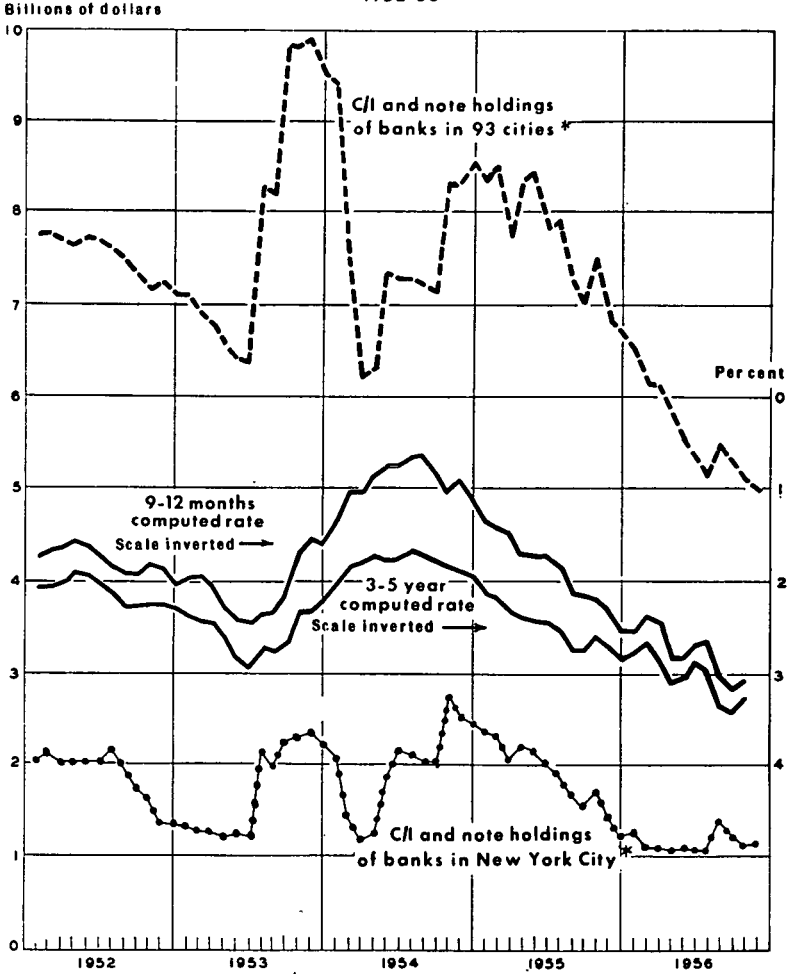


\* Last Wednesday of each month.

† Average of daily figures. Old series, (new series, including 3 1/4's of 1978-83 and 3's of 1995, shows similar pattern with somewhat higher rates, for period from May 1953 onward).



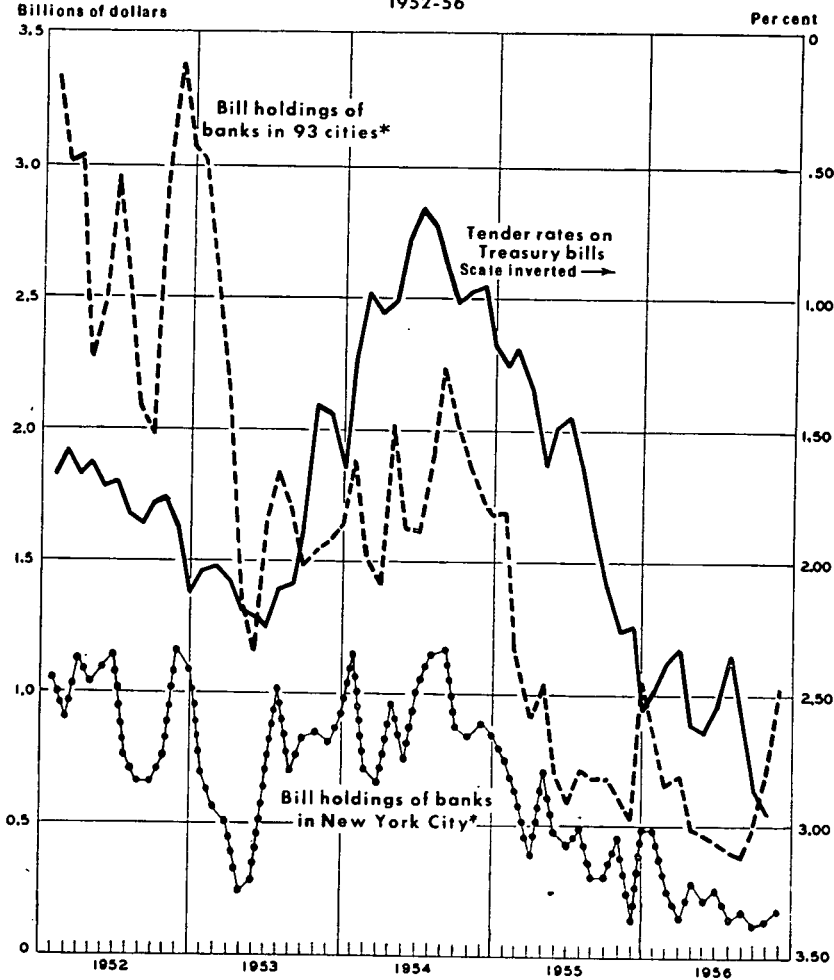
HOLDINGS OF U.S. GOVERNMENT CERTIFICATES AND NOTES BY WEEKLY REPORTING BANKS AND AVERAGE YIELD ON COMPUTED GOVERNMENT OBLIGATIONS 1952-56



\* Last Wednesday of each month.

TREASURY BILL HOLDINGS OF WEEKLY REPORTING BANKS  
AND AVERAGE YIELDS ON TREASURY BILLS

1952-56



\* Last Wednesday of each month.

Mr. HAYES. It shows that the Government bond holdings of banks in 93 leading cities rose from a low point of \$13 billion in 1953 to nearly \$18 billion in 1954 and then their holdings declined.

Chairman PATMAN. Didn't they buy in 1953 when they were low?

Mr. HAYES. No; the price of the bonds was quite high all through 1954 and that is when most of this increase in holdings occurred. The peak occurred at the end of 1954. And then those bond holdings dropped off steadily during 1955 and 1956, and at that time prices were dropping steadily.

The charts on notes and certificates show about the same thing, although it is not as smooth a curve.

Chairman PATMAN. But, Mr. Hayes, you are acquainted with the facts and they are to the effect that the banks bought these bonds when

they were low in 1953, and they sold them when they were high in 1954.

And the banks dealing in those bonds made a profit in 1954 in excess of what they had made the year before of 966 percent.

My authority for that statement is the Federal Deposit Insurance Corporation report.

So they really made lots of money buying when bonds were low and selling them when prices were high. And, of course, they could get the benefit of capital gains, too.

Mr. HAYES. If I may comment on that.

Chairman PATMAN. Yes, sir.

Mr. HAYES. I have some figures here showing earnings of the banks, member banks—

Chairman PATMAN. Yes, sir.

Mr. HAYES. During the years 1946, 1949, 1952, and 1955.

During that period the interest earnings on Government securities, over the period as a whole, hardly changed at all.

Chairman PATMAN. Which years—you do not have them all.

Mr. HAYES. From 1946 through 1955. I am just taking those 2 years.

And if you will compare those 2 years the interest earnings from Government securities differ very little.

Chairman PATMAN. What were their earnings on Government securities in 1953?

Mr. HAYES. I do not have 1953.

Chairman PATMAN. I know, but it is necessary to have that because that is the point.

Mr. HAYES. But 1952 was 929 million.

Chairman PATMAN. How much was it in 1954?

Mr. HAYES. I don't have 1954.

Chairman PATMAN. They are the important years. Can you get that for us?

Mr. HAYES. I can give you the overall earnings figures for 1953 and 1954, and the net profits—

Chairman PATMAN. I am talking about profits on Government securities.

Mr. HAYES. I can get that for you.

Chairman PATMAN. You can get that for me. Will you put it in the record at this point?

Mr. HAYES. Yes.

(The data on member bank earnings, expenses, and profits are shown in the following table. Net profits or losses on securities are shown in the footnote; data on profits or losses on Government securities only are not available, but they account for the bulk of the figures.)

TABLE I.—Member bank earnings and expenses, 1946-55

[Millions of dollars]

Item	1946	1947	1948	1949	1950	1951	1952	1953	1954	1955
Total earnings.....	\$2,402.5	\$2,578.6	\$2,828.3	\$2,985.6	\$3,264.7	\$3,698.7	\$4,119.6	\$4,590.2	\$4,826.1	\$5,342.6
United States Government's.....	1,053.5	920.8	854.8	859.2	865.1	831.9	929.3	1,011.0	1,066.4	1,118.1
Loans.....	772.3	1,043.7	1,307.8	1,427.1	1,634.0	2,003.0	2,305.9	2,632.0	2,711.2	3,083.2
All other.....	576.7	614.1	665.7	699.3	765.6	833.8	884.4	947.2	1,048.5	1,141.3
Total expenses.....	1,468.6	1,650.0	1,795.2	1,888.9	2,019.7	2,231.9	2,601.1	2,781.5	2,998.5	3,265.1
Salaries and wages.....	699.4	797.0	875.8	926.1	999.9	1,125.3	1,243.6	1,371.5	1,462.7	1,571.4
Interest on time deposits.....	211.6	235.9	250.5	251.1	271.0	305.5	364.5	424.7	493.0	543.1
All other.....	557.6	617.1	668.9	701.7	748.3	801.1	893.0	985.3	1,042.2	1,150.6
Net current earnings before income taxes.....	934.0	928.6	1,033.1	1,096.7	1,244.9	1,436.8	1,618.6	1,808.7	1,827.6	2,077.5
Net additions or deductions, total <sup>1</sup> .....	+108.8	-19.1	-178.7	-135.4	-95.1	-190.2	-181.4	-251.2	+72.7	-401.5
Net profits before income taxes.....	1,042.8	909.5	854.5	961.3	1,149.9	1,246.5	1,437.2	1,557.5	1,900.3	1,676.0
Taxes on net income.....	285.0	256.5	233.6	275.1	369.1	490.9	607.9	692.3	804.2	690.8
Net profits.....	757.8	653.0	620.9	686.3	780.8	755.6	829.3	865.3	1,096.1	985.2
Total capital accounts.....	7,868.0	8,291.3	8,629.8	8,999.0	9,455.0	9,947.0	10,480.0	11,043.0	11,724.0	12,499.0

<sup>1</sup> Included above in net additions or deductions to earnings are security net profits or losses, net recoveries or chargeoffs on securities, and net transfers from or to reserves for securities, as follows:

Item	1946	1947	1948	1949	1950	1951	1952	1953	1954	1955
Net additions or deductions.....	+121.1	+28.7	+0.9	+40.7	+48.2	-24.2	-52.3	-117.9	+252.0	-152.1

When security net profits, losses, recoveries and chargeoffs, and transfers from or to reserves are adjusted for actual recoveries credited and losses charged to valuation reserves each year, the actual net profits or losses on securities are as follows:

Item	1946	1947	1948	1949	1950	1951	1952	1953	1954	1955
Net additions or deductions.....	(*)	(*)	+2.9	+43.7	+59.5	-20.5	-65.2	-128.6	+315.5	-189.3

\* Not available.

Source: Federal Reserve bulletins.

Chairman PATMAN. Won't you admit for the record they were enormous?

Mr. HAYES. I would have to look at those figures.

Chairman PATMAN. Don't you have any recollection on it?

Mr. HAYES. I do not have on this particular figure. I would like to put in this table on the overall profit of the members banks.

Chairman PATMAN. That is not important in this particular question.

Mr. HAYES. I think it is, Mr. Patman.

Chairman PATMAN. Go ahead.

Mr. HAYES. The net profit was a product of both the interest earnings net and of expenses and profit or loss on sales of securities and other adjustments or recoveries and so on.

And that net figure for all member banks shows a figure—well, in percent of capital funds, it shows these following figures:

For 1952, 7.9 percent; for 1953, 7.8 percent; for 1954, 9.3 percent; for 1955, 7.9 percent.

(The table referred to follows:)

TABLE II.—Ratio of net profits to total capital, member banks and leading corporations, 1946-55

	1946	1947	1948	1949	1950	1951	1952	1953	1954	1955
<b>All member banks:</b>										
Net profits (in millions).....	\$757.8	\$653.0	\$620.9	\$686.3	\$780.8	\$755.6	\$829.3	\$865.3	\$1,096.1	\$985.2
Capital (in millions).....	\$7,868.0	\$8,291.3	\$8,629.8	\$8,999.0	\$9,455.0	\$9,947.0	\$10,480.0	\$11,043.0	\$11,724.0	\$12,499.0
Ratio (percent).....	9.6	7.9	7.2	7.6	8.3	7.6	7.9	7.8	9.3	7.9
<b>Central Reserve New York City banks:</b>										
Net profits (in millions).....	\$158.2	\$132.9	\$138.7	\$111.3	\$145.4	\$141.9	\$174.6	\$161.1	\$213.2	\$186.5
Capital (in millions).....	\$2,167.0	\$2,232.6	\$2,275.7	\$2,323.0	\$2,336.0	\$2,387.0	\$2,458.0	\$2,541.0	\$2,651.0	\$2,744.0
Ratio (percent).....	7.3	6.0	6.1	4.8	6.2	5.9	7.1	6.3	8.0	6.8
<b>Leading corporations—Percent return on net assets:<sup>1</sup></b>										
Total manufacturing.....	12.1	17.1	18.2	13.9	17.1	14.4	12.3	12.7	12.3	15.0
Total mining.....	9.4	16.0	20.5	12.0	13.2	13.0	10.1	7.9	8.2	11.9
Total trade.....	21.9	18.4	18.2	13.4	15.0	11.5	10.1	9.9	9.9	11.1
Total transportation.....	7.6	3.9	5.2	3.4	5.8	5.2	6.0	6.1	4.6	6.1
Total public utilities.....	8.2	8.0	8.6	8.8	9.9	9.0	9.0	9.2	9.3	9.7
Total amusements, services, etc.....	19.4	14.2	10.1	9.9	10.4	10.4	11.1	10.5	11.4	12.3
Total finance.....	6.4	6.7	8.1	9.1	9.0	7.9	8.2	8.1	8.8	7.7
<b>Grand total.....</b>	<b>9.5</b>	<b>12.3</b>	<b>13.6</b>	<b>11.0</b>	<b>13.4</b>	<b>11.4</b>	<b>10.4</b>	<b>10.6</b>	<b>10.3</b>	<b>12.0</b>

<sup>1</sup> As reported by the First National City Bank's monthly letter. Book net assets at the beginning of each year are based upon the excess of total balance-sheet assets over liabilities.

Source: Bank data from Federal Reserve Bulletin.

And you can see, in 1954 it was somewhat higher than it had been, but at no time was it a very high figure, particularly if we compare it with returns in other businesses which are also shown here.

The point of that, I think, is that in 1955, when interest earnings were very good, the net profit went off sharply from 1954 because of the losses taken on the sales of Governments in 1955.

Chairman PATMAN. The Government bonds for some reason went down, took a nosedive in 1953; the banks bought the bonds low. They sold them high in 1954 and made a profit of \$417 million securities sales in that year.

In 1955 they started another nosedive; didn't they?

Mr. HAYES. Mr. Patman, the point of this chart that I mentioned—

Chairman PATMAN. What we are trying to find out is when they are going back.

Mr. HAYES. The point of this chart I mentioned, first, was to show that most of their purchases were made in 1954 when prices were relatively high. And most of the sales were made in 1955 and 1956 when they were low.

Chairman PATMAN. I have the latest annual report of the Federal Deposit Insurance Corporation for 1955, and it shows the following information on the insured commercial banks: Their net profits after taxes averaged \$1,163 million for the 3 years 1953, 1954, and 1955, compared to an annual average of \$865 million in the preceding 6-year period 1947-52. On the ratio of net profits to capital accounts the average for the 1953-55 period was 8.4 percent as compared to 8 percent for the 1947-52 period. It might be noted that in the 1947-52 period profits were rising faster than capital accounts, while in the recent period capital accounts have risen faster than the increase in profits, so that the increase in the current rate of profit on capital account over that for the 1947-52 period actually tends to understate the increased profitability of banks.

The ratio of dividends to capital accounts for the 1953-55 period has risen from 3.7 to 3.9 percent, for an average of 3.8 percent. In the 1947-52 period the ratio of dividends to capital accounts averaged 3.5 percent.

Rates of income for insured commercial banks on their holdings of United States Government obligations rose from 1.80 percent on each \$100 in 1952 to 2.09 percent in 1955. This increase was greater than that for the 6-year period 1927-52, when average rates of income of insured commercial banks on United States Government obligations rose from 1.54 percent per \$100 to 1.80 percent. In 1955, the average rate of income received by commercial banks on their holdings of United States Government obligations was more than a third higher than in 1947. In contrast, their average rates of income on other securities in 1955, 2.15 percent per \$100, was lower than the 2.16 percent for 1947.

Mr. Martin, will you please supply us with a memorandum on the Federal income taxation of commercial banks? We want you to do that. We would like the memorandum to describe the general provisions under which those banks are taxed, as well as any provision of the code which have special application to commercial banks.

We are particularly interested in the code's provision with respect to determination of income and tax consequences when premiums or dis-

counts on bonds including tax-exempt bonds, are involved, and the treatment provided when gains or losses are realized upon the disposition of bonds.

Do those provisions of special applicability involve significant revenue losses for the Government? Are these provisions, in your opinion, likely to affect the decisions of portfolio managers in such a way that the Government bond market as a whole is influenced for tax consideration as such?

Do the standards applied by the examining agencies in respect to the handling of discounts, premiums, losses, and recoveries conform to the requirements of the Internal Revenue Service?

Those are the questions, generally, we would like to have answered. But we would like to have a complete study. And I think it is appropriate to ask you that now, in view of the fact that you do not seem to be clear on what the tax situation is concerning the commercial banks.

Are you willing to furnish us that information, Mr. Martin?

Mr. MARTIN. I will do the best I can. I will consult the Treasury on it, because it is primarily a tax problem.

Chairman PATMAN. I know, but you people have the information over there.

Mr. MARTIN. I will try to get the best memorandum that I can for you on that, but it will take a little time to prepare it. I want to point out that taxation is not our field.

(The requested memorandum on Federal Income Taxation of Commercial Banks appears just below at the conclusion of the record of the morning session.)

Chairman PATMAN. I understand. There seems to be—I do not claim that you are dodging it; I am not making that charge at all—but you are pretty quick to point that out. And you do have a lot of power of which you do not say much about. That is where I argue with you.

I want to read you a communication I have just received from a place in California:

In connection with your current probe of tight-money situation, let me urge legislators to investigate unfairness of FHA law.

While buyers of houses are protected by law, through law stating they can pay no more than 1 percent premium to lending agencies, sellers have no such protection. Result is, in present emergency sellers are in vulnerable position and easy prey for mortgage companies who charge sellers exorbitant discount rates for providing money.

This is manifestly unfair and highly inflationary. Why should sellers have to pay 8 percent to procure money for sale of property which is security enough through intrinsic worth.

Further, let me suggest that someone in Washington is leaking advance news of rate hikes, thus encouraging lenders to stall in negotiations.

Now, of course, you can say that that is FHA, that you have not control over it; which is correct. But you have control of the tight money that is causing these people to charge the sellers even 8 percent in order to sell their property.

In addition to getting the mortgage, selling at a discount, sometimes as low as 10 and 12 percent—in some cases 14 percent discount; I have heard of those—they are making the sellers pay a discount, too.

The law protects the veteran buyer. He cannot pay more than 1 percent.



But since the law is protecting the veteran, they go over and make the seller to the veteran pay.

That looks to me like against conscience. Something ought to be done about that. I don't know whether you can do anything except to maybe loosen up on this money a little bit, because we have had an awful drought in this country, down through the Middle West. And it is a terrible thing.

And we don't have, and we haven't had, much rainfall. We have not had much water there. And we are suffering.

But other sections of the country are not suffering from the drought. That is the way it is with this money. We have a drought of money in certain sections only.

In New York they have plenty of money. The big business fellows can get all of the money they want for plant expansion. But the little fellows out over the Nation, they are in a drought, a very severe drought, a money drought.

I just hope tomorrow, instead of raising the discount rate again, I hope that you will do something about relaxing it, I mean, relaxing the tension and let us have a little easier money.

It is about 12 o'clock. Do you have the Manager of the System open market account here? Maybe I should ask Mr. Hayes that?

MR. HAYES. He is here, Robert G. Rouse.

Chairman PATMAN. He will be here this afternoon?

MR. HAYES. Yes, he will.

Chairman PATMAN. We want to ask him some questions.

Without objection, we will stand in recess until 12 o'clock this afternoon.

(Thereupon, at noon, the committee stood in recess, to reconvene at 2 p. m., this day.)

#### SUPPLEMENTARY QUESTION ON FEDERAL INCOME TAXATION OF COMMERCIAL BANKS

*Question:* Will you please supply us with a memorandum on the Federal income taxation of commercial banks? We would like the memorandum to describe the general provisions under which those banks are taxed, as well as any provisions of the code which have special application to commercial banks. We are particularly interested in the code's provision with respect to determination of income and tax consequences when premiums or discounts on bonds, including tax-exempt bonds, are involved, and the treatment provided when gains or losses are realized upon the disposition of bonds. Do those provisions of special applicability involve significant revenue losses for the Government? Are these provisions, in your opinion, likely to affect the decisions of portfolio managers in such a way that the Government bond market as a whole is influenced by tax considerations as such? Do the standards applied by the examining agencies in respect to the handling of discounts, premiums, losses, and recoveries conform to the requirements of the Internal Revenue Service?

*Answer:* Federal income taxation of commercial banks and the problems arising from such taxation form a highly technical area of Federal tax policy. This particular segment of Federal economic policy is not, of course, the primary responsibility of the Federal Reserve System but rather is the province of the United States Treasury and of Congress. These provisions of the Internal Revenue Code, however, do have some bearing on Federal Reserve actions. Our comments regarding the extent to which these tax provisions have an impact on problems faced by the Federal Reserve were set forth to you in my letter of November 4, 1955, in response to your query of October 17, 1955. At that time we also furnished you a memorandum giving some background information regarding the tax treatment of commercial bank capital gains and losses in Government securities. A supplementary memorandum prepared by the Treasury Department is attached which describes the technical features and answers some of the questions you pose.

The tax treatment accorded bank capital gains and losses, as mentioned in the accompanying memorandum, does have some effect on the decisions of portfolio managers and at times these decisions do have some effect on the action of the Government bond market. As we stated to you in our letter of November 4, 1955, the present provisions of the Internal Revenue Code no doubt make some banks less reluctant than they otherwise would be to sell securities on which they have capital losses and shift into other assets. The possibility of using net capital losses to offset fully ordinary operating income and of simultaneously establishing a new low potential capital gains base encourages switching activity in the Government securities market and thus increases the volume of trading. This is especially the case in periods, such as the present, when low bond prices (relative to recent years) coincide with the end of the year and many commercial banks act to establish a loss position in their bond portfolios. When a bank engages in this type of operation its total holdings of securities are unchanged. However, commercial banks may also be encouraged by these tax provisions to undertake the sale of United States Government securities without an offsetting purchase of some other issue. They then are able to acquire some other asset such as a higher yielding commercial loan, the securities sold by the banks being purchased in large part by other investors. This kind of activity has also been characteristic during the current business upswing and has permitted the banks to be quite responsive to cyclical credit needs in channeling funds from savers to those seeking funds.

It should be pointed out, as mentioned in our letter of November 4, that the sale of Government securities by banks does not add to the total reserve base or credit-extending capacity of the banking system, except when the securities sold are purchased by the Federal Reserve. Sales to other banks or to nonbank investors result in the shifting of reserves among banks, although sales to nonbank investors may reduce deposits and required reserves, thus making possible new extensions of credit in an amount corresponding to the securities sold.

With respect to the handling of discounts, premiums, losses, and recoveries on securities, the Internal Revenue Service and examining agencies follow substantially the same standards, for example, with respect to bonds bought at a discount, neither permits a writeup above cost. It should be noted, however, that with respect to bonds purchased at a premium, examining agencies insist that the premium be charged off or amortized on a consistent and reasonable basis to maturity or to date of sale. For tax purposes, Internal Revenue Service permits the taxpayer to report the difference between cost and the maturity or sales price of wholly taxable bonds as a loss or gain, or to amortize the premium over the period to maturity or earlier call date. For tax-exempt securities an adjustment must be made in the basis of the bond as described in the Treasury memorandum.

---

## SUPPLEMENTARY MEMORANDUM

### FEDERAL INCOME TAXATION OF BANKS

#### I. INTRODUCTION

Banks, as corporations, are taxed on their income under the provisions of the 1954 Internal Revenue Code applicable to corporations generally. For the most part, banks are treated in the same manner as other corporations in regard to the major aspects of corporate income taxation, such as tax rates, the kinds of income reported, the type of deductions permitted, and the treatment of gains and losses on capital assets other than bonds and other evidences of indebtedness.

There are only a few sections of the law that are specifically directed to banks. In subchapter H, chapter 1 of the 1954 code, relating to banking institutions, sections 581-584 set forth rules of general application to banks, including the definition of a bank, the treatment of losses on securities held by a bank, the deduction by banks of amounts paid to the Federal Government on certain preferred stock owned by the Government, and the treatment of common trust funds.

Sections 591-594 of subchapter H establish special rules for mutual savings banks, cooperative banks, and domestic building and loan associations with respect to deductions for dividends paid on deposits (similar to the deduction for interest paid on savings deposits by commercial banks), deductions for repayment of certain loans made by the Federal Government before 1952, the

treatment of bad debt reserves, and the provision of an alternative tax for mutual savings banks conducting life-insurance business.

The remaining specific bank rule, section 601, relates to a special deduction for bank affiliates.

In addition to the specific provisions of subchapter H, there are several sections of the law which apply to corporations generally but which have special importance for banks as a result of their particular economic function. These sections relate to the treatment of bad debts in the case of commercial banks (sec. 166 and the regulations), the amortization of bond premiums (sec. 171), the nonrecognition of gain or loss on exchange of property (sec. 1031), and the treatment of bonds bought at discount (sec. 1232).

## II. TAX PROVISIONS OF SPECIAL IMPORTANCE TO BANKS

### A. Reserve for bad debts

On the basis of section 166, banks and other taxpayers may deduct from gross income wholly or partially worthless bad debts in the year the losses are sustained. As an alternative, the taxpayer may establish a reserve for bad debts and take a current deduction for reasonable additions to such a reserve.

The principal use of the reserve method by banks is in connection with accounting for losses on loans. The regulations supporting section 166 prescribe two methods of determining the annual additions to bad-debt loan reserves. One method is based on a 20-year moving average (including the taxable year) of the ratio of actual losses on loans to total loans. The alternative method, which involves a similar set of computations, is based on a bad-debt ratio derived from the loss experience of any 20 consecutive years since 1927. Under both methods the current addition to the reserve is determined by multiplying the bad-debt ratio (average of losses to loans over the given period) by the loans outstanding at the end of the taxable year to obtain the maximum tentative reserve addition. The actual addition is either this amount or any smaller amount which will make the reserve at the end of the taxable year equal to three times the maximum tentative reserve addition. Thus the current additions to bad-debt reserves are directly limited and the reserve itself is limited indirectly.

The moving-average reserve method was first provided in 1947 and the alternative fixed-period method was authorized in 1954. The latter method, insofar as it allows the banks to use a larger bad-debt ratio than the moving-average method, results in larger current additions to reserves and total reserves. A bank on the moving-average method is allowed to switch to the fixed-period method without obtaining the Commissioner's permission. If a bank is on the fixed-period method, it may elect to use any 20 consecutive years and, consequently, may change from one set of years to another at any time without permission.

In addition to bad-debt reserves against loans, banks—as distinct from other corporations—may elect as a result of section 582 (a) to treat bonds and other evidences of indebtedness with interest coupons or in registered form as bad debts if they become wholly or partially worthless. This allows the banks ordinary loss treatment on such securities either as a current deduction or as a reasonable addition to bad-debt reserves for bonds. Specific reserve methods are not prescribed in this case but any reserve for losses on bonds may not merely reflect market fluctuations in bond prices.

### B. Worthless stock in affiliated banks

Under section 582 (b) a bank is allowed to treat worthless stock in an affiliated bank as ordinary loss, provided the bank owns directly at least 80 percent of each class of stock of the other bank. This provision represents a change made in 1954 from prior law. According to the report of the Senate Finance Committee:

"Under present law (1939 code), losses on completely worthless stock or securities owned in an affiliated corporation are allowed as an ordinary loss if 90 percent of the aggregate gross income of the affiliated company for all taxable years was derived from sources other than investment income. In the past banks have not qualified for this tax treatment because most of their income is derived from investment sources.

"Both versions of the bill (H. R. 8300) remove this restriction in the case of banks by treating stock held in an affiliated bank as a noncapital asset. This provision places banks on a parity with other business corporations. Although the principal qualification of other types of business affiliates entitled to such

tax treatment is noninvestment income, this rule was adopted to limit the tax benefits to companies whose affiliates were engaged in the same general type of business as the parent, rather than those used as a dumping ground for undesirable investments. Since loans and investments are the stock in trade of banks, it appears discriminatory not to allow banks a similar opportunity to take an ordinary loss on worthless stock in an affiliated company."

#### *C. Gains and losses on bonds and other evidences of indebtedness*

Banks, unlike other corporations, are allowed by section 582 (c) ordinary loss treatment on the sale or exchange of bonds, debentures, notes, or certificates, or other evidences of indebtedness, issued by any corporation (including one issued by a government or political subdivision thereof), with interest coupons or in registered form, if such losses exceed the gains of the taxable year from sales or exchanges of such securities. On the other hand, if in the taxable year gains on sales of bonds exceed losses on such sales, the net gain is subject to tax as a capital gain at a 25 percent rate.

This treatment is substantially the same as that permitted under section 117 (i) of the 1939 code, which came into being with the Revenue Act of 1942. The justification for section 117 (i) advanced at the time was that bonds were a necessary type of investment for banks. Moreover, section 117 (i) parallels the treatment under section 117 (j), which was enacted at the same time, and relates to depreciable and other real property used in a taxpayer's trade or business and held for more than 6 months, except for property includible in inventory or held primarily for sale to customers.

Section 1031 (a) also relates to gains and losses and provides, generally, that on exchanges of property held for productive use or for investment no gain or loss shall be recognized, but an exception is made for exchanges of stock in trade, bonds and other evidences of indebtedness, and equities. It is this exception which is of interest to banks since it means that on any exchanges of bonds at a gain or loss, the gain or loss will be recognized. Gain on exchange of bonds would be taken into account as capital gain. Losses, on the other hand, would be treated as ordinary losses provided the conditions of section 582 (c) were met, i. e., total losses exceeded total gains.

It should be recognized, however, that insofar as losses on exchanges of bonds are concerned the key provision is section 582 (c). In other words, as long as section 582 (c) allows banks ordinary loss treatment on the sale or exchange of bonds, provided losses exceed gains, it is immaterial that section 1031 (a) states in a negative manner that gains or losses on such exchanges will be recognized.

Estimates of the revenue effects of allowing banks full deductions as ordinary loss for net losses on sales of bonds, debentures, etc., will vary with the assumptions made. The latest available data from the corporate Statistics of Income for 1953 show the item "Net Loss, Sales Other Than Capital Assets" as reported by banks and trust companies to be \$212 million, of which \$197 million was reported by those with net incomes. The bulk of this item is assumed to be losses on sales or exchanges of bonds. In the absence of the provision for deduction as ordinary loss, it may be assumed that this amount of capital loss could be offset against capital gains currently or through a loss carryover to other years. The net effect of the ordinary loss treatment is thus to allow a deduction effective against income at a rate of generally 52 percent rather than 25 percent, or a differential of 27 percent. Thus, for 1953, there would have been a maximum revenue effect of \$53 million, on the assumption that the same volume of sales and exchanges would have been transacted in the absence of ordinary loss treatment. If, however, it were assumed that without this tax treatment, the volume of loss on sales and exchanges would have been substantially contracted, as is probable, the revenue loss would, of course, be commensurately smaller.

#### *D. Amortization of bond premiums*

In purchasing bonds for investment purposes, banks at times buy bonds at a premium, equal to the excess of a bond's purchase price over its redemption price. Under section 171, banks and other taxpayers are allowed to amortize the bond premium to maturity or earlier call date and to deduct from income in each taxable year the portion of the premium amortized in that year. By this procedure the premium is gradually recovered over the remaining life of the bond. In effect, this provision provides an appropriate current adjustment of the interest to its approximate real amount.

The bond premium amortization rule applies, however, only to bonds the interest on which is wholly or partially taxable. Tax-exempt bonds, as is the

case with municipal bonds, are specifically excluded from the provisions of section 171.

A distinction is also made between callable and noncallable bonds in connection with the period over which the premium may be amortized. As noted above, the premium may be amortized to maturity or earlier call date, except that in the case of wholly taxable bonds issued after January 22, 1951, and acquired after January 22, 1954, the premium may be amortized to the nearest call date only if that date is more than 3 years from the date of original issue. Therefore, bonds with a very short call feature, such as 30-day callable bonds, may not now be used as vehicles of tax abuse as was the case under prior law.

When a bank or other taxpayer amortizes bond premiums, a compensating adjustment of the basis of the bond must be made to insure that a double deduction of the premium does not occur; that is, to insure that there is not a loss on sale or redemption of the bond attributable to the amortized portion of the premium in addition to the deduction for the amortization of premium. Even though tax deductions for amortization of premiums on tax-exempt bonds are not allowed, the adjusted basis of such bonds must be reduced over time as if the premium were being amortized. The reason is, of course, that if reduction of basis of tax-exempt bonds bought at a premium were not required, losses would arise on sale or redemption of the bonds (attributable to the premiums), a result inconsistent with the rule that premiums on tax-exempt bonds cannot be amortized and deducted currently.

The general rules relating to premiums on tax-exempt bonds applicable to investors are also applied to banks and others who are dealers in tax-exempt securities, except where a dealer buys short-term municipal bonds at a premium which are disposed of within 30 days of purchase or the bonds' earliest maturity or call date is more than 5 years from the purchase date. The effect of these exceptions is to allow the dealer to realize an ordinary loss upon sale or redemption of such bonds. Recently the staffs of the Joint Committee on Internal Revenue Taxation and the Treasury Department recommended to the Subcommittee on Internal Revenue Taxation of the Committee on Ways and Means that the 30-day and 5-year rules be removed so as to treat dealers and investors in tax-exempt bonds in the same manner.

#### *E. Bonds bought at discount*

Section 1232, relating to bonds and other evidences of indebtedness, is another general provision of the code in which banks as substantial purchasers of bonds have an interest. Specifically, this section states, in part, that a portion of any gain realized on taxable bonds bought at a discount and which were originally issued at a discount will be taxed as ordinary income.

To summarize briefly, when a bond is issued at a discount, the difference between the bond's issue price to the public and its redemption price at maturity is called the original issue discount. Any gain on sale of the bond which represents recovery of this discount is taxable as ordinary income and gain in excess of the discount is treated as capital gain. Where a bond is sold before maturity the original issue discount is spread pro rata over the entire life of the bond. This procedure reduces the amount of the total discount which is recovered as ordinary income at the time of sale. In connection with the computation of original issue discount, it should be noted that where the discount is less than one-fourth of 1 percent of the redemption price multiplied by the number of complete years to maturity, the original issue discount is deemed to be zero. Thus, any gain realized by the bondholder would be a capital gain. This rule serves to eliminate cases in which the ordinary income part of any gain is likely to be very small.

#### *F. Deduction of dividends paid on certain preferred stock*

According to section 583, which conforms substantially to section 121 of the 1939 code, the dividends a bank pays on its preferred stock owned by the United States or any instrumentality thereof which is exempt from Federal income tax are deductible from gross income. This provision reflects the fact that at times certain Federal agencies advance funds to banks in financial difficulties in exchange for preferred stock in order to sustain the banks and to protect the depositors.

#### *G. The treatment of common trust funds*

Banks often establish common trust funds for the collective investment and reinvestment of funds placed in their care as trustees, executors, administrators, or guardians. Section 584, which relates to the tax treatment of such trust funds, provides, essentially, that a common trust fund shall not be considered

a corporation and that the income of the trust fund shall be taxable in the hands of the individual participants. In other words, the common trust fund is viewed as a conduit and is treated more or less like a partnership.

#### *H. Special deduction for bank affiliates*

A holding company affiliate of a bank is allowed by section 601 a special deduction in connection with the computation of accumulated taxable income and undistributed personal holding company income. The deduction is allowed in the amount of earnings or profits of the affiliate which, in compliance with the law, has been devoted during the taxable year to the acquisition of readily marketable assets other than bank stock. To obtain this deduction, the Board of Governors of the Federal Reserve System must certify that such an amount of the earnings or profits of the holding company has been devoted to the prescribed use.

This section of the 1954 code corresponds substantially to section 26 (d) of the 1939 code.

#### AFTERNOON SESSION

Chairman PATMAN. The committee will please come to order.

Is the manager of the open market account available now?

Mr. ROUSE. Yes, sir.

**STATEMENT OF WILLIAM McCHESNEY MARTIN, JR., CHAIRMAN, BOARD OF GOVERNORS OF THE FEDERAL RESERVE SYSTEM; ACCOMPANIED BY ALFRED HAYES, C. CANBY BALDERSTON, J. A. ERICKSON, W. D. FULTON, DELOS C. JOHNS, A. L. MILLS, JR., OLIVER S. POWELL, J. L. ROBERTSON, CHARLES N. SHEPARDSON, AND M. S. SZYMCAK, MEMBERS OF THE FEDERAL OPEN MARKET COMMITTEE; AND ROBERT G. ROUSE, MANAGER, SYSTEM OPEN MARKET ACCOUNT—Resumed**

Chairman PATMAN. Give your name to the reporter, if you please.

Mr. ROUSE. Robert G. Rouse.

Chairman PATMAN. Is Mr. Robert V. Roosa in your office?

Mr. ROUSE. He is a vice president of the Federal Reserve Bank of New York, and presently in charge of research and statistics. He was associated with me in the open market function until comparatively recently.

Chairman PATMAN. You are acquainted with his book?

Mr. ROUSE. Yes.

Chairman PATMAN. I think it was written on Federal Reserve Operations in the Money and Government Securities Markets. He was with the Open Market Committee quite a long time, was he not?

Mr. ROUSE. Yes, he was with the function for approximately 3 years. He is still interested in it, of course, as an economist.

Chairman PATMAN. You have complete charge of what you call the open market account for the New York Federal Reserve Bank?

Mr. ROUSE. Yes, sir; I am manager of the account.

Chairman PATMAN. And you were selected by Mr. Hayes of the New York Federal Reserve Bank, or by the Board of Directors?

Mr. ROUSE. I was selected originally by Governor Harrison and Allan Sproul in November 1939, approved by the directors of the bank, and approved by the Federal Open Market Committee.

That was an annual process thereafter, and it has been carried out through March of this year, when I was last selected and approved by the Committee.

Chairman PATMAN. You are employed by the bank?

Mr. ROUSE. I am a vice president of the bank.

Chairman PATMAN. And approved by the Open Market Committee?

Mr. ROUSE. Correct, sir.

Chairman PATMAN. Including the Federal Reserve Board?

Mr. ROUSE. Yes, sir.

Chairman PATMAN. Where do you get your pay?

Mr. ROUSE. From the Federal Reserve Bank of New York.

Chairman PATMAN. From the Federal Reserve Bank of New York. You are hired and paid by the Federal Reserve Bank of New York?

Mr. ROUSE. That is right, sir.

Chairman PATMAN. In your operations in connection with the open market, you buy and sell Government securities for all the 12 Federal Reserve banks?

Mr. ROUSE. That is correct.

Chairman PATMAN. Under the 1935 act, no other bank has any right to buy or sell securities, but each bank is obligated to carry out instructions from you?

Mr. ROUSE. They are obliged to sell or buy as the account sells or buys.

Chairman PATMAN. When you buy, say, a million dollars worth of Government securities, you give a check on some bank, do you not?

Mr. ROUSE. We give our own check.

Chairman PATMAN. You give a check on the Federal Reserve Bank of New York?

Mr. ROUSE. Yes, sir.

Chairman PATMAN. How do you allocate that million dollars among the 12 Federal Reserve banks?

Mr. ROUSE. It is in accordance with the daily averages of the total resources of each bank, pro rata.

Chairman PATMAN. In other words, you will determine the daily average of the resources, value of the resources, of each bank, and then that million dollars will be allocated to each bank in proportion?

Mr. ROUSE. That formula was adopted by the Federal Open Market Committee. This is done annually. As of February 28, or some such date, we each year allocate the securities if, by reason of the application of that formula each day, or each day that a transaction takes place, some variance has developed during the year; and the Committee has the opportunity to reassess the propriety of that formula at any time that it sees fit.

Chairman PATMAN. If there is any—in other words, if it is not properly balanced, you make the adjustment at the end of the year?

Mr. ROUSE. The Committee authorizes an adjustment in the formula.

Chairman PATMAN. If it is necessary for New York banks to transfer bonds to, say, Dallas, Tex., Dallas, Tex., will send you Federal Reserve notes to pay you for them?

Mr. ROUSE. It is done through the interdistrict settlement fund.

Chairman PATMAN. Now then, suppose you should buy a million dollars worth of bonds from the Dallas bank, and the Dallas bank said, "I want Federal Reserve notes in payment of these bonds, a million dollars," how would you go about getting those notes delivered to the Dallas bank?

Mr. ROUSE. We have never had that question come up, Mr. Patman.

Chairman PATMAN. I beg your pardon?

Mr. ROUSE. That is a new—I don't think I understand your question.

Chairman PATMAN. Well, you see, these Federal Reserve notes, of course, are printed by the Bureau of Engraving and Printing here in Washington. In some way you get that million dollars worth of Federal Reserve notes to pay that Dallas bank. How would you get those notes? How would you get them away from the Bureau of Engraving and Printing?

How would you get them delivered to the New York Federal Reserve Bank for that purpose?

Mr. ROUSE. It is a bookkeeping transaction through the interdistrict settlement fund, I believe, which is carried out at the Board of Governors' office.

Chairman PATMAN. In practice, it is a bookkeeping operation. But the truth is, all the bonds that you have—and you have about \$25 billion worth of bonds, do you not?

Mr. ROUSE. Something less than that; yes, sir.

Chairman PATMAN. About 24 or 25?

Mr. ROUSE. About 24.

Chairman PATMAN. Every one of those bonds have been bought, not on the resources of the Federal Reserve banks, but on the credit of the Nation by exchanging Federal Reserve notes for them, have they not?

Mr. ROUSE. Yes; they are bought by the—out of Federal Reserve funds.

Chairman PATMAN. No; you are mistaken there, are you not? You do not say that they are bought with Federal Reserve funds. The money is created by those bonds. Do you not understand that?

Mr. ROUSE. It is created—yes, indirectly.

Chairman PATMAN. Well, directly.

In other words, if you buy bonds, you must pay for them, and those \$24 billion worth of bonds were paid for, but not by Federal Reserve bank funds; they were paid for by Federal Reserve notes.

Now, I will not insist on your answering that. I will ask Mr. Martin to answer that.

Is that not correct, Mr. Martin?

Mr. MARTIN. It would be the same thing, sir.

Chairman PATMAN. In other words, that is where the power to create money comes in through the Federal Reserve.

Mr. MARTIN. Yes.

Chairman PATMAN. You create the money. In other words, the money is printed, it is paid for the bonds, the \$24 billion worth of bonds.

Mr. MARTIN. We have the power to create money.

Chairman PATMAN. And you did do it to buy these bonds?

Mr. MARTIN. In the purchase of bonds, we ease the money market; in sales of bonds—

Chairman PATMAN. I am not talking about the reasons or arguments. I am just asking.

Mr. MARTIN. I was just talking about the process. The purchase of bonds would ease the money market, and the sale of bonds would contract it.

Chairman PATMAN. Let's divorce it from any argument about any market, easy or hard, and confine it to the bonds that you already have.



You have \$24 billion worth of bonds. Now, those bonds were bought by giving of Federal Reserve notes in exchange for the bonds, were they not?

Mr. MARTIN. Well, Federal Reserve credit.

Chairman PATMAN. What is that?

Mr. MARTIN. Federal Reserve credit. They were not specific—

Chairman PATMAN. That is what I mean. But every one of them is an obligation of the United States Government, is it not?

Mr. MARTIN. That is correct.

Chairman PATMAN. And every one of those notes that you trade for those bonds of the Government says on its face that it is an obligation of the United States Government?

Mr. MARTIN. That is correct.

Chairman PATMAN. And that is what makes it good.

Mr. MARTIN. That is right.

Chairman PATMAN. Now then, whenever you take that Government obligation from the Bureau of Engraving and Printing and you trade it for \$24 billion worth of bonds which you have, and you have those bonds now, you draw interest on those bonds, do you not?

Mr. MARTIN. We do.

Chairman PATMAN. About \$600 million a year; and, although you traded one Government obligation for it, you keep the bonds and you do not cancel them. They pay interest, and you use that \$600 million in any way that is allowed by law, for administrative purposes in the operation of the Reserve banks. And then, of course, after all the deductions have been made, why, you pay 90 percent of the remainder into the Treasury of the United States?

Mr. MARTIN. That is correct.

Chairman PATMAN. The point I am trying to make, Mr. Martin, is, I am trying to answer a fallacious argument that is going over the country: No. 1, that these reserves that the member banks have in their Federal Reserve Banks are used to buy these bonds. That is a fallacy, is it not?

Mr. MARTIN. That is a fallacy.

Chairman PATMAN. That is a fallacy; it is not true.

Mr. MARTIN. That is right.

Chairman PATMAN. All right.

No. 2 is that the banks own the Federal Reserve Banking System, and it is run by the banks, it is operated for their benefit.

That is a fallacy, is it not?

Mr. MARTIN. That is a fallacy.

Chairman PATMAN. Now, the reason it is a fallacy is because the stock in the bank does not mean anything to the operation of that bank, does it? In other words, it is not used.

Mr. MARTIN. The stock in the bank is not proprietorship.

Chairman PATMAN. It is not used at all, is it? There is no use that that stock is put to?

Mr. MARTIN. Well, the—

Chairman PATMAN. The member banks.

Mr. MARTIN. There is a use put to it in the sense that it provides participation in the vote.

Chairman PATMAN. That is kind of psychological, to make them feel they are part of the System.

Mr. MARTIN. No. It creates the power to vote.

Chairman PATMAN. The what?

Mr. MARTIN. It creates the power to vote.

Chairman PATMAN. The power to vote for——

Mr. MARTIN. It is not proprietorship.

Chairman PATMAN. The power to vote for directors to run the bank.

Mr. MARTIN. Yes.

Chairman PATMAN. Well, that is easy. That is nice. [Laughter.] I was wondering what they did.

But they paid in about \$300 million?

Mr. MARTIN. That is right.

Chairman PATMAN. In stock. And that stock now is there, but it is really useless to the banking system except make them believe, "Now you have got an interest in this thing, and that determines your participation in electing directors."

But do they vote according to the amount of stock they have?

Mr. MARTIN. No; not precisely.

Chairman PATMAN. Well, you see, that is knocked in the head, too, is it not? What I mean is, it is not used for that purpose.

All right.

So it is used to give the bankers a feeling that they have an interest in the Federal Reserve System when they don't have any interest except they get 6 percent interest on that stock, 6 percent dividend: is it not?

Now, is it not a fact, and we have gone over this before, that the Federal Reserve System and the Federal Reserve banks are Government institutions operated for the Government?

Mr. MARTIN. The Federal Reserve Board is clearly Government. The Federal Reserve banks, under our setup, are quasi-Government.

Chairman PATMAN. Are quasi-what?

Mr. MARTIN. Quasi-Government; they have an independent board of directors.

Chairman PATMAN. All right, let's examine that.

That stock, or that word "stock" is a misnomer, is it not?

Mr. MARTIN. If you are talking about stock in terms of proprietorship—ownership—yes.

Chairman PATMAN. Well, of course that is what stock is; yes. Normally that is what stock is; when you say "stock," you mean a proprietary interest of some kind, do you not?

Mr. MARTIN. In the ordinary sense, yes.

Chairman PATMAN. That is right, in the ordinary sense.

Mr. MARTIN. You and I are in agreement that it is not proprietary interest.

Chairman PATMAN. Yes.

Therefore, this does not convey any proprietary interest at all, and the word "stock" is a misnomer. It is not a correct word at all. It is just an involuntary assessment that has been made on the banks as long as they are members.

Now, they go out, the money is refunded to them. But as long as they are members, they get 6 percent annually on that.

And as evidence of the fact that they do not have any proprietary interest, which you admit, is the fact that this so-called stock cannot be sold, it cannot be hypothecated, and as a convincing and unanswerable argument that the banks have no interest in the Federal Reserve System as such, financial or proprietary interest, the law specifically

provides that in the event of the liquidation of a Federal Reserve bank, that after they get their \$300 million stock back, the Government gets everything else. That is right; is it not?

Mr. MARTIN. That is right.

Chairman PATMAN. Now, if the banks had any proprietary interest in that, they would get what was left after liquidation, would they not?

Mr. MARTIN. Well, you and I are in agreement it is not proprietary interest.

Chairman PATMAN. Yes.

Therefore, the statement that the banks own the Federal Reserve System is not a correct statement, is it?

Mr. MARTIN. The banks do not own the Federal Reserve System.

Chairman PATMAN. That is right.

Mr. MARTIN. But the banks do participate in the management.

Chairman PATMAN. It is an agency operated in the Government's interest by public members, seven members of the Federal Reserve Board, each one selected for a term of 14 years, and he cannot succeed himself after he fills out the whole term.

Of course, he can fill out two or three part-terms and make it 25 years. That would be all right. And they are selected by the President and confirmed by the Senate.

Mr. MARTIN. That is correct.

Chairman PATMAN. Now, you state—I am about to get off of this gentleman over here, and I will go back and ask him another question.

Senator O'MAHONEY. You are going to let him up? [Laughter.]

Chairman PATMAN. I think I had better ask Mr. Martin this instead of this gentleman:

I believe you have stated repeatedly, Mr. Martin, that the Treasury, in sizing up what kind of interest rate should be charged—and Mr. Humphrey has testified a number of times before this committee, I know, to that effect—that the Treasury will call in people who are dealers and people who have something to do with the sale of Government securities, and that they talk to the Treasury, and then they talk to you.

Almost invariably they go from the Treasury to your shop, do they not?

Mr. MARTIN. They frequently do; yes, sir.

Chairman PATMAN. They frequently do, and they are the ones that are consulted for the purpose of determining the interest rate that should be paid on Government bonds; I mean they are the ones that the Treasury uses. And you, of course, either say "yes" or "no."

Mr. MARTIN. We consult with the Treasury. We don't say "yes" or "no" on their interest rate. We are glad to give them the best advice that we have about what we think the market is.

Chairman PATMAN. Do you really believe we have a free market in Government bonds, Mr. Martin?

Mr. MARTIN. Well, all freedom is relative, but I say there are forces in the market place, as I have repeatedly said to you, that are stronger than both the Federal Reserve and the Treasury together. Some people question that, but I think that is where the law of supply and demand comes in.

Chairman PATMAN. You would not positively and without reservation say that there is a free market at all times in Government bonds?

Mr. MARTIN. I would say that there is some intervention, as was provided in the Federal Reserve Act, in the market, but that generally speaking, the market forces are permitted to operate.

And since the Treasury-Federal Reserve accord in 1951, the market forces, the market has been relatively free.

Now, that does not mean that we step completely aside and let the market become the law of the jungle. We are there as a guardian. We are trying to develop a climate and a general situation in which the players on the field have the best conditions to operate in.

But we do not make the market.

Chairman PATMAN. I am not going to pursue that accord further, but you have dug up a real snake that I want to help you kill on that.

Senator O'MAHONEY. Mr. Chairman, may I ask a question on that point?

Chairman PATMAN. Yes, sir.

Senator O'MAHONEY. Your answer is a qualified one, is it not, Mr. Martin?

Mr. MARTIN. Yes; it is qualified.

Senator O'MAHONEY. You do not want this committee or anybody who reads or hears this testimony to believe that you are saying that there is a free market in Government securities. There is not, is there? Am I not right?

Mr. MARTIN. There is not a completely free market in Government securities. We are watching over it from time to time.

Senator O'MAHONEY. It is as free as you will allow it to be.

Mr. MARTIN. It—there are—

Senator O'MAHONEY. You do not want a free market in Government bonds, do you?

Mr. MARTIN. Yes, indeed, I want the forces of the market to be permitted to play, but I don't want—

Senator O'MAHONEY. Let's follow this through.

You cannot get any answers to any questions, particularly to a complex question involving money, unless you are clear about your definitions.

Now, a free market, in the question which I am directing to you, is a market in which the law of supply and demand alone operates. It will go up or it will go down according to the forces which operate in the market, without Government intervention which will affect it. That is a free market.

Mr. MARTIN. Well, we have some Government intervention in this market.

Senator O'MAHONEY. That is the whole point.

Now, the whole issue here is to what extent and how should Government intervene? The Federal Reserve Board does intervene. Some people who come to us tell us that your intervention is bad for them. And for the economy of certain regions.

Others tell us that your intervention is good.

Your explanation of the intervention is that you want to prevent inflation. But you cure inflation or prevent inflation by providing a certain amount of inflation in the cost of money. When you raise the interest rate, all in the world you are doing is raising the price of money; is that not right?

Mr. MARTIN. No, Senator. The cost of money, it is the demand for money which creates the inflation. We could—

Senator O'MAHONEY. But you can control the interest.

Mr. MARTIN. We could control the interest at a price which would be depreciation of the dollar. Now, if you want us to control it in that way, it can be done.

Senator O'MAHONEY. Don't you see, you are changing the subject.

Mr. MARTIN. I don't think so. I don't think you can cover this subject except by looking at it as a process.

Senator O'MAHONEY. No matter—accepting your answer just as you made it, it nevertheless is true, is it not, that you have intervened, that you have raised the cost of money, and that you have done so for the express purpose of preventing the price of other commodities from rising?

Mr. MARTIN. Let's put it this way: We have not supplied all the money that is required to prevent a rise in interest rates.

Senator O'MAHONEY. Will you repeat that, please?

Mr. MARTIN. We have not supplied all of the credit which is necessary to prevent a rise in interest rates.

Senator O'MAHONEY. That is precisely true. You have not supplied all the money which the free market demands; you assert, and I think with propriety, that the object of your doing this is to prevent inflation.

But the sad fact is that it does not prevent inflation, because all you have got to do is look at the prices in the Economic Indicators to know that the prices of all goods except farm commodities have been going up, and particularly have the prices of dividends been going up, the value of securities going up, but the income of the farmer has been going down. And if you will pardon me while Mr. Moore hands me this document, prepared by the Council of Economic Advisers and printed under the authority of this committee, the figures I am going to read to you now will explain why so much complaint about this matter comes from rural areas.

Sometimes it is hard to find the exact page where these figures appear. Let's get it piece by piece.

Here it is—page 7, entitled "Farm Income," shows that the farm operators' net income, excluding adjustment for inventory change, which in 1951 was \$14.8 billion, has fallen every year since then until in 1955 it had fallen to \$11.3 billion.

Now, while that was going on, the returns from dividends were increasing: Dividends in 1950 amounted to \$9.2 billion. In 1952 they were \$9 billion flat, in 1953, \$9.3 billion, in 1954, \$10 billion, and in 1955, \$11.2 billion.

At the same time, personal interest income was increasing from \$10.6 billion to \$16.1 billion. In other words, while the farm economy was going down, the income of those who have dividends, who receive dividends for income and who receive personal interest, collect the interest.

So not only is the home builder paying more money, more interest for the money that he borrows, not only is the small-business man paying more interest for the money that he borrows, but the Government itself is paying more money, more interest for the money that it borrows.

Under your policy, the cost of money to the Government of the United States and to a vast segment of the people of the United States has increased, and some have complained about it.

Now, it is your policy that does it. I will admit there are other factors—of course, there are other factors—but you have spoken very frankly against pegging bonds; have you not?

Mr. MARTIN. I have, indeed.

Senator O'MAHONEY. You do not believe that bonds should be pegged. You could peg them; could you not?

Mr. MARTIN. We could.

Senator O'MAHONEY. But the reason you do not believe in pegging them is because you believe that that would cause inflation?

Mr. MARTIN. Because the price of that would be too great.

Senator O'MAHONEY. The price would have to be too great.

I am not arguing whether you are right or wrong. I am just trying to get the facts right out here on the table where we can all look at them and see them, without a misunderstanding of what we mean.

So here, somewhere along the line, because of this judgment which you have just repeated, you intervened as a Government board, and you changed the rate of interest.

Now, it injures some people; it certainly helps the banks. It helps those who collect interest, who loan money, but it does not help those communities which want to build schools, the communities which want to build roads, the people who want to build homes, the businesses which want to expand.

Now, am I wrong in that statement of fact?

Mr. MARTIN. Well, I think there are two sides to it, Senator. The demand for credit is what is creating the increase in interest rates. The Federal—

Senator O'MAHONEY. Why do we have an increased demand for credit?

Mr. MARTIN. Because the people are trying to do too many things too fast.

Senator O'MAHONEY. That is your judgment.

Mr. MARTIN. Well, that seems to be borne out, I think, by the facts in terms of prices. We could supply all the money that everybody is requesting today.

Senator O'MAHONEY. Do you think that the people who want to build more schools for their children want to do it too fast?

Mr. MARTIN. I am not passing a judgment on whether they are doing it too fast or not; I don't know. But I am saying that they have to face up to what I was discussing with you this morning, whether they would rather pay \$3½ million for that school instead of \$3 million for that school.

Senator O'MAHONEY. What I want to point out to you, sir, is the conflict between two different branches of the Government. You do not want to take the steps that would make the cost of money less to the communities which want to build schools; but we understand from the announcements that come from Augusta that the President is going to ask the Congress to appropriate money to build schools, to aid the States in building schools.

Now, will that not be inflationary, too, by increasing the expenditure? Would it not be better, by a lower interest rate, to get that money from investors, particularly when the investors might be in the very school districts?

Mr. MARTIN. If the people of the United States wish, through their Congress, to depreciate their dollar in order to build schools, that is certainly within the purview of Congress.

Senator O'MAHONEY. Well, now, Mr. Martin, I have never been very much impressed by this talk about depreciating the dollar, because I know that the purchasing power of the dollar has been steadily decreased since this Government was founded.

You will agree with me on that, will you not?

Mr. MARTIN. I think it has been depreciated often far too much. But I don't think we are asked to —

Senator O'MAHONEY. The falling price of the dollar has accompanied steadily the increasing prosperity of the Nation.

Mr. MARTIN. Well, that I don't agree with you on, Senator.

Senator O'MAHONEY. I will show you a chart produced by one of these Cleveland banks which was presented to us several years ago, which shows the fluctuations of the dollar. And the better we have grown, the prouder we have grown, the more productive we have grown, the less we have been able to get for the dollar, because we have so many of them. The dollar is merely an instrument of doing these things.

Mr. MARTIN. Here are wholesale prices which have been given to me by Mr. Young, which shows the fluctuations. Now, you can always handle a situation of this sort by outright depreciation of the dollar, but there are many factors that go into each one of these situations, and I do not think that the inflation has improved at any time the prosperity of the country.

Senator O'MAHONEY. Here is a chart on wholesale prices, too, and this comes from the Council of Economic Advisers.

Mr. MARTIN. I am quite sure it will agree substantially with this.

Senator O'MAHONEY. Very likely, but what does it show? It shows that the prices, the industrial prices, have been rising, in 1952, 1953, 1954, 1955, and 1956, the same period during which you have been raising the interest rates; that all commodities have risen from index 110 in 1952 to an index of about 116 in 1956; whereas the prices of farm commodities have fallen from an index of 100 in 1952 to an index of about 89 in 1956.

So what has your increase in interest rates been doing?

Mr. MARTIN. Are you suggesting that our policy has not been progressively severe enough?

Senator O'MAHONEY. I am suggesting, sir, that your policy has not been effective, that one segment of our economy is suffering and another segment of the economy is profiting from the policy that you followed.

Mr. MARTIN. Well, I don't agree with you on that.

Senator O'MAHONEY. You do not deny that dividends have increased?

Mr. MARTIN. Well, is that bad?

Senator O'MAHONEY. What?

Mr. MARTIN. Is that bad?

Senator O'MAHONEY. But farm prices have fallen.

Mr. MARTIN. Well—

Senator O'MAHONEY. That is bad.

Mr. MARTIN. There are two different sets of premises that you are dealing with.

Senator O'MAHONEY. No; I am making them all out of one chart.

Mr. MARTIN. Oh, no. The supply and demand in securities and the supply and demand for farm products are two different sets of factors, and that is what we cannot get away from.

Senator O'MAHONEY. Let me put it this way, Mr. Martin. You are too nice a man to argue with, although I would enjoy it, but I just want to say to you that I would like to have you write another paper to submit to this committee, in which you will undertake to show that the policy has actually been successful and could not be varied one way, one jot or tittle either way, for the benefit of the country.

Mr. MARTIN. Well, for the sake of the record, let me say that we have never claimed that our policy has been a hundred percent perfect, and we never will. It is not the nature of this problem that you can have a hundred percent perfection.

But I will say that so far as making the blanket charge that because there have been increases in prices the policy has failed, let us never forget that there are budgetary and fiscal problems, also; but the real test is how much higher would those prices have risen if the law of supply and demand in the money market had not been permitted to operate to dampen down somewhat the rate of spending and proceed to move in the direction of increasing savings.

That gap between savings and investment has to be met by some process.

Senator O'MAHONEY. Well, you are buying bonds right now in order to supply more money for the Christmas trade; are you not?

Mr. MARTIN. That is correct.

Senator O'MAHONEY. That is a justifiable purpose, in your mind?

Mr. MARTIN. That is right.

Senator O'MAHONEY. But it would not be a justifiable purpose, in your mind, to buy bonds to stabilize the Federal bond market and prevent a further decline in those bonds?

Mr. MARTIN. Except in the instance of a disorderly market, we would think that buying bonds just for that purpose, under present conditions—

Senator O'MAHONEY. How about for building of schools? Do you not think you might as well help the building of schools as help the retail merchants to supply the Christmas trade?

Mr. MARTIN. Well, now you are in a different field.

Senator O'MAHONEY. I have to jump around to different fields to keep up with you.

Mr. MARTIN. On the building of schools, I make no observation as to its desirability or undesirability, but I want those schools to be built with the price of labor and materials which will give the users of those schools the maximum value, and minimize their expenses in creating those schools.

Now, if it requires them to delay a little bit from time to time, I personally would think it would be preferable to delay than for everybody to rush in for a limited supply of steel and building materials and bid the prices up.

That is where I come back to this demand factor.

Senator O'MAHONEY. But when you delay the building of schools, you are delaying the education of children; and nature seems to have provided a limit to the life of man. It has been extended a little bit



by the decrease in infant mortality, but the old rule of three score and ten seems still to apply, if the obituary notices in the newspapers are indicators, and I think you can well make a selective exception from your rule in the case of building schools.

Mr. MARTIN. Well now, how many exceptions do we make?

Senator O'MAHONEY. That would be up to you. You make some exceptions, you have made six different changes, the chairman tells us.

Mr. MARTIN. Well, those have been impersonal. They have not been directed toward helping schools or houses or automobiles.

Senator O'MAHONEY. I led off with the one which was specific, and that was the Christmas trade. I asked you that question.

Mr. MARTIN. Well, we have a definite responsibility to supply the seasonal needs of all business, not just the Christmas trade.

Senator O'MAHONEY. Now you see why I have to jump from field to field with you. [Laughter.] You cannot defer the need of education or training.

Mr. MARTIN. I would like to associate the Board a hundred percent with the desire for education [laughter], and we are all united in our belief that education is of paramount importance.

Senator O'MAHONEY. Let me ask you to go one step further, and announce that the Board is united in its determination to do what it can to help the school districts and States of the United States to build the schools they need.

Mr. MARTIN. Without depreciating the American dollar. [Laughter.]

Senator O'MAHONEY. How are you going to deal with the social demands of the country?

May I say this? And then I am going to close my questioning. Of course, Mr. Martin, this is a people's country, not in the sense that the Soviet use that phrase, but in the sense that was stated in the preamble to the Constitution of the United States. This Government was founded to improve the general welfare.

All of the founders of our Government agreed upon that, and all through our history we have had battles between the Congress and the banks to prevent the banks from running the Government in a way that would be injurious to the social progress of the people.

I do not mean to tell you the story of William Henry Harrison and John Tyler. Tyler was a Democrat. He was nominated for Vice President on the Whig ticket because the Whigs thought they could win that way, and only in that way; and one of the purposes of the Whig Party was to reestablish the United States Bank which Jackson had destroyed because he felt that it was taking too much control over the trend of Government.

Tyler tried his best to agree on a charter for the new bank, and made 3 or 4 changes. He vetoed the bill.

Then it was changed, and he couldn't take it. He vetoed it again.

So his inherent support of the right of the people to have these social improvements through the Government overcame his desire to cooperate with the ultraconservative Whigs, who thought that money was more important than people.

That is the same issue that we have now, but it is made much more acute by reason of the facts which we have developed this morning.

The conservative and customary methods of fiscal policy which

could be justified when the national debt of the United States in 1939 was less than \$50 billion cannot be justified now when the national debt of the United States is \$278 billion, and at a period when we must remember that so much of that debt, practically all of it, is money that was spent for destruction, not for productive enterprise at all.

There has been many a wise word said with respect to interest, that it should be paid only on productive loans. That is to say, for projects that create new wealth or earn a legitimate profit, as distinguished from destructive loans or loans that were made to recover from disaster or to wage wars or things of that kind.

We cannot govern this interest problem by shutting off the desire of people in some enterprises to expand and progress, while we grant to others the privilege to expand and progress.

Mr. MARTIN. Well, Senator, I would just like to say that this money power that you have been discussing has been with us as a problem, as you state, from the early days of the Republic.

Senator O'MAHONEY. Right.

Mr. MARTIN. And we have evolved a means of handling it whereby Congress placed a trusteeship over it and wrote a trust indenture in the Federal Reserve Act.

Senator O'MAHONEY. Let me say that the Federal Reserve Board is doing much better than was done before the Federal Reserve Board was created, but you are working under very much more difficult conditions.

Mr. MARTIN. Well, I want to reemphasize what I said this morning, that we welcome this inquiry.

Senator O'MAHONEY. Fine.

Mr. MARTIN. We appreciate the opportunity to review this problem. Our responsibility is an impersonal one with respect to the allocation of resources. Now, it is up to us to present, under the Federal Reserve Act, to you what the price is if you are going to create money in excess of the requirements at a given time, which will go into increases in prices.

Senator O'MAHONEY. What I have been trying to find out, unfortunately without success, all day long is: What is the yardstick by which you measure the amount of money that ought to be created?

Mr. MARTIN. Well, the yardstick—there is no firm yardstick, but we have looked on the normal growth of the country in terms of perhaps 2, 3, 4 percent, no fixed formula, and we have added to the money supply generally for that purpose. But we have to gage things in terms of the demand and supply of credit and business activity.

Now we have increased the money supply 1½ percent over this past year, but the velocity of money has been considerably higher than that, so that a 3- or 4-percent increase during the recession of 1953-54, in terms of the actual use of money, probably contributed less than the 1½ percent that we have been adding today.

But, generally speaking, we have tried to make money available at all times, and although many people say that it hasn't been available, we question it. We have studied it very carefully. It has been available, but the cost of it has been rising because of the demand factors, where the root of inflation comes; the demand factors, not the cost factors, have been the ones that have overpowered the money supply in such a way that interest rates rise; and the saver, under these circumstances, should receive a higher return. And we think this bene-

fits the little man, the pension holder, the small savings account, because let me point out that stable prices are one of the greatest blessings, in my judgment, that the little-business man can have.

The big-business man can defend himself against increases in prices of a jagged sort, but the little-business man is pretty helpless when it comes to a price level that goes haywire.

Chairman PATMAN. What about the price level of interest?

Mr. MARTIN. We are trying to pull all these things together.

I am sorry, Mr. Patman.

Chairman PATMAN. I say, you talk about how injurious a price level is, an erratic price level, on the little man. What about the price level on interest; isn't that destructive to the little man where it goes up—

Mr. MARTIN. Again, I say I would like to have, and you would, too, as low interest rates as we can have.

Chairman PATMAN. Yes, sir.

Mr. MARTIN. But something has to give at given points, and I think that using the credit mechanism as one of the governors on the flywheel of the economy, as I frequently express it, is about the most satisfactory way consonant with free institutions that we have so far devised to handle this money problem, that is a very real one, which Senator O'Mahoney so appropriately raises.

Chairman PATMAN. The way it looks like, the people that you are asking to give are the small-business people, the schools, the municipalities, the home builders and you state here that there is only so much—in effect you say that—so much labor available and so much of materials available, and if you make credit easier, it will not cause any more housing; it will just take away from somebody who is now getting it.

Now, this morning you said something about administered prices and you did not conclude. I wonder if you would mind finishing your statement on that.

Mr. MARTIN. I do not really recall what I said this morning.

Chairman PATMAN. All right, let me ask you anew: Do you recognize administered prices?

Mr. MARTIN. Well, I recognize the fact that in certain industries—

Chairman PATMAN. Prices are fixed?

Mr. MARTIN. (continuing). Prices are fixed.

Chairman PATMAN. Administered?

Mr. MARTIN. You have to determine prices.

Chairman PATMAN. All right.

Now, what percent of the prices are administered prices?

Mr. MARTIN. That I don't know.

Chairman PATMAN. Well, they are in the big industries, are they not?

Mr. MARTIN. Well, they tend to be there, because the demand and supply factors can be gaged a little bit better there.

Chairman PATMAN. Well, they are, as a matter of fact, they are in the big industries.

All right. Now, the big people are getting these loans, so the same people who are benefited under the high interest rate, because they can get loans and other people cannot, they already have charge of the pricing, the administered prices.

Mr. MARTIN. Let me make—

Chairman PATMAN. What evidence have you—you state that if you made it possible for all the little people to scramble for it, it would just mean that they would have to pay more to build a schoolhouse and more to build houses, and you wouldn't get any more done, but what proof do you have that they are not going to raise these administered prices anyway? They have a right to do that anyway, I mean they have that power.

Mr. MARTIN. Let me make a comment about this little man that is being denied the credit. I don't know whether he is being discriminated against. I don't honestly know. There may be some of it because this is a free society, and some people tend to take the easier course.

But we have tried in our administration of credit—we don't control the free enterprise system, but we have tried to point out that we want credits judged on as sound a basis as possible, and there are many banks that tell us they actually favor the little man as distinct from the big man.

But one of the important things about a big man is financial, one of the reasons you try to get bigger is that you have financial status that the little man doesn't have.

I frequently pointed out that between two prize fighters, a good big man will usually beat a good little man, because that is just muscle, and most little men are trying to get bigger.

Chairman PATMAN. How do you compare that with the big fellows getting the money?

Mr. MARTIN. I don't know whether the big fellows do and the little fellows don't.

The point I am making is, we are trying to gather data on that, but right now the assumption is made that I am not absolutely sure is correct, that all the big men are getting the money.

Now, this is borrowed money, mind you.

Chairman PATMAN. I know, but they are on the board of directors.

Mr. MARTIN. It doesn't help a man to borrow money and get into trouble.

Chairman PATMAN. They can lend it to themselves, in effect.

Chairman PATMAN. I want to ask you a few questions. I hope it will not take too much time.

You mentioned about the wholesale prices there a while ago. I wish you would get that chart again.

It has been my argument, Mr. Martin, that the darkest day for the farmers in the history of this Nation was March 4, 1951, when the Federal Reserve Board seceded from the executive, declared their independence, and said they were going to go their own way and let interest rates go up.

That is, in effect, what was said. And from that day on, interest rates commenced going up. Look at that chart, and I will venture to say on farm prices that you will find from March 4, 1951, every year since that time the line is consistently downward. Is that not right? From March 4, 1951—I know it is right, because I have seen many of your charts.

You see, the farmer pays both ways. You know, there are people who can protect themselves on interest rates as it goes up—say there

are 10 middlemen between the farmer and consumer, each one of these middlemen will take into account increased interest, and they will take it out of the price of the farmer's product. This accounts in part for the fall in the farmer's share of the consumer's dollar spent on farm products.

Moreover, higher interest rates are reflected in the price of farm machinery, from the cost of the ore, the barges on the Great Lakes, and in the steel mills and fabricating plants, in transportation. It all comes right down to the farmer, every one of them have added the higher cost of interest on every transaction.

Therefore, the farmer has paid it both ways, because he is the only unprotected person.

Mr. MARTIN. Let me just introduce into the record here that in the last year, farm prices have gone up 4 percent. During this period, the demand for money has exceeded the supply, and interest rates have been rising.

Now, the farm problem is not one that I am an expert on, but it is essentially a matter of supply and demand.

I might ask, if you would permit it, to have Governor Shepardson, who has had experience in farming, to make some comments on the farm problem.

Chairman PATMAN. I don't want to get it off on that angle right now [laughter], not that I wouldn't be interested, but I know what your story is. We have some good fox dogs down South, and when we have a good fox dog and we are on a trail and that fox dog takes out after a cottontail rabbit, why, we don't consider him a good fox dog any more. He is a cottontail rabbit dog. So I do not want to go off at an angle, and the main thing is about high interest rates, and I do not want to get off on the farm program, not that I am not interested in it, but because it does not dovetail in with what we are doing here now, and we have a lot of things to cover.

If we have time, I will be very glad to do it. If he wants to file a statement, we will be delighted to have it in the record, Mr. Martin.

I want to get back to Mr. Rouse over here, the manager of that greatest account on earth.

What is normally the aggregate of business done by your office in the course of a month, Mr. Rouse?

Mr. ROUSE. I haven't those figures in mind, Mr. Patman, I am sorry.

Chairman PATMAN. Well, would you say a hundred million dollars?

Mr. ROUSE. Probably in excess of that.

Chairman PATMAN. Two billion dollars?

Mr. ROUSE. I wouldn't know.

Chairman PATMAN. In the course of a year, what would it run?

Mr. ROUSE. I can't give you a figure, I am sorry.

Chairman PATMAN. You couldn't even estimate?

Mr. ROUSE. It is a large figure.

Chairman PATMAN. You couldn't even estimate?

Mr. ROUSE. No; I would rather not, because in some years it has been very little, and some years it has been a lot.

Chairman PATMAN. Well, last year, for instance?

Mr. ROUSE. You have this matter of purchases and sales; in some cases the purchases might run 2 to 1 to sales because of redemptions of securities at maturity.

Chairman PATMAN. I know, Mr. Rouse. I did not expect any involved answer on this. I did not think it demanded any. But you ought to have an idea within \$5 billion of how much business you did last year.

Mr. ROUSE. Perhaps—well, just say it was noticeably less than \$5 billion.

Chairman PATMAN. Less than \$5 billion.

How much was it this year?

Mr. ROUSE. I haven't a figure in mind at all.

Chairman PATMAN. You do not know. But everything is done in the open market; in other words—

Mr. ROUSE. I will say this: that between runoffs sales and purchases, the amount of securities in the account now is almost the same as it was the first of the year.

Chairman PATMAN. About the same as it was the first of the year. All right.

Now then, in your selection, you were selected by the Federal Reserve Bank of New York, as you stated.

Now, these directors that run the Federal Reserve bank in New York are just like all of the other 11 banks, are exactly alike for the New York bank, except the New York bank has the account, the open market account, and you run it for that bank.

All right. These 9 directors who have charge of that bank, they are selected, are they not, 3 class A, they are selected by the big banks, 1 of them; 1 of them by the medium-sized bank; 1 of them by the small bank, is that right?

Mr. ROUSE. Three bankers, that is correct.

Chairman PATMAN. Three banks. That is; three of them, that is class A.

Class B, they are, of course, bankers?

Mr. ROUSE. No. Class A are bankers. Class B are—

Chairman PATMAN. They are bankers.

Mr. ROUSE. Class B are not bankers.

Chairman PATMAN. What is that?

Mr. ROUSE. Class B are not bankers.

Chairman PATMAN. Not bankers?

Mr. ROUSE. No.

Chairman PATMAN. They hold an interest in banks. You mean to say they cannot own an interest in banks?

Mr. ROUSE. They may.

Chairman PATMAN. Why, of course they can.

Mr. HAYES. May I inject a word?

Chairman PATMAN. And the majority of them do have an interest in banks.

Mr. HAYES. I would like to answer, in the New York bank it just happens that no one of our B directors owns any bank stock.

Chairman PATMAN. The banks selected them, did they not?

Mr. HAYES. The banks selected them.

Chairman PATMAN. The banks selected every one of the class B's, that is, three of them. All right.

And the bankers evidently thought they were sympathetic, or they would not have selected them.

Now then, the class C, that is the Chairman of the Board, used to be—and I guess he is—a Federal Reserve agent, and two more.

Do you ever bring them in to your conferences here in Washington, Mr. Martin?

Mr. MARTIN. Yes; we just finished a conference.

Chairman PATMAN. About the class C directors.

Mr. MARTIN. With the Chairman and Deputy Chairman, two of the class C directors. We did not have all three of the class C.

Chairman PATMAN. But you recognize the class C directors?

Mr. MARTIN. Yes; we do. We do; indeed, we had a very—

Chairman PATMAN. And this bank is set up just like the other banks. The six selected by the banks have two-thirds of the directors who run that bank, don't they, Mr. Rouse?

Mr. ROUSE. Yes, sir; two-thirds of the directors are elected by the banks.

Chairman PATMAN. They select them?

Mr. ROUSE. Selected by the banks.

Chairman PATMAN. Therefore, the private bankers select the officers and agents of the bank, including yourself who run this biggest business on earth, using the Government's credit from the Bureau of Engraving and Printing, and trading it for United States Government bonds.

Mr. Martin, don't you think that the Federal Reserve System should be divorced—while you are talking about divorcing yourself from the executive—don't you think you should divorce yourself from the private banks?

Mr. MARTIN. Well, do you think that the Department of Agriculture ought to be divorced from the farmers?

Chairman PATMAN. Well, that is not exactly the same question.

Mr. MARTIN. Well, I think—

Chairman PATMAN. You see, no—

Mr. MARTIN. Same elements in it.

Chairman PATMAN. They don't use cotton and wheat as a medium of exchange.

Mr. MARTIN. Well—

Chairman PATMAN. If they used the cotton and wheat and pork as a medium of exchange, why your question would be a valid one.

But here we are talking about the creation, issuance, and distribution of money, that affects everybody. It does not take a banker—

Mr. MARTIN. We have special supervisory laws with respect to banks that we do not have for a business—all businesses. And I think they should be carefully supervised, but to say that the bankers of the United States control and dominate the System is not, in my judgment, correct, but that we need the bankers of the United States who are dealing every day in money and credit—if we are going to deal in money and credit at all, it seems to me obvious on the face of it.

Chairman PATMAN. Well, it is all right to get their views and suggestions and judgment, but it would be just as reasonable to me, like Woodrow Wilson said, to have the railroad owners run the Interstate Commerce Commission, and fix freight rates, as to let the bankers be on these policymaking boards and fix interest rates.

Now, I do not impugn the motive of a single banker—not a one—they are good, patriotic American citizens. I do not have any grievance against any of them. I do not distrust them. I do not question their honor or their integrity.

But I am talking about from a self-interest standpoint.

Here is the Federal Reserve Board, composed of 7 members—you are surrounded by 24 bankers to do your job. You have 12 on the Advisory Committee, selected by the private bankers who have the power of going in there and seeing what you are doing, ask you questions, and why you want to do it this way or that way, representing the private bankers.

Then you have 12 presidents of Federal Reserve banks selected by the banks.

So this Board of 7 is surrounded by 24 bankers, to do their job.

And I am just hoping in divorcing yourself from the Executive, you would also make a recommendation to Congress about divorcing yourself from the private banks.

Mr. HAYES. Could I make one observation?

Chairman PATMAN. Yes, Mr. Hayes.

Mr. HAYES. I would like to take exception to the statement that the presidents are selected by the private bankers. You have traced this chain of authority through the directors.

Chairman PATMAN. Wait just a minute. Maybe I made a misstatement. Selected by—representatives selected by the private banks.

Mr. HAYES. I misunderstood you then.

Chairman PATMAN. That is the only statement I intended to make and did make.

Mr. HAYES. I did want to point out, too, that the presidents, after being initially selected by the 9 directors, who include 3 directors chosen by the Board of Governors, must still be approved by the Board of Governors; that is, the appointment both of the president and of the first vice president cannot become effective until approval by the Board of Governors.

Chairman PATMAN. That is right.

Well, of course, they would pick out somebody like yourself, a good man, that they could not turn down. I am not questioning the motives or impugning their motives, of anybody in connection with this.

Mr. Martin, interest rates have gone up; discount rates 200 percent since 1947. Did you know that in discount rates—

Mr. MARTIN. Well—

Chairman PATMAN. The private acceptance, 90 days, have gone up 266.7 percent. The prime commercial paper for 6 months has gone up 252.4 percent since 1947. And the 3 months' bills have gone up 434.3 percent.

The 9 to 12 months' bills have gone up 267 percent, in 3 to 5 years, issued, I assume in notes, 172.7 percent.

I do not know of anything in the commercial or business world that has gone up any more than that, do you?

Mr. MARTIN. Disposable personal income has also had a spectacular rise.

Chairman PATMAN. Not that much.

Mr. MARTIN. These are comparative figures. But disposable personal income, as I pointed out in the statement this morning, is up, I think, \$21 billion over a year ago.

And tight money in the sense we are talking about it today, in one sense it is almost loose money because money has been flowing so freely, in so many directions, it has not seemed to have had any retarding



effect on disposable personal income and we have had a relatively stable price level.

I have been sorry that it has gotten out of hand recently.

Chairman PATMAN. Relative, but how, Mr. Martin, did you get that price level? How did you get it? Industrial prices, as you know, have gone up. They have consistently gone up.

Now then, that price level has gone up. If the farm prices had gone up, too—but farm prices were depressed, just enough to make the average an even price level—if it had not been taken out of the hide of the farmer, this price level would have gone way up.

You will have to admit that if farm prices had not gone down as much as they have, this price level would not have remained stable, would it?

Mr. MARTIN. That is true. Mr. Patman, from about the middle of 1955, up to that time, we had overall reasonably stable prices.

Now, I have regretted—and that is one of the reasons we have been so alarmed about the current trend and have wanted to do what little we can through money and credit policy to alert the country to the danger of price increases which have been showing a persistent tendency to move upwards over the last 6 or 7 months.

Chairman PATMAN. How about the increase in interest rates? Interest is part of the cost of doing business. It is a price increase.

Mr. MARTIN. The role of interest in the economy is that it is one of the prices, but, as I have pointed out, to satisfy all of the demands for money, at a time of intensive utilization of resources, can do nothing but add to the price of money.

And one of the restraining influences of interest rates is that interest rates tend to reduce spending and to give an incentive to savings.

That has been one of the few equilibrating forces that we have ever developed on a strictly impersonal basis in the economy.

Chairman PATMAN. All right. Now then, you have known Professor Bogan, don't you, you know of him?

Mr. MARTIN. I have high regard for Professor Bogan.

Chairman PATMAN. I have before me a statement he made about the financial situation, about the savings lag, in the face of high interest rates, in which he says, right on that point—I am quoting:

As has often been the case, the volume of personal savings is not proving responsive to higher interest rates. The volume of savings, of individual savings, is determined in the main by established habit patterns, rather than the rate of return.

In other words, savers do not act quickly that way. It is some sort of a pattern. And I do not see how anybody can safely contract or provide for the future at all when they do not know how low these bonds are going to get. They do not know, but what they are going as low as the British bonds that are now below 60—3½ percent bonds. They do not know how high this interest rate is going.

Is there any limit beyond which you will not permit these bonds to sink, Mr. Martin?

As a representative of the Open Market Committee, charged by Congress—and I am glad you brought that up—every statement you issued could properly be worded, "The Federal Reserve Board has taken the following action for Congress," because every action you take you take it for Congress, don't you?

Mr. MARTIN. We are the agent of the Congress.

Chairman PATMAN. That is right. You are the agent of the Congress. And every action you take, you take it for Congress. And whether Members of Congress recognize it or not, each and every one is responsible for your action. Each and every one of them.

Mr. MARTIN. Exactly, and on this matter of contract there is nothing more destructive of contractual relationships than a dollar that people do not have confidence in.

Chairman PATMAN. How can they have confidence in the bonds and the interest rate like it is—how low will you let these bonds go?

In other words, is there a limit beyond which you will not permit these bonds to descend?

Mr. MARTIN. I have not place, no limits of any sort on this matter. But I think we have to recognize that there is an equilibrating force at work.

I have here a table which shows that net personal saving is tending to increase, and when the gap between savings and investment is gradually filled, as it will be in due course, this equilibrating force will come into play again. And the business process as we have known it, has made it possible for us on a general basis to attain a definitely higher standard of living.

Now, the future of this country is unlimited. Our greatest economic problem is this: if we travel too fast we are going to get into a lot of trouble.

Chairman PATMAN. You do not depend on savings entirely, do you, Mr. Martin—don't you depend on created money?

Mr. MARTIN. If we create money—when the demand for money—when people are trying not only to spend more money than they have, but to buy more goods in the aggregate than there are—if we create money at that juncture in the economy, then all we do is add upward pressures on prices.

Chairman PATMAN. Now, about helping savers, all of which I am for—I want to help the savers—but do you believe that it is in the interest of the country to have an interest rate so high for savers that they will be satisfied with the return they get in the form of interest from their savings or is it in the interest of the country to have the interest rate low so that they will be looking around, let their minds be feeding around and finding opportunities to invest money and go into private enterprise, and let it become a part of venture capital and make more money.

Which is better for the people, to have an interest rate that will induce people just to be complacent and say, "I am satisfied"——

Mr. MARTIN. I want to restate——

Chairman PATMAN. Or is it best to have a rate that they will want to improve on by investment into the private enterprise system.

Mr. MARTIN. I want to restate my position on interest rates. I do not favor high interest rates. I want interest rates as low as we can have them without producing inflationary consequences because I believe you will have a greater formation of capital that way.

But if the alternative is to have inflationary pressures, I believe you do a great deal more damage to this little man that we are talking about than by any other single thing in the society.

Chairman PATMAN. You still are fighting inflation, but you cannot tell us where it is.

Mr. MARTIN. I always do everything within my power to resist inflation.

Chairman PATMAN. I don't blame you at all. But remember this, that you have plenty of ways to resist inflation, but you have not one way to resist deflation.

Mr. MARTIN. Let me just make—

Chairman PATMAN. That is a correct statement, isn't it?

Mr. MARTIN. A statement that I made this morning. I do not believe that a money and credit policy can make business, in itself. It produces a climate in which business can perhaps thrive and flourish.

But when we talk about this business of inducing or producing a depression or a recession, when money is available, I say that those people have more faith in the power of money policy than I have, and less faith in the strength and vitality of the economy than I have.

I have complete confidence that over a long period of time the American economy is strong enough to survive even a few mistakes of the money powers, because it is the ingenuity and the workmanship and the skill and the resources and the vitality of America that we are discussing now that cannot be destroyed by modest adjustments from time to time.

Mr. PATMAN. Mr. Martin, talking about this school situation, and the housing situation, I want to ask you about two things. Under the law the Federal Reserve Open Market Committee can buy Government bonds. And the Federal Reserve Open Market Committee can buy any bonds that are guaranteed by the United States Government, whether housing bonds, school bonds, or anything else; can't they?

Mr. MARTIN. Well, we can. We haven't as a rule.

Chairman PATMAN. You have the power, but you have not done it; have you?

Mr. MARTIN. We have not done it; that is right.

Chairman PATMAN. Why don't you arrange to do it? Now these schools are suffering. Mr. Levitt up here at New York gave an illustration where one school district is paying an increased rate of interest that amounts to as much money—the increase now—that would build an additional schoolhouse that would house 900 students, just in 1 school district.

That is an awful penalty for those people to pay on these long-time bonds that are tax exempt.

And you have the power to stabilize that market. If it takes a congressional act, you can get it, if you will ask for it.

The same way on housing. And a lot of these mortgages are guaranteed. I don't know whether they come within the regulations, exactly, or not, but if they do not, if you would ask for the power you would get it from Congress.

You would not have the least trouble getting it and you could solve both the housing problem and the school problem through the Federal Reserve banks.

So I suggest to you, you start working on that, Mr. Martin, and give a little consideration to it. Will you do that?

Mr. MARTIN. Well, I want to associate the entire Board again with an interest in education and—

Chairman PATMAN. All right, act.

Mr. MARTIN. The welfare of the country.

Chairman PATMAN. And the school system in particular.

Mr. MARTIN. And the school system in particular.

Chairman PATMAN. Actions speak louder than words. And I have shown you how to do it.

Mr. MARTIN. Let me also say as to the people that are educated in those schools, the boys and girls of tomorrow—that if the savings, the saving and investment fabric which has made this country strong, are destroyed by the process of building school buildings for them at rates that have been forced upon an unwilling market by an unending stream of fiat-created money—that they will be very sorry that something has gone out of American life.

Chairman PATMAN. You are in effect saying, Mr. Martin, whether you intend to or not—and again I am not impugning your motives or questioning your motives at all, but you are in effect saying that it is better for the economy that this school district in New York State pay a million and a half dollars more in interest than it would have had to pay 2 years ago—it is better for them to do that—than to spend that money to house, to have a place to educate 922 additional students.

And that thing can be multiplied by thousands of school districts all over the land.

In other words, what you are doing is in opposition to our educational program, Mr. Martin. You are stifling education in this country.

Mr. MARTIN. Not in the slightest. You and I are in complete agreement on our objectives. We differ on the methods we use to get there.

Chairman PATMAN. Now then, let us take industrial loans. You have a right under the law to make small-business loans, don't you?

Mr. MARTIN. That is right, sir.

Chairman PATMAN. How many have you made the last year?

Mr. MARTIN. I defer to Mr. Erickson. I do not know that we have made any.

Mr. ERICKSON. We have made some.

Chairman PATMAN. Ten million or one million?

Mr. ERICKSON. \$300,000.

Chairman PATMAN. How much money do you have for that purpose?

Mr. ERICKSON. There is no special amount.

Chairman PATMAN. Isn't it \$134 million?

Mr. MARTIN. About \$134 million.

Chairman PATMAN. Why do you say there is no specified amount?

Mr. MARTIN. We have not allocated any specific amount.

Chairman PATMAN. You do not have to allocate it. It is there.

Mr. MARTIN. That is correct.

Chairman PATMAN. Congress put it there, specified, earmarked it.

Mr. MARTIN. That is correct.

Chairman PATMAN. Isn't it a fact that you refused to use it, because you said the RFC was making those loans, and the RFC could do a better job? The RFC has terminated. There is no more RFC. There is no satisfactory agency making Small Business Administration loans.

Why don't you get back in there and help these small-business people? That \$300,000 is just a drop in the bucket. It does not mean anything, \$300,000 a year. I know you are not bragging about it.

Mr. ERICKSON. That is the only request we have had.

Chairman PATMAN. It is?

Mr. ERICKSON. Yes, sir; the only request.

Chairman PATMAN. Your Public Relations Department has not been working.

Mr. ERICKSON. In answer to that we had floods in Connecticut and Massachusetts, last year, and we sent around to all of the banks notice of 13-B and did not get a single request.

Chairman PATMAN. That goes to the public relations ability of the people that you have. You have unlimited funds, because if you need more money, take more greenbacks out of the Bureau of Engraving and Printing, buy more bonds and keep the interest and spend it for that purpose. That is the way you can do it. That is the system. All right.

So you can have plenty of public relations men to spread the word. And I hope you get busy. If you need more money, I believe Congress would give it to you out of your funds because you have plenty of funds down there to be used for that purpose.

Senator O'MAHONEY. I want to call your attention, Mr. Martin, to this. I know you are familiar with this publication, the Economic Indicator.

On the first page there appears at the bottom of the page a table or graph, indicating the variations in Government spending, Federal, State, and local.

There is, also, a table showing business spending, and consumer spending. This is all intended to show up the Nation's income, expenditure and savings.

In this latter—in the table I first spoke of, at the bottom of the page—it appears that Government spending in 1950 was slightly below \$50 billion. It increased to a peak of about, oh, maybe \$60 billion, in 1951. It leveled off, though gradually increasing, until in 1953 it would figure about \$75 billion. And then it began to fall off again, until 1955, when it rose above \$75 billion, where it stayed during 1956.

And now with pronouncements that we are receiving because of the increased burdens that the Government will have to face for national defense, and for economic aid to foreign countries, the lowest estimate of increased spending for the next budget year that I have heard is about \$3 billion.

There is very little possibility, apparently, of cutting down domestic expenditures.

Don't you agree with me that this tremendous amount of Government spending makes an altogether new problem from that which existed at the time the Federal Reserve Board was created?

Mr. MARTIN. I think in degrees it is different; yes, sir.

Senator O'MAHONEY. Well, isn't it actually utterly different in substance as well as in degree? Government expenditures, so far as defense is concerned, is something vastly greater than it ever was before. Until we became involved in World War II, why, we didn't know what the cost of defense would be.

I was chairman of the Defense Subcommittee on Expenditures, and I remember when the cost of an improved airplane, toward the end of the war, would be about a million and a half dollars.

Now, these new jet airplanes that are being built for civilian traffic cost about \$8 million apiece.

The expenditures that we have to make for the Army, for the Navy, and for the Air Force, are incomparably greater than ever before imagined and they are increasing steadily, particularly in the field of guided missiles, and the supernuclear weapons.

This utterly changes our situation. Don't you agree?

Mr. MARTIN. Well, I don't think that it changes it in the sense of the desirability of a stable dollar. I think that it certainly is a very complex and difficult problem; but if you compare all of these relationships, the gross national product, the growth of the country, the size of the debt, you still have—

Senator O'MAHONEY. When Government expenditures increase, do they not have a necessary effect upon the dollar?

Mr. MARTIN. Well, unless they are—

Senator O'MAHONEY. You cannot avoid it, can you?

Mr. MARTIN. Unless they are properly financed. We have a financing problem and we also have a problem of—

Senator O'MAHONEY. To me it seems like putting on a new tire, when I was a boy. When you got it on the rim on one side it was bulging out on the other, and it was a day's job sometimes to get that tire on.

You gentlemen are old enough to have experienced that, are you not?

Mr. MARTIN. Yes.

Senator O'MAHONEY. That is what we are dealing with now when we are trying to fit this Government finance to the demands put upon it, is it not?

Mr. MARTIN. We have a very difficult problem that—

Senator O'MAHONEY. And when the national debt exceeds the debt limit that Congress has placed upon it, does it not throw out of balance completely the desire of Government leaders to talk about a balanced budget? They have to change their course of action almost every 6 months and they have done it, have they not?

Mr. MARTIN. They have a very difficult problem, indeed, sir.

Senator O'MAHONEY. Well now, I will just say this to you: I believe very definitely and fundamentally that if we are going to win the cold war with Russia we had better concentrate all of your fiscal policies to see that the social and human goals of the masses of the people are protected from depression of any kind.

We would much rather go out of balance somewhere else than out of balance in improving the standard of living and the culture of the masses of the people who make up this Nation of ours. They are the very foundation of it.

That is why I respectfully will urge upon the Federal Reserve Board to forget the theories and the sound principles, even, which may have been sound when we did not have this great international problem, and place first of all in our consideration the maintenance of a sound people rather than a sound dollar.

Mr. MARTIN. Let me say, Senator, that I agree with you completely. And I frequently say the dollar should be our servant and not our master.

Senator O'MAHONEY. Right.

Mr. MARTIN. But we should have—and we will have this strength to stand up in the free world only as we are strong industrially and

economically, and as our standard of living is growing on a sound basis, and we have sustainable jobs, which is our problem today.

The actions which the Federal Reserve Board have been taking in accord with the forces in the money market have been designed to prevent deflation, with the understanding that preceding inflation will lead to a more drastic deflation than perhaps we could afford to have.

And therefore, an ounce of prevention is worth a pound of cure.

There are many, many facets to that, and it is a very complex problem. And no one on this Board thinks that we have all of the answers.

Senator O'MAHONEY. Mr. Chairman, I want to say, because I must go, that I feel that the Federal Reserve Board should be complimented for the frankness it has employed in answering the questions which we have propounded to its members here.

I feel that they have come here with a completely sincere desire to reveal all of the factors that can be revealed, and by that I mean can be revealed only because of the complexity in revealing these things.

You are telling whatever we want to know. And if we were smarter men maybe we could ask smarter questions. But I think maybe you would have some smarter answers, too. I feel that you are doing the best you can. And I thank you for what you have presented here today so far as I am concerned.

I still feel, however, that the problem is not settled, and that members of the Board must keep an open ear to all factors of the economy, before they reach a sound solution in the next Congress, which I hope we shall, as to what shall be done.

Of course, I thank the chairman for the magnificent way in which he has been handling this matter.

I beg to be excused now. I have some constituents here.

Chairman PATMAN. Thank you, sir. You have made a great contribution to our hearing.

Senator O'MAHONEY. I have some of my constituents here—young students—to see the Federal Reserve Board.

Chairman PATMAN. The Open Market Committee.

Senator O'MAHONEY. Thank you very much.

Chairman PATMAN. Mr. Shepardson, I feel like I ought to ask if you want to reply to what was said here about the farm situation in view of Chairman Martin's statement. If you would like to comment on anything that has been said, you have the opportunity now to do so.

Mr. SHEPARDSON. I might say this just briefly.

It is true that the farm prices declined from 1951, until the recent upturn this year. And that all too slight, I admit.

But that was not a result of availability of money or cost of money. The farmers of this country expanded facilities tremendously to meet the war and postwar demands when other countries were out of production.

Chairman PATMAN. Mr. Shepardson, would you take that chart there and look at it, and answer this question: if it is a fact that what the farmers received was going up, until March 4, 1951, and every year since that time it has gone down.

Mr. SHEPARDSON. I think it hit a peak in 1947, if I remember right; then it dropped.

Chairman PATMAN. I want to go to March 4, 1951.

Mr. SHEPARDSON. It dropped from 1947 to 1951, came back up in 1951 on account of Korea, not on account of money—on account of another demand for food, and agricultural products.

And as that demand fell off, agriculture is suffering today primarily from the burdens of surpluses that are hanging over the market.

The one thing that has been a partial offset, that has saved us from the decline that we had back in the thirties, was the fact that the rest of the economy has been moving at a high level.

There has been a high consumer purchasing power that has softened what might have been a much worse drop in prices than there has been.

But the decline in farm prices is strictly a relationship of supply against a declining demand—the war and the immediate postwar and Korean demand that we had for farm commodities both here and abroad.

Mr. PATMAN. Thank you very kindly, sir.

Now, Mr. Martin, in furtherance of that suggestion I made that the Federal Reserve could support these bonds, may I suggest to you that since the RFC has gone, and you have the authority, and if you need any more authority I am sure that Congress would grant it to you—that the Federal Reserve banks could do what the RFC used to do, buy up all of these school bonds and road bonds and city bonds, and State bonds where they could not get a market for them, and where they could not get a reasonable price.

The RFC made millions of dollars out of it, didn't lose a penny, and sold them out to the market evenly and everybody profited by it.

Now, the gentlemen in these Reserve banks, they do not have too much to do now since the central bank was organized.

You took most of their powers away from them. And you could give them something to do on that, on these municipal bonds and school bonds, in particular, and these small business loans, these industrial loans.

And I can remind you, too, that the first investment that was made as an open market transaction was the Federal Reserve Bank of New York buying \$5 million worth of securities from New York City. Do you remember that?

Mr. ROUSE. No.

Chairman PATMAN. Or reading about it?

Mr. ROUSE. No.

Chairman PATMAN. You see, the bankers, they were almost having running fits because they were going in the hole all of the time on the Federal Reserve, and they could not get the money from the member banks, and it looked like they were going to have to go to Congress and ask for an appropriation.

The bankers are pretty smart fellows. They began to think about it, "Now, what can we do?"

And some banker said, "Well now, we have the power to create money. Let's create money and buy some bonds. And use the interest on the bonds."

And that is exactly what they did on that first purchase of \$5 million of securities from the city of New York, not Government securities.

And so I humbly suggest that to you, Mr. Martin.

And I join Senator O'Mahoney in thanking all of you members—members of the Open Market Committee, which includes, of course,



the Federal Reserve Board—for your frankness and for being so forthright in answering all of the questions.

Mr. Martin always answered all of the questions, as all of the rest of you always do the same thing. Every question that is asked you try to give us an honest answer and we appreciate that.

I know it is nearly the time that some of you wanted to go. We do not want to hold you too long.

But, Mr. Martin, if we submit to you any questions before we close this record, I assume you would be willing to answer those questions and let it appear in the record as part of the hearings.

Mr. MARTIN. Be very glad to.

Chairman PATMAN. And the other members would do the same thing.

Mr. MARTIN. To the best of our ability.

Chairman PATMAN. Mr. Hayes, the hour is getting late; I wonder if you could run rapidly through your statement. We expect to have some more hearings, later. You know we have just scratched the surface of this thing and can go into questioning at that time.

Mr. HAYES. I would like to direct my comments today principally to the method of operation of the Federal Open Market Committee and the role of the Federal Reserve Bank of New York in executing the Committee's instructions. As a practicing central banker of less than 5 months' standing, I certainly make no claim to expertness in these matters, but it occurs to me that your committee might like to have the views of a newcomer like myself, taking my first look at the way in which this very vital function of national monetary and credit control is handled.

It goes without saying that the Federal Reserve Bank of New York, of which I have the privilege of being the chief executive officer, undertakes a great variety of important activities, most of which are related in some degree to the operations of the Federal Open Market Committee. I am thinking of such things as handling the reserve and borrowing accounts of the member banks, the provision of currency, the processing and crediting of checks received for collection, the expediting of wire transfers of deposit balances among banks and of Government securities among investors, the calling and disbursement of funds for the United States Treasury, the handling of transactions for foreign central bank and government accounts representing settlement of the United States balance of payments with other countries, and the supervision of member banks. These activities, most of which we undertake in common with the 11 other Federal Reserve Banks, have a great deal to do with the System's major responsibility of contributing to an efficient and adequate money and credit mechanism for the Nation. But they are sometimes referred to as "defensive" or "passive" operations, in contrast with the three "dynamic" or "active" instruments—reserve requirements, discount rates, and open market operations—which are employed in our efforts to minimize both inflation and deflation and to facilitate sturdy economic growth.

To discuss the Federal Open Market Committee's activities without referring to all three of these instruments would be quite misleading. For while it is true that the Board of Governors alone has the responsibility for determining reserve requirements, and while discount rates are established by the individual Reserve banks—subject to review and determination by the Board of Governors—in practice the Fed-

eral Open Market Committee has become the principal forum in which these two instruments, as well as that of open market operations, are discussed and weighed by representatives of the entire System in arriving at a systemwide consensus as to what should be done at any given time in the field of general credit control. The emergence of the Federal Open Market Committee as the meeting place where representatives of all parts of the System's complex structure can be brought together, for joint discussion of interrelated responsibilities, is one of the most interesting, and also probably one of the most constructive developments in Federal Reserve history.

Meetings of the Federal Open Market Committee are generally held every 2 or 3 weeks in Washington, so that I have been privileged to attend some 6 or 7 times since I became associated with the New York Reserve Bank. As you know, the Committee consists of 12 members, including the 7 members of the Board of Governors and 5 of the Reserve bank presidents. The president of the New York Reserve Bank is continuously a member, while the other four presidents are appointed in rotation. The 12 members of the Committee, which was established by statute, sit and reach decisions as responsible individuals, not as representatives of any constituency. Each must find the answer, in the light of all the facts and his own conscience, to the question: "What policy of credit control would be the best policy under present conditions for the economy of the United States?" Naturally each member brings to the Committee the full benefit of any special information available to him, including—in the case of the Reserve bank presidents—information concerning economic conditions in the various districts and the views concerning them held by businessmen and others; but each member also gives careful consideration to nationwide conditions and makes his final judgment on that basis.

The 7 presidents who are not, at the time, members of the Federal Open Market Committee nevertheless attend these meetings regularly by invitation and participate in the discussions on the same basis as the 12 Committee members, with the sole exception that they have no vote on matters requiring a vote. Thus the Committee obtains a firsthand report on conditions in each of the 12 Federal Reserve districts. During the periods between meetings, the 7 Governors and the 12 Presidents are of course pursuing their various other duties, but they are also preparing for the coming deliberations of the Federal Open Market Committee by observing the results of policies established at previous meetings, gathering new economic data, and continually reviewing their judgments of past decisions and current events. In New York, for example, our senior officers gather at least once each week to review important developments, and we have another special meeting of officers a few days in advance of each Federal Open Market Committee meeting for the special purpose of discussing the current state of business and credit conditions, Treasury finance, and related matters, and what type of credit policy seems best suited to this state of affairs.

At each Federal Open Market Committee meeting the procedure is to have the Manager of the System Account, who is also vice president in charge of the securities function at the New York Reserve Bank, lead off with any observations he may wish to make on what has actually happened in the Account and in financial markets in

general since the last meeting. He will already have furnished each member of the Board of Governors and each president with special written reports that are complete through the close of business on the preceding day. Thereafter two of the senior staff members of the Board of Governors present a comprehensive and detailed summary of current business and credit conditions in the country as a whole. After this the Chairman, following such introductory remarks as he considers appropriate on domestic or foreign developments, calls on each president and each governor, in turn, to give his appraisal of the current situation and to state his views concerning appropriate policy in the circumstances. Customarily the president of the New York Reserve Bank is called on first, and, because of the location of the bank in the country's money center, I usually talk of business and credit developments and expectations in national terms, and of the open market and other Federal Reserve policies I would consider appropriate in the light of those developments. The other presidents usually start off with comments on conditions in their particular districts and they, too, give their views as to credit policy. Likewise each member of the Board of Governors states his opinion concerning the appropriate policy after discussing any particular developments in the country's economy which appear to him pertinent. Generally the last man to comment is the Chairman of the Federal Open Market Committee, who is of course also Chairman of the Board of Governors. He summarizes his own appraisal of the situation and then undertakes the difficult task of pulling together the threads of all the preceding discussion and expressing the consensus of the meeting in terms of, first, how the directive to the New York Reserve Bank should be worded and, second, what specific actions are called for in the way of open market purchases or sales or other credit control measures—perhaps mentioning, for example, the possibility that consideration may be given to discount rate changes by the various Reserve banks, or to changes in reserve requirements by the Board of Governors. The Chairman then gives all present a chance to state whether they agree with his understanding of the consensus. The Manager of the System Account is asked whether the instructions are sufficiently explicit to enable him to carry out the Committee's wishes effectively, and at this point the Committee has an opportunity to convey to the Manager any nuances of policy which they think should be kept in mind.

I have been greatly impressed by the effectiveness of this whole procedure in bringing together a variety of disinterested and objective views on our country's economic conditions and problems, and then in deriving from these a reasoned consensus as to monetary and credit policy. Often the opinion of any one member is not yet crystallized when he arrives at the meeting, and it may well be modified during the meeting by this process of give-and-take. On the other hand, I think it is pretty clear that with 19 well-informed people having a full opportunity to present their views, on the basis of data assembled by able staffs throughout the System, it would be quite impossible for any one man holding an extreme position to dominate the Committee and dictate the Committee's conclusions. Indeed, the thinking of any one man may not be fully in accord with the consensus; the consensus is acceptable because it is a fusing of all the views, and it provides a workable basis for operations. Over time, such a consensus is bound to

be far more reliable than the occasional flash of insight that a single individual might produce.

I have been struck by the degree of harmony which has been achieved in this whole procedure. It has almost always been possible, without even the formality of a vote, to reach a consensus through the give-and-take of reasoned discussions.

As I have already indicated, the general conclusions of the Committee as to credit policy are set forth in the directive issued to the Federal Reserve Bank of New York. The directive is amplified by the statement of the consensus and by the full discussion, all of which are of course noted in the Committee's minutes. From this point on, and until the next Federal Open Market Committee meeting, the primary responsibility for conducting open market operations is in the hands of the Federal Reserve Bank of New York, acting in accordance with the instructions of the Committee. With the country's money market and securities markets centered in New York, most open market operations must necessarily be executed there, but I would like to stress that the New York bank is acting at all times for the System as a whole on the instructions of the Committee and is at all times responsive to the Committee's wishes. In my capacity as a member and Vice Chairman of the Federal Open Market Committee, I am in a position to help interpret the Committee's wishes to the Manager, and he himself has of course been present at the last meeting when he was specifically instructed on the varied detailed considerations which the Committee wishes him to keep in mind. He knows, for example, approximately what member bank reserve position the Committee believes appropriate, or he may have been told to give only secondary consideration to this factor and for a time to be guided primarily by such factors as the tightness of the banking structure in the money centers, the degree of market pressure suggested by United States Treasury bill rates and other money market rates, the impact of a large Treasury borrowing operation, and even more broadly by that on-the-spot appraisal of current attitudes and actions which is described as the "feel" of the market.

A comprehensive procedure has been worked out for keeping the Board of Governors and the other members of the Federal Open Market Committee promptly and fully informed on market conditions and all actual transactions for the System account, as well as on contemplated transactions. One of the most effective tools to this end is the so-called daily conference call at 11 a. m., each business day, when the manager of the account or his assistant talks by telephone with the economic adviser and a senior economist of the Board of Governors. The presidents of those Federal Reserve banks outside of New York who are currently serving on the Committee also participate by long-distance telephone in these discussions on a rotating basis, 1 President sharing in the call for a period of 2 or 3 weeks. At the New York Reserve Bank, the first vice president or I often "sit in" on the telephone call and many times both of us are present. (The first vice president is, in conformity with the statute, my alternate as a member of the Federal Open Market Committee.) The manager of the account summarizes conditions in the money and capital markets, the various reports or comments received from the dealers in United States Government securities, the reserve position of the principal New York banks, and the reserve position of the country's member banks as a

whole—together with the New York Reserve Bank's expectations as to changes in this national reserve position day by day for the next few weeks. The manager then indicates whether these available data and expected developments point to a need for open market operations in order to fulfill the Federal Open Market Committee's instructions, i. e., whether Treasury bills should be purchased or sold, whether repurchase agreements should be made with dealers, whether holdings of acceptances should be increased or run down, and in approximately what amount any or all of these might be considered. Participation in the call provides the economic adviser to the Board of Governors and the other president who is taking part in the call, the opportunity and responsibility of contributing their views as to existing conditions and the proposed course of action, particularly as these relate to the policy set at the most recent Federal Open Market Committee meeting. Usually there is immediate agreement, but suggestions may be made which result in some modification of the manager's program. Immediately following this conversation, a full summary is prepared at the Board and distributed to all of the Governors in Washington; the same summary is sent by wire to the various Reserve bank presidents.

The staff of the Board of Governors is advised periodically during the day by telephone on all details concerning actual operations and market developments. In addition, a written report is submitted daily to the Board of Governors by the New York Reserve Bank with copies to the interested officers of the other Federal Reserve banks and branches. At the end of each statement week a full written report is submitted by the manager to the members of the Federal Open Market Committee and to the other presidents. These reports not only provide a complete statement of all actions taken but they also give a full running record of conditions in the money and capital markets, with emphasis on interest rate changes and on the behavior of United States Government and other security prices. Prior to each Federal Open Market Committee meeting, as I have mentioned earlier, a detailed recapitulation of all major market developments and all transactions since the last previous meeting is prepared for submission to all Committee members and the other presidents.

Questions may occur to the account manager between Federal Open Market Committee meetings, perhaps as a result of some unforeseen development at home or abroad, which appear to call for an interpretation of some policy decision reached at the last meeting. If it is a minor matter, the question may be settled by discussion with the president or first vice president of the New York bank, but if it involves a major policy consideration, we may decide to consult by telephone with the Chairman, or, in his absence, with the Vice Chairman of the Board of Governors or some other member of the Committee. Or the initiative may come from Washington; i. e., Chairman Martin or Vice Chairman Balderston may telephone me and raise some question or make some suggestion having to do with interpretation of the current Federal Open Market Committee policy. If very urgent questions arise, it is possible to arrange on short notice for a telephone meeting of the Federal Open Market Committee to deal with whatever emergency may exist.

We in the New York Reserve Bank encourage the governors and the other Reserve bank presidents, as well as senior members of the staffs of the Board of Governors and of the other Reserve banks, to

spend as much time as they can spare visiting our trading desk, observing the manager and his assistants carry out open-market operations, and familiarizing themselves with the actual market atmosphere in which these operations are conducted. I am happy to say that we have had fine visits of this kind recently from the chairman and several of the governors and presidents.

The chief point which I would like to emphasize is the high degree of close contact and close cooperation existing between the Federal Open Market Committee as the originator of all open-market policy and the Federal Reserve Bank of New York as the executor of this policy. In my brief experience with the System I have felt that this whole mechanism works very effectively in the public interest.

I have already touched upon the importance of the New York money and capital markets, which is the basic reason for placing the responsibility for execution of the Federal Open Market Committee's policies on the Federal Reserve Bank of New York. Perhaps it would be useful at this point to explain briefly just what is meant by the Nation's "money market" and how the New York Reserve Bank's trading desk is organized to keep in intimate touch with that market.

The money market has been defined as the active market for money and close money substitutes which financial institutions and others rely upon to provide the liquidity needed in the usual course of their operations. Commercial banks, Government securities dealers, investment bankers, other financial institutions, nonfinancial corporations, State and municipal governments, and others turn to the money market to adjust their cash positions—supplying funds when they hold surplus cash, withdrawing or borrowing funds when they need cash. The instruments employed (in addition to bank borrowing at the Federal Reserve banks) might be short-term Government securities, marketable private short-term paper, demand loans, or Federal funds—money that is good at the Federal Reserve banks today, purchased with money that will not be collected funds until tomorrow. The money market through which all these day-to-day cash adjustments are made is national in scope, but the residual shortages or surpluses of funds come to focus in New York at the large New York banks. The extensive correspondent and customer relationships of these banks, and the purchase and sale of money market securities by the specialized dealer firms located in New York, provide facilities upon which all other regions depend to settle their shortages or use their excesses.

By providing a mechanism whereby interest earning investments may be converted readily into cash, and short-term money needs can be met through borrowing, the money market provides a degree of liquidity to debt instruments and a degree of flexibility to investment and borrowing practices that are essential to the functioning and the growth of a highly developed industrial and financial system. The participants in the money market are as varied as the economy itself. Business corporations are important and may come to the money market with temporary cash accruals to invest in short-term Treasury securities, bankers' acceptances, sales finance company paper, or other instruments. The corporations have to be confident of a market for their investments so that the latter can be liquidated readily when these funds are needed to pay dividends or taxes, or for operating purposes. Confidence in the liquidity of their investments has made it possible for them to make money available to others seeking money

rather than holding these funds in idle cash balances. State or local government may have funds from tax collections or from the sale of a bond issue that are not immediately needed and are temporarily available for investment. Foreign central banks accrue dollar reserves that may be invested in Treasury bills or bankers' acceptances. All of the financial intermediaries—life insurance companies, such Government agencies as the Federal intermediate credit banks or the Federal home loan banks, or any others—participate in the money market at least some of the time, either as borrowers or lenders of short-term funds.

Of course, the 14,000 commercial banks in the United States, or a considerable number among them, are the principal participants in the money market. The deposits held with them are check-book money and may be withdrawn without notice. It is particularly important, therefore, that commercial banks hold adequate secondary reserves in the form of liquid short-term investments to provide a potential source of cash to meet withdrawals. Moreover, commercial banks are required by law to keep minimum cash reserves against deposits; in the case of Federal Reserve member banks, these reserves must be kept with the Reserve banks. Since cash reserves earn no return, it is in a bank's interest to limit its cash reserves as nearly as possible to the amount required by law. In doing so, however, constant recourse to the money market is necessary, either to borrow money or to sell short-term investments when an excess of withdrawals over deposits pulls money away or to lend or invest short-term funds if an excess of deposits over withdrawals temporarily provides excess cash.

It is through the complex interrelations of this network of short-term financial transactions that the money system is kept working smoothly, from day to day, meeting the vast payments requirements of a vigorous, growing economy. The great bulk of the enormous movement of funds through the banking system each day works itself out through an offsetting of funds available against funds required on a local or regional basis, but a net residual of available funds or need for funds remains. It is in absorbing or supplying these residual funds that the central New York money market is of crucial importance. And it is here that the net dependence of the entire financial structure upon the Federal Reserve is brought most clearly into focus. That is why the operations of the arm of the System located in New York necessarily fill a central role in exerting the marginal degree of easing or restraining influence that is needed, if monetary policy is to exert a determining marginal force upon the availability of money and credit for the country as a whole.

These operations in New York include, of course, a host of varied functions that are also being performed by the System's 35 other arms—the 11 other Federal Reserve banks, and the 24 Federal Reserve bank branches, located throughout the country. They include, notably, the discount mechanism through which banks may borrow directly to meet short-run adverse swings in their reserve positions. That is a vast subject in itself. The only special significance of New York in this zone of System activity is that so much of the borrowing need that converges on the large New York City banks results from the residual of pressures exerted on these banks by their correspondents everywhere.

What is more or less unique in New York is the location there of the active center of the trading market in the United States Government securities. Because all banks and others may turn to the purchase or sale of Government securities, as the first line of defense for employing or obtaining money market funds, that market becomes a major zone for the exercise of System responsibility at its own initiative. By buying or selling short-term Government securities, or by advancing funds at times to the dealers who are continuously making markets in these securities for all classes of investors, the Federal Reserve can bring about the general degree of tightness or ease that is most likely to fulfill the broad dynamic aims of monetary and credit policy.

I will not try, here, to describe that market in any detail. What I do want to attempt, very briefly, is to outline the procedures followed by our own trading desk, in carrying through each day the instructions of the Federal Open Market Committee. Perhaps I should note parenthetically that our use of the term "trading desk" does not imply that we "trade" in the usual sense—with a view to making profits. Our desk, is, in reality, a listening post and a "transactions desk" where orders are executed.

This desk at the Federal Reserve Bank of New York has direct telephone lines with the principal dealer firms and with the commercial banks in New York and Chicago that have Government securities dealer departments. A group of specialists on the desk are in constant communication with these firms, which are in turn in touch with banks and other investors all over the country, and the composite picture that evolves hour by hour from these conversations and from direct reports from the principal New York banks will show the balance of forces that is taking shape in the money market. Price and yield quotations from various dealers for all Government securities and United States agency issues, the latest Federal funds rate, overall changes in stock prices, and other information are chalked up on a large quotation board to provide statistical background for the reports and comments that are constantly pouring in. In a real sense, the trading desk is the Federal Reserve System's listening post in the money market as well as its operating arm.

Discussions at meetings of the Open Market Committee with respect to its instructions to the Federal Reserve Bank of New York usually include among other things reference to the degree of pressure—ease or tightness—that the Committee wishes to maintain in the money market in pursuit of its broad policy objectives. The discussion may sometimes include mention of targets in terms of bank reserve positions or short-term interest rates that would be generally appropriate to the current phase of credit policy. But it is recognized that statistical measures are not always satisfactory guides to the condition of money and credit availability which the Committee wishes to maintain and that the "feel" of the market, as interpreted by specialists, must be the principal day-to-day guide—that is, the things that close observation can reveal are invaluable aids from the standpoint of the timing of operations.

However, I would not wish to leave the impression that the open market operations for the Federal Reserve System are guided largely by educated intuition. Back of the day-to-day decisions to buy or sell Government securities or to enter into repurchase agreements with dealers lies an intensive evaluation of the supply and distribution of



bank reserves and of the forces that are likely to influence the money market currently and in the near future. A group of money market specialists works constantly at forecasting the additions to or withdrawals of funds from the national money market which may be expected on the basis of patterns previously observed in changes occurring during a week, month, season, or year. Estimates are made of the daily flow of Treasury receipts and expenditures to determine if the Treasury will be supplying or withdrawing funds from the market. Other specialists keep records of scheduled security flotations by corporations and Government bodies, including the Federal Government, and the expected influence of these operations on interest rates and market conditions is included in the total picture. Detailed data are compiled on the positions of the New York banks, including their borrowing from the Reserve bank and in the Federal funds market. And many other statistics and reports—more than I could detail in this statement—are poured into the hopper each day to form part of the background against which operating decisions are made.

The piecing together and interpretation of the bits and pieces of statistical data, market reports, developments in psychology and news items that goes on constantly in the securities department of the Federal Reserve Bank of New York is directed toward a single purpose—the execution of the policy instructions of the Federal Open Market Committee. By 11 o'clock on most mornings enough of the overall picture will have been assembled to give a reasonably clear idea of the action, if any, that will be called for, and it is then that the conference telephone call—to which I referred earlier—is made. From that point on, subject to any questions that may come in from the members of the Committee or their staffs, the job becomes the highly specialized technical operation of choosing the right methods, and the right time, to effect the marginal degree of influence upon the volume of bank reserves, and the state of the money market, that will best carry through the general aims of System policy.

We have already had occasion this morning, particularly through Chairman Martin's testimony here, to discuss what has been done through recent weeks and months. If there are further questions, either as to techniques or as to objectives, perhaps the best way to give you the answers you require will be for me to attempt to respond directly to those questions.

Chairman PATMAN. You gentlemen are, I guess, the most important people in the United States now in our economy. You have more power than the Congress. You have more power than the Congress of the United States.

Mr. ROUSE. I have a complementary statement that I would like to put in the record, too. I covered part of it in response to your questions but the rest is my role.

Chairman PATMAN. Certainly, you may do so.

Mr. ROUSE. Thank you.

(The prepared paper by Mr. Rouse is as follows:)

#### STATEMENT OF MR. ROBERT G. ROUSE

This brief statement is intended to give your committee a thumbnail description of my role as manager of the Federal Reserve System's open market account. I was appointed System account manager in November 1939, succeeding Mr. Allan Sproul; Mr. Sproul, in turn, had succeeded Mr. W. Randolph Burgess. I was selected for the position by the board of directors of the Federal Reserve

Bank of New York, on the recommendation of President Harrison and Mr. Sproul, and my selection was approved by the Federal Open Market Committee. My official title at the Federal Reserve Bank of New York is vice president.

Under the operating procedures of the Federal Open Market Committee, the Federal Reserve Bank of New York has been chosen by the Committee to carry out all purchases and sale transactions in Government securities for the account of all 12 Federal Reserve banks. I have the responsibility of supervising the execution of those transactions in accordance with instructions of the Committee. The selection of the Federal Reserve Bank of New York is the logical consequence of the fact that it is physically located in the Nation's money market center, where the great bulk of all transactions in United States Government securities, and in other money market instruments, actually takes place.

Mr. Hayes has described the manner in which meetings of the Federal Open Market Committee are conducted and my participation in those meetings as manager of the System open market account. There are two reasons for my being in attendance at the meetings. First, it is my responsibility to report upon the manner in which instructions adopted at the last meeting have been executed in the market, and to answer any questions on the conduct of these operations that any member of the Committee might raise. After my report, the first order of Committee business is to approve the operations for the System account during the period since the last meeting. My second reason for attending the meetings is to learn firsthand the Committee's intentions as they are developed in the discussion of policy during the meeting. It is never possible to get into a written directive or into the minutes of the meeting the shadings and nuances that may be contained in the policy objectives the Committee establishes.

The instructions given to me by the Committee are of two kinds: First, the instructions on monetary and credit objectives that are to be achieved through operations during the period until the next meeting and, second, the continuing instructions that establish certain rules of procedure that are to be followed in the course of the System account's participation in the Government securities market.

The Committee discussions of immediate policy objectives at times include guideposts which my associates and I must keep before us in making day-to-day operating decisions. For example, the Committee sometimes establishes reserve targets. During a "restrictive" phase of credit policy it might be the Committee's intention that member bank excess reserves at the Federal Reserve banks should be prevented from rising above some particular range, or during a period of "easy money" policy, the Committee might direct that open market operations be conducted at least partly with a view to increasing excess reserves. At other times the Committee might be particularly interested in the developments in the capital markets and the direction and degree of change in interest rates. Reserve measurements are not always satisfactory measures of the true availability of credit and money, and movements of interest rates might give a better reflection of prevailing credit conditions. These guides might be among the 3 or 4 considered particularly important by the Committee at a given time. But the Committee will not expect to be able to blueprint the course of market developments, even for a few days ahead, and therefore would not set rigid targets for any of these guides, nor try to spell out in detail various alternative sets of possible developments and targets. Enough is said to make clear to my associates and me the degree of general pressure that the Committee wants maintained, and the relative importance of various guides in the circumstances then prevailing. Reliance must then be placed upon the judgment of the manager and his associates to interpret the meaning and implications of the stream of developments and of changing psychological attitudes occurring in the markets from day to day to achieve the proper timing in carrying out the instructions of the Committee.

Managing the System open market account to achieve the objectives established by the Committee calls for the assistance of many specialists. For many of these needs we call on the services of skilled technicians who also serve jointly some of the other operating or service functions of the bank. For example, it is necessary to have forecasts of changes in bank reserves that are likely to occur as a result of a great variety of developments that are quite independent of open market policy—our open market operations must take account of these influences. Such forecasts are, in fact, prepared each morning for our use. Back of their preparation lies a pyramid of statistical information and knowledge of past performance that is used by our money market specialists in drawing up their forecasts. Other specialists are constantly analyzing developments in all of the

securities markets so as to provide the account management with the necessary information required for interpretation of the hour-by-hour course of developments in these markets. Demands for bank credit are likewise important in appraising the pressure of credit demands in the market—and for some kinds of credit this is significant not just monthly, or weekly, but daily and even hourly. The economists at the bank help materially in keeping us informed on critical aspects of these developments.

All of us engaged in open market operations are thus constantly in touch with the money market and the Government securities market so that each new development, as it exerts its influence on credit conditions, can be included in the overall view of market conditions that we form from day to day. The most important part of my role as manager of the System open market account in carrying out the Committee's instructions is this never-ending appraisal of market influences. A decision to buy or sell Government securities results from the interpretation that my associates and I place upon the various conditions at work in the market and upon our judgment as to what would be required against this background to achieve the Committee's objectives. In passing, I might call your attention to one point which my comments have probably already made clear; managing the System open market account is not a one-man operation. While responsibility for final decisions is mine, I rely heavily upon the competent staff of market specialists, traders, statisticians, economists, and others at the Federal Reserve Bank of New York to assist me. In addition, I am able to discuss day-to-day problems of policy execution with the Vice Chairman of the Committee, Mr. Alfred Hayes, or his alternate, Mr. William Treiber, at the New York Reserve bank. And when more serious matters arise on which I wish guidance, I may contact Chairman Martin or request a telephone conference with the full Committee.

I mentioned earlier that the system account manager operates under two types of instructions from the Federal Open Market Committee. The first are the instructions for the execution of current policy that I have just briefly described. The second are more detailed operating instructions that establish certain procedures and methods of operation for the system account in the Government securities market. Among these there is the instruction that the manager should buy or sell at best prices in the execution of system account transactions. In the actual conduct of a system operation, dealers are asked to offer us securities if we are buying or, if we are selling, to bid for securities offered by the system account. The dealers quoting the lowest prices when we are buying or the highest prices when we are selling will get the system account business. Of course, the decision as to the total amount to be bought or sold for the system account at any time is made by the manager, within the framework of committee instructions and review. In this connection, the Open Market Committee establishes a limit on total purchases or sales for the system account between meetings of the committee. If market conditions appear to me to require that purchases or sales in excess of this authorized amount should be made, I must refer back to the committee for authorization to enter into these additional transactions.

It has always seemed clear to me that as manager of the system open market account, operating under the Federal Open Market Committee, I am answerable directly to the committee for the manner in which I discharge my responsibilities. My function is that of a specialist designated to carry out day-to-day operations under the direction of the policymaking Federal Open Market Committee. In this capacity it is part of my responsibility to keep the members of the committee fully informed on all operations for the account and the reasons which give rise to each operation. Mr. Hayes has outlined the conference telephone calls and the steady stream of reports originating in the securities department of the Federal Reserve Bank of New York. These calls and reports are intended to be as informative as it is possible to make them, and through the years we have attempted to improve this flow of communications between the manager of the account and the Open Market Committee.

Chairman PATMAN. And any of you can add anything that you think is material and germane, including you, Mr. Shepardson.

What is the status of the consumer study, Mr. Martin?

Mr. MARTIN. The consumer credit study will be completed and will be published early next year.

Chairman PATMAN. Early next year?

Mr. MARTIN. I won't set a specific date on it.

Chairman PATMAN. You had some staff papers on the 1953, 1954 recession. Have you finished those?

Mr. ENSLEY. If I may, Mr. Chairman, at the time of our hearings 2 years ago it was a little premature to make complete evaluation of the monetary experience during the 1953-54 period. I believe you indicated at that time that you had staff projects, looking into that experience.

It is my understanding that since then, staff papers have been prepared and circulated to academic and labor and business and banking economists.

Would you comment on your plans for the ultimate disposition of those papers.

Mr. MARTIN. Mr. Young informs me—Mr. Young, who is head of our Department of Research and Statistics—that these were just working papers and that they would require quite a bit of work.

Mr. ENSLEY. I appreciate that.

Mr. MARTIN. We are working on them and reviewing them in the light of these meetings we have been having with various groups that have been giving us some ideas and comments on them.

Mr. ENSLEY. I have heard some very favorable comments about them. And it seemed that their publication might have some merit.

Mr. MARTIN. It might be that the Board would take under consideration publishing them after we have had a chance to edit them suitably in the light of all of the comments we have received.

Chairman PATMAN. Just one other thing, Mr. Martin, about a request for a Federal Reserve survey that I will make of you, if it is reasonable.

There is a dispute about the effects of tight money on small business. In the absence of authoritative reports there have been private surveys which are contradictory.

For example, Standard Factors Corp. surveys show small business getting less loans, the ABA survey and the Mellon Bank study of its own lending, shows small business getting more.

I want to ask you, Mr. Martin, to make this survey.

A good way to do it would be to repeat a survey which the Board made as of October 5, 1955. This shows the amount of loans outstanding by size of borrowers, cross-classified by size of bank.

If the same survey were made as of October 5, 1956, we could by comparing to the report as of a year ago, tell, (1), what the effects of tight money have been on the small borrowers against big borrowers; and (2) what the effect have been on the small banks against big banks.

It previously covered business loans of all member banks, and appeared in the Federal Reserve Bulletin for April 1956. The tabulation shows 7 size classes of borrowers and 10 size classes of banks.

Would you have that survey conducted, Mr. Martin?

Mr. MARTIN. We will do our very best to get further data on this subject, Mr. Patman. We are deeply interested in it, you know.

Chairman PATMAN. Yes. I know you are.

Mr. MARTIN. And want to do everything we can.

Chairman PATMAN. And that \$134 million you have for small industrial loans will last too long at the rate of \$300,000 a year. We

hope you will find some way to pep it up, the opportunity for these little fellows to get these loans.

Mr. Frischknecht, do you have some questions?

Would you consider sending yours in like I am sending mine in?

Mr. FRISCHKNECHT. Mr. Martin, I am Dr. Frischknecht, legislative assistant to Senator Watkins. He could not be with us today. He is on his way back to Washington from Hawaii.

I just spoke with him by telephone from San Francisco. He asked me if I would convey to you and the members of the Board his sincere thanks for the good job which you have been doing the past 3 or 4 years.

I do have some questions I would have liked to have asked you. I think they might have added a little perspective to the discussion that has continued at quite great length here today, but I suspect, as the chairman indicated, that we may have another opportunity before too long to hear from you again.

And Senator Watkins will be here at that time. So with that little explanation I will forego any examination.

Mr. MARTIN. We will await receipt of those questions, or if you wish to submit them we will try to answer them now.

Chairman PATMAN. We can submit them in writing if it is all right.

Mr. MARTIN. That will be perfectly all right.

(Supplementary questions later submitted to Mr. Martin by letter and his answers to them are covered in the following.)

#### ANSWERS TO REPRESENTATIVE PATMAN'S QUESTIONS

1. Credit the lifeblood of our economy: An early economist to whom modern economists are greatly indebted was a French surgeon, Francois Quesnay. Quesnay's ideas about how the economy functioned were influenced by his knowledge of the circulation of blood in the human organism. Following along Quesnay's line and viewing credit as the lifeblood of our present-day economy, these questions occur to me. Our economy is a vital living organism. Will it be made healthier by curtailing its flow of lifeblood? Do we heal disease by general bleeding or do we treat specific infections?

Modern medicine puts great emphasis on the necessity of maintaining a general environment propitious to health. While analogies are imperfect, we would agree in general that credit may be likened to the lifeblood of our present-day economy. However, pursuing your analogy, we would diagnose the credit situation today as one of high blood pressure for which the remedy is neither bleeding nor pumping more blood into the system but a general therapy to alleviate the high pressure affecting the entire economic body.

2. Thirty years of penicillin for a minor infection: When you or I get an infection and come down with a fever we first try to build up our production of antibodies to bring that fever down. If the infection persists and the fever mounts, our physician may administer and prescribe penicillin for a week or 10 days, enough to curb the infection and bring the fever back to normal. You wouldn't think much of that doctor if he put you on penicillin for 30 years to take care of a 10-day infection? Yet in many cases the high interest rate cure for today's alleged inflation will have to be taken every day over the next 20 to 30 years.

Lower interest rates offer incentives for borrowers when resources are available and higher interest rates offer an incentive to defer borrowing when resources are unavailable. It is true that the borrowing costs on a 30-year obligation incurred 2 years ago would be less than the borrowing costs a borrower would incur in today's market. This illustrates the strong incentives interest rates, particularly on long-term loans, exert toward sustaining high-level employment and maintaining the value of the dollar in the economy. If 30-year money were available to borrowers at the same interest rate as 2 years ago, higher prices for resources and output generally would more than offset the lower borrowing costs.

3. Why should United States support a plan that drives its bonds down and makes it pay more? What would you say of the businessman who used his full power and influence to force down the market price of his company's obligations and gave enthusiastic support to a plan whereby he would have to pay more and more for the use of credit extended by lenders who had gotten it from him originally at no cost to themselves? No doubt you would find it difficult to find such a businessman—he either would be broke or in a mental hospital. Can you tell me why precisely the same pattern of conduct pursued by the United States Government is considered perfectly proper and sound?

Successful businessmen usually evaluate specific costs in terms of the total effects on their operations. It would be the height of folly for the United States to inflate the currency under the impression that this would lower the cost of running the Government. Actually, the country would pay for this folly many times over in the shape of higher prices for everything it buys.

4. Inflation and shortages: Inflation or sharply rising prices are usually associated with physical shortages. Would you say that inflation is more likely to be prolonged when employment, output, and incomes are rising and plant capacity is being expanded, or when credit is tightened with the inevitable rise in interest rates operating to restrict output, reduce the demand for workers and lowering incomes? Assuming that people in the United States desire not only to maintain past standards but to raise them, which policy would you say is more likely to result in permanent inflationary pressure?

We would not agree with this statement of the problem. Inflation arises when aggregate money demand is in excess of the capacity to make available the goods demanded. Attempts to increase money demand still further under conditions of intensive use of resources induces a competitive scramble for the available goods and thus increases prices. It should be noted that many industries are currently operating at capacity and the gross national product is the highest on record and still rising.

5. Safety factor versus speculative returns on governments: Assuming you want wide ownership of the Federal debt in the hands of permanent investors, which would you say is more likely to help you achieve such an objective—a policy that promotes confidence in the safety of the principal invested in a Government obligation, or one that creates opportunities for speculative gains, discounts and higher yields?

The record shows that the continued erosion in the purchasing power of the dollar that occurred prior to 1951, when United States Government prices were pegged at par, had serious adverse effects on the efforts of the Treasury to promote widespread ownership of savings bonds on the part of permanent investors. A policy designed to protect the value or purchasing power of the dollar is certainly most likely to encourage the "wide ownership of the Federal debt in the hands of permanent investors."

6. Would you say that since the accord the role of power of banks and investment houses in influencing the allocation of our resources have been considerably increased? From the standpoint of democratic government would you regard this as strengthening or weakening it?

The "role and power of the banks and investment houses in influencing the allocation of our resources" has been changed radically since the accord in that they are no longer shielded from fluctuations in interest rates and prices in the market. This exposure of the financial community to the sanctions of the market would seem to strengthen democratic processes. These institutions affect allocation of resources through investing the savings that are placed with them for administration. Total savings have been increased since the accord, but there has been no particular trend in the proportions of the total that have been invested or allocated through the medium of financial intermediaries as a group, on the one hand, and through the process of direct investment by individuals, on the other. Stability in the purchasing power of the dollar since the accord has increased the confidence of savers and the willingness of people to save in dollar form. This has financed the great growth of our productive capacity in recent years.

Do you think that the price of money allocates the supply of credit?

In our judgment, it helps. This influence is illustrated in the answer to question 9.

8. Could you have limited the growth of credit to the same extent without raising interest rates?

Interest rates rose in response to the basic supply-and-demand situation. When resources are being fully utilized, growth of credit cannot be limited without a rise in interest rates unless you have a credit-rationing system so

all embracing as to be administratively impractical and inimicable to our system of democratic government.

9. Do you think credit policy has effectively restrained the plant and equipment boom? If so, how?

The rate of construction of plant and equipment has surged 25 percent ahead of that of a year ago. This boom has accentuated the demand both for construction labor and for the materials used by the construction industry. As a result prices have risen. However, credit policy and fiscal policy have exerted a moderating influence. The recently released report of the McGraw-Hill Publishing Co. concerning business plans for capital spending in 1957 and 1958 states: "Difficulties in construction and in delivery of equipment have delayed some 1956 expenditures until 1957. And in some industries, a part of 1957 spending is being rescheduled for 1958. Cash shortages—resulting from lower profits and tight credit conditions—have been important in some cases. However, the main effect has been to stretch out plans for expenditures. Very few cancellations are reported." It may be noted that, "For 1957, business now plans to increase spending 11 percent compared with an increase of 21 percent in 1956. A considerable portion of the increase represents spending that was originally planned for 1956 and has been deferred until 1957."

At an earlier date we described for you the mechanism through which our credit policy operates to restrict inflationary expenditures. In our answers to the 1952 questionnaire submitted by the subcommittee of the Joint Economic Committee on Monetary Policy and Management of the Public Debt, of which you were chairman, we stated (question 31, pt. I, pp. 373-374):

"The sensitivity of borrowers to changes in the rate of interest varies widely. In certain fields of long-term investment, such as housing and public utilities (which are large and important fields), interest costs are particularly significant, and a comparatively small increase in interest rates can have a substantial effect in decreasing or postponing the demand for capital. Even in other fields where the rate of interest plays a less important role in costs, fringe borrowers may still be deterred from borrowing in case interest rates rise, while other borrowers may decide to get along with a smaller investment in inventory or in plant and equipment. The higher the long-term rate becomes, the more likely becomes the expectation that this condition is temporary and the more likely will be the tendency for long-term borrowers to postpone investment outlays in the expectation of borrowing later at a considerable saving in interest cost.

"The effect upon the borrower of the rate of interest considered as a cost of current investments, as described above, is far from being its only effect. An increase in the rate of interest has a further influence, and an important one, in that it reduces the money value of existing assets.<sup>59</sup>

"Income earning assets are valued by capitalizing the expected income at the going rate of interest with due allowance for risk. When interest rates rise, the market value of such assets tends to decline, unless actual or expected earnings rise at the same time, since their earnings are capitalized at a higher rate of interest. This results in a basic change in the relationship between prices of existing assets and prices of new producible wealth which, together with changes in expectations as to profits and risks due to the changed credit and monetary situation, shifts the balance of entrepreneurial decisions toward holding or buying old assets, and adapting old assets to new uses, rather than buying new ones whose production would involve adding to the demand for materials and labor. Values of fixed-interest-bearing securities also decline as market interest rates rise, a development which reduces the liquidity positions of their holders and tends to discourage spending, both with borrowed funds and otherwise."

<sup>59</sup> In a highly developed economy such as the United States, the volume of accumulated capital assets is very great in relation to current income. Small percentage changes in the value of such assets involve large dollar amounts. In a recent study by Raymond W. Goldsmith, which is now in process of publication, it is estimated that for the 145-year period 1805-1950 the average yearly rate of growth reproducible tangible wealth in the United States was about  $4\frac{1}{4}$  percent, or about 2 percent on a per capita basis. At the end of 1948 reproducible tangible wealth owned by individuals, business, and farmers was valued at approximately \$600 billion. Although not all of this represents assets whose value is directly affected by changes in interest rates, the figure serves to give some idea of the magnitude of reproducible assets involved. In addition, values of income-producing lands are affected, as are values of negotiable claims not represented by real assets. The study is a part of a comprehensive inquiry into savings and investment in the American economy, financed by a grant of funds from the insurance companies investment research committee, with the joint participation of the two associations of life-insurance companies.

10. Do you agree with Secretary Humphrey that savers and investors need to have even greater incentives in order to overcome this alleged shortage of capital? Do you feel that higher interest rates are part of the generally greater incentives they should be offered?

Yes, as long as savings are inadequate to meet investment demands. The record of 1956 shows that higher interest rates have encouraged individuals to increase their money savings.

11. Do you think that we face a capital shortage in the United States? Please explain how low interest rates from 1932 to 1952 contributed to this alleged capital shortage.

At present there are unsatisfied capital demands which cannot be met from existing resources at present levels of savings. During the period 1932-40, low interest rates offered an incentive for capital investment, but investment demands were small relative to savings. During the period of wartime inflation, savings were borrowed by the Government to help finance the war effort, and such investment as occurred was concentrated in war-supporting activities. Since the war, real capital formation has been high, partly because of the carry-over of accumulated backlogs and partly to provide for our current and prospective high rates of growth. The low interest rates, maintained artificially from 1946 to 1951, fed the inflation that took place in that period and seriously eroded the purchasing power of the dollar.

12. If people are induced to save more, won't this mean they will spend less on goods and services? If business is increasing its productive capacity and consumers are to buy less, what will happen to the business operating rate? How will this affect investment?

The problem of economic stabilization policies is to attain an appropriate balance between consumption, saving, and investment.

13. Is there a danger that high interest rates may become a permanent habit in the United States? Would this be a desirable development?

The level and structure of interest rates that prevails at any time must reflect the relationship between current borrowing demands and the volume of saving. Interest rates in this country today are not a habit; the great danger is that inflation may become a habit as it has become in several unhappy countries abroad. In this connection it should be borne in mind that the cheap money policies pursued in some countries have not brought about low interest rates. The countries which have allowed their money supply to expand without restraint generally have the highest rates of interest—and those which have exercised restraint have the lowest rates. In Switzerland the yield on government bonds is about 3¼ percent, a little below the level in the United States. In France it is about 5½ percent, and in Mexico, Brazil, and Chile it is over 10 percent.

14. If you had no alternative to choose from except a policy that led to mild inflation or one which led to outright deflation, which would you choose? Why?

Under our economic and political institutions, a mild inflation, deliberately accepted as a policy, would be certain to set the stage for an unhealthy boom and eventual collapse. A choice, therefore, is not open. The aim of monetary policy is to contribute, so far as it can, to steady economic progress.

15. What policies or institutional setups should we have, if any, to insure that certain social demands for schools, housing, highways, etc., do not get lost in the scramble for the relatively scarce credit resources?

This question relates to broad governmental policies, which go beyond the responsibilities of the Federal Reserve System for regulating overall monetary and credit conditions with a view to orderly growth in the economy as a whole and a stable value for the dollar. The worthwhile social demands referred to have, properly, the power of Government behind them—the power to tax and appropriate, the power to borrow, the power of eminent domain. The question is not one of inadequate power—but how much of the resources of the country should be preempted to these purposes at any point in time. Basically, public facilities are financed out of revenues and to this extent are not affected by conditions in the capital markets. When the decision is made to finance public facilities by borrowing, the funds sought must be bid away from other borrowers. There are various devices by which this money can be attracted for these special purposes—subsidies, tax exemptions, direct loans, etc. None of these provides a fundamental solution, however, to the problem of scarcity of physical resources. So long as demands for goods and services outrun productive capacities, any program to provide preferential treatment of one class of borrowers will add to the cost of borrowing by other groups and add to the cost of basic materials for all borrowers.



Chairman PATMAN. I did not finish out the question that I intended to finish a while ago about the statement that Mr. Roosa made in his book.

You know there has been quite a bit of discussion in here as to who is consulted when you are trying to arrive at just the exact rate that should be used on a bond issue like the  $3\frac{1}{4}$  percent, or the others, and who is the go-between, between the Treasury and the Open Market Committee, and the people who buy, the dealers.

And this statement in here indicates something I think that is of interest. It says:

The senior managements which set the broad policy outlines for the various Government dealer firms, bank and nonbank, do so on the basis of tested experience in the rough and tumble of the whole range of financial markets.

In other words, it is the senior managements which set the broad policy outline for the various Government dealer firms, banks, and nonbanks.

They are the people that he says that you confer with in arriving at the interest rate, but, of course, I guess you say that you confer with a lot more people besides them.

Mr. MARTIN. Well, that is the Treasury's primary responsibility. And we give the Treasury all of the assistance we can in coming to a satisfactory decision. The number and the people that are conferred with are entirely in the Treasury's hands.

Chairman PATMAN. We want to leave this meeting on a good note. Is there any one of you members that would like to say anything before we conclude the hearings today and, really, for this year, because we will not have time to expand on it this year?

Would you, Mr. Martin?

Mr. MARTIN. No. I have probably talked too much, Mr. Patman.

Chairman PATMAN. We want to thank you very much for the forthright answers you have given. You are always giving us the information as you see it. And we appreciate all you gentlemen coming here. Without objection, I will insert at the conclusion of the record a series of tables containing data pertinent to today's discussions.

I said at the outset of these hearings that I did not anticipate that we would have time to work out and prepare a formal subcommittee report.

The course of the hearings has however raised a good many questions in my mind, and I should like to hold the record open long enough to place in it a statement of my personal views upon the implications of recent monetary and credit policies and practices.

Unless there is something else to come up, we will reserve the right to submit those questions and we will stand adjourned subject to call of the Chair.

(The statement just referred to, made available to the press on December 17, 1956, follows:)

#### HIGH INTEREST AND TIGHT MONEY POLICIES OF THE FEDERAL RESERVE SYSTEM

STATEMENT BY REPRESENTATIVE WRIGHT PATMAN (DEMOCRAT, TEXAS), CHAIRMAN OF SUBCOMMITTEE ON ECONOMIC STABILIZATION, JOINT ECONOMIC COMMITTEE, ON RECENT SUBCOMMITTEE HEARINGS ON MONETARY AND CREDIT PROBLEMS

The Subcommittee on Economic Stabilization has just concluded another of its periodic reviews designed to check on the adequacy and effectiveness of an important stabilization instrument—general monetary and credit controls.

At the opening of these hearings I stated that they were in no way intended to undermine or threaten the Federal Reserve System as it is presently consti-

tuted. Our objective rather was to gather information as to recent and current monetary and credit policy and its effects on various segments of our economy.

It was not originally intended to issue a report or recommendation after these hearings but rather to study the record and to consider it in connection with the annual report of the Joint Economic Committee due March 1.

However, in view of the unprecedented public interest that has been manifested in the brief 2-day hearing and the concern of many groups about the problems that were discussed before the subcommittee, I deem it appropriate to issue the following statement which incorporates some preliminary impressions.

First, the 2 days of hearings served to make me feel even more strongly than before that the time is past due for a thorough reexamination of our entire monetary system and particularly a reevaluation of the role and goals of monetary policy. Mr. Elliott Bell has made an important contribution by indicating some of the specific areas that need study. Without detailing his suggestions here I will say that I find myself in broad agreement with Mr. Bell as to the areas that need study. As to the vehicle for that study I differ with Mr. Bell. Suffice it to say that my reasons for differing with him are that I believe this is an area where the Congress has an inescapable constitutional responsibility. I believe we might well combine Mr. Bell's proposal with mine by having a joint congressional monetary committee assisted by outstanding qualified experts in the field of banking and public finance.

My second impression gained from these hearings is that there has been an exaggerated importance attributed to the monetary and credit powers of the Federal Reserve as instruments that can guarantee us stability and growth. Chairman Martin has made an important contribution to public enlightenment in once again warning that monetary policy is "only one factor" and that "it is not adequate to do an effective job if the budgetary and the fiscal policy of the Government runs completely counter to it."

In this connection there was apparent unanimity throughout the hearings that the main stimulus to the current inflationary pressures that the Federal Reserve is attempting to restrain through its restrictive monetary policy and higher interest rates and the greatest threat to instability have come from the capital goods area, and particularly from the plant and equipment expenditures boom. This points up a serious lack of coordination between the fiscal authorities and the monetary authority. For the expansion of plant and equipment expenditure was stated by the Secretary of the Treasury to be the primary objective of Administration tax policy. As he put it, "investment is the goose that lays the golden eggs."

Moreover, within the area of plant and equipment spending credit restraint has operated unevenly. As Chairman Martin pointed out, an important advantage big firms have is their financial status. The little man does not have it. That means that when the supply of bank credit is restricted and commercial banks and other lenders must resort to rationing, they will naturally extend credit to those whom they judge to be the soundest risks, the big firms with financial status. The small business is in effect being denied the right to scramble.

This leads to a third impression gained from these hearings. The Federal Reserve operates on the theory that by restraining generally the supply of credit and thereby denying credit to some would-be capital users, it is preventing a wild scramble for limited resources which could only raise prices without increasing the supply of resources. Ignoring for a moment the questionable assumption that resources are completely inelastic, it is pertinent to point out that the price increases that have been greatest occurred in metals and metal products, construction materials, and machinery.

These are the so-called administered price sectors. That is to say price decisions are not responsive to short-run interaction of supply and demand in the market. Instead they are fixed more with an eye on the probable effects of prices and profits on the attraction of new firms into the industry. Since in the administered price industries an important consideration is to limit the number of producers, it is likely that prices will not respond freely to unrestricted supply and demand forces. It is also true that prices will be raised on the basis of other factors which changes in the supply of credit and the interest rate will importantly affect. Thus the price will unquestionably be fixed to reflect a rate of return that takes into account the capitalization of invested funds at the going rate of interest. Therefore with respect to administered price sectors rises in interest rates, due to restriction of credit, play a more important role in raising prices than the restriction of credit does in

preventing prices from being pushed up by the pressure of market demand and supply forces.

Conversely it is true that in the areas characterized by sensitivity to market forces of supply and demand, rising interest rates are less likely to be passed on price-wise because of the sharp competitive situation that confronts each seller. The textile industry is a good example.

It would appear that the monetary authorities do not appreciate sufficiently the effects of credit restraint in areas characterized by administered prices.

A fourth impression created by these hearings is that under existing policies we have no way of assuring that certain social needs for schools, housing, highways, etc., do not get bypassed in the scramble for scarce resources. The machinery we rely on for rationing a curtailed supply of credit is not primarily influenced by social needs and priorities. The result is that many school districts have had to pay excessively high interest rates, in some cases enough to buy a school that could house an additional 900 pupils. In too many instances school districts have had to postpone bond issues because of the lack of investors. We cannot afford to postpone school facilities too long, especially in the light of the challenge that the Soviet Union is making to our technological leadership. And even if this challenge did not exist, education as a social need cannot be treated as impersonally in the allocation of resources as, say, the demand for racetracks or nightclubs.

It is evident that, assuming we want to continue to fight inflationary forces with some measure of restraint on credit, we must decide upon the type of machinery we want to ration the curtailed supply.

A final impression gained from these hearings is that not sufficient attention is being given by the monetary authorities on the harmful effects of higher interest rates on income distribution. The main concern seems to be with stimulating savings by offering higher interest rates as an inducement. It is well known that the man of moderate means does most of his savings through purchase of life insurance, payment of principal on home mortgages, etc. The really big savers are those with very large incomes. The effect of raising interest rates may well be to increase savings by increasing the income of the highest income receivers. This will tend to redistribute income and purchasing power in the same uneven way that led to the widening gap between consumption and productive capacity in the late 1920's. We do not want to stimulate savings at the expense of a widespread distribution of purchasing power which is the most potent incentive ever presented to a prospective investor.

We must at all times be equally vigilant to the dangers of deflation as we are concerned now about the dangers of inflation.

(By direction of Chairman Patman the following tables are made a part of the record:)

*Farm wage rates, railroad freight rate index, and total transportation bill for farm food products, 1947, 1955, and 1956*

	1947	1955	1956	Percentage increase to—	
				1955	1956
				Percent	Percent
Transportation bill for farm food products (billions of dollars) <sup>1</sup> .....	\$2.05	\$3.59	(2)	75.1	(2)
Railroad freight rate index (index No. 1947-49=100) <sup>2</sup> .....	88	124	P 130	40.9	47.7
Farm wage rates, composite (dollars per hour) <sup>4</sup> .....	\$0.571	-----	\$0.736	-----	28.9

<sup>1</sup> Estimates of total expenditures by shippers for transportation (except local hauling) of farm products for civilian consumption by rail and truck, including private trucks. Principal causes for increase are change in rates, volume shipped, and length of haul.

<sup>2</sup> Not available.

<sup>3</sup> Combined index for railroad freight rates on livestock, meats, vegetables and fruits, wheat and cotton.

<sup>4</sup> For October 1947 and October 1956.

Source: U. S. Department of Agriculture.

*Bond yields and money market rates, 1947, and week ending Dec. 1, 1956*

	Week ending Dec. 1, 1956 (percent)	1947	1947-56 percentage increase
U. S. Government securities (taxable):			
3-month bills <sup>1</sup> .....	3.174	0.594	434.3
9- to 12-month issues <sup>2</sup> .....	3.23	.88	267.0
3- to 5-year issues <sup>3</sup> .....	3.60	1.32	172.7
Bonds:			
Due or callable from 10 to 20 years.....	3.36	4.25	49.3
Due or callable at 20 years or after.....	3.33		
Local housing authority temporary notes (tax exempt) <sup>4</sup> .....	2.355	.845	48.0
High-grade municipal bonds <sup>5</sup> .....	3.45	2.01	178.7
Corporate bonds: <sup>6</sup>			
Aaa.....	3.71	2.61	42.1
Baa.....	4.26	3.24	31.5
Prime commercial paper, 4 to 6 months.....	3.63	1.03	252.4
Prime bankers' acceptances, 90 days.....	3.19	.87	266.7
Federal Reserve discount rate <sup>10</sup> .....	3.00	1.00	200.0

<sup>1</sup> Rate on new issues within period.  
<sup>2</sup> Includes certificates of indebtedness and selected note and bond issues.  
<sup>3</sup> Includes selected note and bond issues.  
<sup>4</sup> 15 years or more.  
<sup>5</sup> Last sale of notes in 1947 and sale of Dec. 4, 1956.  
<sup>6</sup> Standard & Poor's Corp.  
<sup>7</sup> Week ending Nov. 23.  
<sup>8</sup> Moody's Investors Service.  
<sup>9</sup> Week ending Nov. 23.  
<sup>10</sup> Advances of member banks secured by Government obligations and discounts of and advances secured by eligible paper.

Source: Board of Governors, Federal Reserve system.

*Average prices paid by farmers at independent stores Sept. 15, 1956, compared to Sept. 15, 1947*

Commodity and unit	Sept. 15, 1956	Sept. 15, 1947	Percentage in- crease (+) or decrease (-)
Food: Coffee..... pound	\$1.05	\$0.484	+116.9
Clothing:			
Men's overalls..... pair	3.58	3.29	+8.8
Women's shoes..... do	5.65	4.99	+13.2
Household operation:			
Soap flakes..... pound	.275	.291	-5.5
Detergent..... do			
Household furnishings: Living-room suites..... each	194.00	163.00	+19.0
Building materials: Framing lumber (2x4x16)..... thousand board-feet	143.00	115.00	+24.3
Motor supplies: Gasoline..... gallon	.306	.256	+19.5
Motor vehicles:			
Automobile: Ford, 6-cylinder, Mainline <sup>1</sup> ..... each	2,040.00	1,310.00	+55.7
Tractor: 20-29 belt horsepower..... do	2,090.00	1,490.00	+40.0
Farm machinery: Combine, 5- to 6-foot cut, power takeoff..... do	1,590.00	1,010.00	+57.4
Fertilizer: 3-12-6..... ton	40.80	38.10	+7.1
Livestock: Feeder cattle..... 100 pounds	16.70	20.10	-16.9
Feed: Mixed dairy, 16-percent protein..... do	3.66	4.23	-13.5
Iron and steel items:			
Milk can, 10-gallon..... each	12.60	7.43	+69.6
Nails, 8-penny, common..... pound	.154	.0966	+59.4
Barbed wire:			
2-point..... spool of 80 rods	9.39	6.47	+45.1
4-point..... do	10.50	6.95	+51.1
Poultry netting (5x150 feet)..... roll	10.10	6.55	+54.2
Fence posts, steel..... each	1.08	.729	+48.1
Gates, farm, galvanized, 14 feet..... do	26.60	18.50	+43.8
Iron pipe, galvanized, 1 1/4-inch diameter..... foot	.420	.249	+68.7

<sup>1</sup> For July 1947 and 1956. This model was a 2-door sedan in 1947 and a 4-door sedan in 1956.

Source: U. S. Department of Agriculture.

*Average prices received by farmers for farm products in United States, Nov. 15, 1956, compared to Nov. 15, 1947*

Commodity and unit	Nov. 15, 1956	Nov. 15, 1947	Percentage increase (+) or decrease (-)
Wheat.....bushel.....	\$2.05	\$2.74	-25.2
Corn.....do.....	1.21	2.19	-44.7
Cotton, American Upland.....pound.....	.3188	.3188	+0.1
Tobacco, all.....do.....	.10	.40	-75.0
Potatoes.....hundredweight.....	1.53	2.60	-41.2
Hogs.....do.....	14.20	24.30	-41.6
Beef cattle.....do.....	14.60	18.20	-19.8
All milk, wholesale.....do.....	4.59	5.02	-8.6
Eggs.....per dozen.....	.372	.534	-30.3

Source: U. S. Department of Agriculture.

(Thereupon, at 4 p. m., the hearing was adjourned, subject to call of the Chair.)

×

# WORLD ECONOMIC GROWTH AND COMPETITION

---

---

## HEARINGS

BEFORE THE

SUBCOMMITTEE ON FOREIGN ECONOMIC POLICY

OF THE

JOINT ECONOMIC COMMITTEE

CONGRESS OF THE UNITED STATES

EIGHTY-FOURTH CONGRESS

SECOND SESSION

PURSUANT TO

Sec. 5 (a) of Public Law 304, 79th Congress

---

DECEMBER 10, 12, AND 13, 1956

---

Printed for the use of the Joint Economic Committee



UNITED STATES

GOVERNMENT PRINTING OFFICE

WASHINGTON : 1957

85589

EP

## JOINT ECONOMIC COMMITTEE

(Created pursuant to sec. 5 (a) of Public Law 304, 79th Cong.)

PAUL H. DOUGLAS, Senator from Illinois, *Chairman*  
WRIGHT PATMAN, Representative from Texas, *Vice Chairman*

### SENATE

JOHN SPARKMAN, Alabama  
J. WILLIAM FULBRIGHT, Arkansas  
JOSEPH C. O'MAHONEY, Wyoming  
RALPH E. FLANDERS, Vermont  
ARTHUR V. WATKINS, Utah  
BARRY GOLDWATER, Arizona

### HOUSE OF REPRESENTATIVES

RICHARD BOLLING, Missouri  
WILBUR D. MILLS, Arkansas  
AUGUSTINE B. KELLEY, Pennsylvania  
JESSE P. WOLCOTT, Michigan  
HENRY O. TALLE, Iowa  
THOMAS B. CURTIS, Missouri

GROVER W. ENSLEY, *Executive Director*  
JOHN W. LEHMAN, *Clerk*

---

### SUBCOMMITTEE ON FOREIGN ECONOMIC POLICY

RICHARD BOLLING, Missouri, *Chairman*  
PAUL H. DOUGLAS, Illinois  
HENRY O. TALLE, Iowa  
J. WILLIAM FULBRIGHT, Arkansas  
RALPH E. FLANDERS, Vermont  
CHARLES S. SHELDON II, *Economist*

# CONTENTS

---

Topics in order of discussion:	Page
Economic Growth Trends in the Industrial Nations.....	1
Growth of the United States Economy.....	6
Dexter M. Keezer, director, department of economics, McGraw-Hill Publishing Co., accompanied by Douglas Greenwald, McGraw-Hill Publishing Co.....	6
Significance and Shortcomings of Economic Comparisons.....	19
Solomon Fabricant, Director of Research, National Bureau of Economic Research.....	20
Growth of the Soviet Economy.....	29
Gregory Grossman, Russian research center, Harvard University.....	29
A Comparison of Economic Growth in the Communist and Non-Communist Worlds.....	33
Harry Schwartz, specialist on Soviet and satellite affairs, the New York Times.....	34
The Problems of Economic Projection.....	38
Martin R. Gainsbrugh, chief economist, National Industrial Conference Board.....	39
Economic Growth Trends in Underdeveloped Areas.....	59
Meaning and Importance of Economic Development in World Affairs.....	60
Henry G. Aubrey, director of research on the economics of competitive coexistence, National Planning Association....	60
Red Chinese Development and Prospects.....	62
Alexander Eckstein, department of economics, Harvard University.....	63
The Development Effort of India.....	69
Hon. John Sherman Cooper, United States Senator from the State of Kentucky.....	70
How Japan Developed and Its Economic Outlook.....	74
Jerome B. Cohen, professor of economics, Bernard M. Baruch School of Business and Public Administration, The City College, New York.....	74
International Aspects of Economic Development.....	95
Willard L. Thorp, department of economics, Amherst College.....	95
The Challenge of World Economic Competition and Growth.....	117
The Soviet Use of Economic Growth for Military and Political Purposes.....	118
Henry L. Roberts, director, Russian institute, Columbia University.....	118
Soviet Economic Growth as a Base for Trade and Technical Assistance.....	121
Hans Heymann Jr., representative, economics division, The Rand Corp.....	121
United States-Communist Struggle in the Underdeveloped Areas.....	126
W. W. Rostow, center for international studies, Massachu- setts Institute of Technology.....	126
United States Foreign Economic Policy in Meeting the World Challenge.....	134
Milton Katz, Harvard Law School.....	134
Implications of the World Challenge for the United States Economy.....	147
Roy L. Reiersen, vice president, Bankers Trust Co.....	148
Statements:	
Aubrey, Henry G., director of research on the economics of com- petitive coexistence, National Planning Association.....	60
Cohen, Jerome B., professor of economics, Bernard M. Baruch School of Business and Public Administration, the City College, New York.....	74, 79
Cooper, Hon. John Sherman, United States Senator from the State of Kentucky.....	70



Statements—Continued	Page
Eckstein, Alexander, department of economics, Harvard University—	63
Exhibits:	
Average annual rate of growth in production of selected industrial and farm products in China, India, and the U. S. S. R.-----	64
Selected economic growth indicators, Communist China, 1949-55, and targets for 1957 and 1962-----	68
Selected economic growth indicators, India, 1950-51 to 1955-56, and targets for 1960-61-----	69
Selected economic growth indicators, U. S. S. R., 1913-37--	69
Fabricant, Solomon, director of research, National Bureau of Economic Research-----	20
The longer forward look: Some critical remarks-----	22
Gainsbrugh, Martin R., chief economist, National Industrial Conference Board-----	39
Exhibit: United States population—actual and projections, by age, 1955 and 1975-----	41
Grossman, Gregory, Russian research center, Harvard University--	29
Heymann, Hans, Jr., representative, economics division, the Rand Corp-----	121
Exhibits:	
Foreign aid and credits of the U. S. S. R. to underdeveloped countries-----	122
Soviet trade with the free world-----	124
Katz, Milton, Harvard Law School-----	134, 142
Keezer, Dexter M., director, department of economics, McGraw-Hill Publishing Co., accompanied by Douglas Greenwald, McGraw-Hill Publishing Co-----	6, 10
Exhibits:	
Business capital spending and capacity in manufacturing---	18
Growth of scientific research and development in the United States, 1941-55, 1960-----	16
Income (after taxes) per person (in constant 1955 dollars)--	19
Labor cost up—Power cost down, 1930-53-----	17
Output per man-hour increases while working hours decline--	15
Population growth by 1970-----	14
Projection of gross national product through 1970, and how it is produced (in constant 1955 dollars)-----	13
Projections of economic indicators, 1960, 1965, 1970-----	19
Reierson, Roy L., vice president, Bankers Trust Co-----	148
Roberts, Henry L., director, Russian Institute, Columbia University--	118
Rostow, W. W., Center for International Studies, Massachusetts Institute of Technology-----	126, 131
Schwartz, Harry, specialist on Soviet and satellite affairs, the New York Times-----	34
Exhibits:	
Estimated output of coal, oil, steel, and electricity in the Communist countries in 1956 and the 1960 output goals for these countries-----	34
Estimated production of coal, oil, steel, and electricity in 1938, 1950, and 1955 in the entire world and in the parts of the world which were Communist and non-Communist in 1955-----	34
Output in Communist Eastern Europe of coal, oil, steel, and electricity in 1938, 1949, and 1955-----	35
Thorp, Willard L., department of economics, Amherst College-----	95
Additional information:	
Memorandum supplied by Willard L. Thorp to the Joint Economic Committee in response to three questions by Senator Flanders----	108
Press release and schedule of witnesses-----	2
Reexamination of our trade policy, memorandum of Hon. Ralph E. Flanders-----	5

## APPENDIX

Economic Consequences of Disarmament, speech given at Stanford University, July 23, 1956, by Dr. Grover W. Ensley-----	163
Kremlin Economists Disclose Red Plans, reprint of article in Nation's Business, January 1957, by Dr. Grover W. Ensley-----	170

# WORLD ECONOMIC GROWTH AND COMPETITION

---

MONDAY, DECEMBER 10, 1956

CONGRESS OF THE UNITED STATES,  
SUBCOMMITTEE ON FOREIGN ECONOMIC POLICY,  
JOINT ECONOMIC COMMITTEE,  
*Washington, D. C.*

The subcommittee met, pursuant to call, at 10:10 a. m., in room 1301, New House Office Building, Washington, D. C., Hon. Richard Bolling presiding.

Present: Senator Ralph E. Flanders.

Also present: Charles S. Sheldon II, staff economist; James W. Knowles, staff economist.

Representative BOLLING. The subcommittee will be in order. The Joint Economic Committee has primary responsibility in the Congress for making studies and recommendations in the broad area of economic and business affairs as they affect the growth and the stability of the whole economy. This role is now familiar to most people, after more than a decade of operation under the Employment Act.

If ever the concept needed reinforcing, the idea is now very clear to everyone that international events can have a powerful influence upon the workings of the economy. We have seen in recent weeks both the relatively progressive and healthy economies of our allies in Western Europe and the economies of our friends in the Middle East, who had so much to hope for in economic development, face greatly changed expectations. War in the Middle East has brought a new economic crisis—with rationing, the threat of inflation, and new trade controls—to many countries that a few months ago had little reason to expect such disaster. And, certainly, on the other side of the Iron Curtain, unrest in the satellites and changed relations with the Soviet Union will have economic effects which may be far reaching.

It was this recognition, that international events and international trading relations can be of major importance to economic stability and growth, which led to the creation almost 2 years ago of this subcommittee. Even earlier, the full committee had sponsored a comparative study of economic growth trends in the Soviet bloc contrasted with similar development in the United States, Canada, and Western Europe. Much has happened since that time. The subcommittee, a year ago, conducted a general review of foreign economic policy principles to serve as a framework for later studies, and to provide the joint committee with perspective on the importance of international trade, investment, and economic development.

This year, in continuation of the study, it developed more completely the implications for the economy of the national-defense exception to unhampered international trade. No other part of the

Congress previously had had the occasion to explore so thoroughly the meaning of such policies to the Nation as a whole, even though some previous studies have done creditable work in assembling facts about a few individual critical industries in isolation from other aspects of such restriction.

At the same time, the subcommittee this year has also undertaken a fresh look at comparative economic growth in various parts of the world. This seems appropriate now that 2 years have passed since the previous study of this nature was made. These studies have two principal phases: First, we expect to release, sometime in January, a new study on the Soviet economy, comparing its economic strength and its growth trends, with the United States used as a yardstick. Having examined the draft which is now being subjected to final review, I believe it will perform a useful service in assembling in one place economic data with carefully weighed interpretations which should be extremely useful to all persons interested in our economic race with the Russians. There will be a public announcement as soon as printed copies are available.

Second, in furtherance of the studies of this subcommittee, the hearings opening this morning are designed to bring together highly qualified persons to discuss various aspects of worldwide economic conditions and international rivalries. With the future difficult to predict with any certainty, these gentlemen today and on the remaining days of the hearings will help us to identify major considerations likely to affect the future, to identify some of the big unanswered questions in the world outlook, and to make such other comments for us as world economic conditions suggest.

I am placing in the record at this point the press release and schedule of witnesses covering the present hearings:

[For a. m. release, Thursday, December 6, 1956]

CONGRESS OF THE UNITED STATES, JOINT ECONOMIC COMMITTEE

SUBCOMMITTEE ON FOREIGN ECONOMIC POLICY

Representative Richard Bolling (Democrat, Missouri) announced today that the Subcommittee on Foreign Economic Policy, of which he is the chairman, in continuance of its study of economic growth trends in various parts of the world, will hold public hearings during the week beginning Monday, December 10, to receive testimony from a selected list of witnesses qualified by their experience and responsibilities to discuss problems of economic growth on both sides of the Iron Curtain and their interaction with our foreign economic policy goals.

There follows Mr. Bolling's statement outlining the reasons for the hearings and a copy of the list of witnesses with the dates of their appearance:

"The Joint Economic Committee is charged with responsibility under the Employment Act of 1946 for making continuing studies of the growth and stability of the United States economy. International developments of the recent past have been so significant as to warrant a fresh look at economic conditions in various parts of the world to see what may be the implications for United States economic policy both at home and abroad.

"These needs were anticipated by the Joint Economic Committee in its report of March 1, 1956, which stated (p. 8):

"The subcommittee, therefore, during the coming year will continue its studies of (1) current economic trends behind the Iron and Bamboo Curtains, in the free world, and in the uncommitted regions of the world; (2) the nature, extent, and actual performance of Communist efforts in providing economic assistance to underdeveloped areas; (3) where present trends may be leading us and the broad implications for our economic policy, particularly foreign aid and investment policies \* \* \*

"This subcommittee soon will issue a staff study which is in its final stages of preparation, dealing with Soviet economic structure and growth, and making comparisons with the United States economy. Further details will be announced at the time the report becomes available for distribution.

"In further development of its assigned responsibilities, the subcommittee is holding public hearings designed to identify the issues associated with economic growth problems. The hearings are being organized under three headings: (a) Economic growth trends in the industrial nations; (b) economic growth trends in underdeveloped areas; and (c) the challenge of world economic competition and growth.

"The specialists who have been invited to appear will each present an oral statement, and then share in exploratory panel discussions, and receive questions from members of the subcommittee. If the results warrant a report by the subcommittee to the Congress, this would follow the hearings, based upon both a review of the evidence collected and the staff study on growth trends. In any event, the high caliber of the invited witnesses will make their testimony worthy of careful study by the Congress, the press, and the public."

The other members of the subcommittee are: Senator Paul H. Douglas (Democrat, Illinois), Senator J. William Fulbright (Democrat, Arkansas), Senator Ralph E. Flanders (Republican, Vermont), Representative Henry O. Talle (Republican, Iowa).

#### SCHEDULE OF PUBLIC HEARINGS ON WORLD ECONOMIC GROWTH AND COMPETITION

Monday, December 10, 1956, 10 a. m., House Banking and Currency Committee room:

##### *Economic growth trends in the industrial nations*

Dexter M. Keezer, director, department of economics, McGraw-Hill Publishing Co.: Growth of the United States Economy.

Solomon Fabricant, director of research, National Bureau of Economic Research: Significance and Shortcomings of Economic Comparisons.

Gregory Grossman, Russian Research Center, Harvard University: Growth of the Soviet Economy.

Harry Schwartz, specialist on Soviet and satellite affairs, the New York Times: A Comparison of Economic Growth in the Communist and the Non-Communist Worlds.

Martin R. Gainsbrugh, chief economist, National Industrial Conference Board: The Problems of Economic Projection.

Wednesday, December 12, 1956, 10 a. m., House Banking and Currency Committee room:

##### *Economic growth trends in underdeveloped areas*

Henry G. Aubrey, director of research on the economics of competitive coexistence, National Planning Association: Meaning and Importance of Economic Development in World Affairs.

Alexander Eckstein, department of economics, Harvard University: Red Chinese Development and Prospects.

John Sherman Cooper, United States Senate: The Development Effort of India.

Jerome B. Cohen, Bernard M. Baruch School of Business and Public Administration, the City College, New York: How Japan Developed, and Its Economic Outlook.

Willard L. Thorp, Department of Economics, Amherst College: International Aspects of Economic Development.

Thursday, December 13, 1956, 10 a. m., House Banking and Currency Committee room:

##### *The challenge of world economic competition and growth*

Henry L. Roberts, director, the Russian Institute, Columbia University: The Soviet Use of Economic Growth for Military and Political Purposes.

Hans Heymann, Jr., the Rand Corp.: Soviet Economic Growth as a Base for Trade and Technical Assistance.

Walter W. Rostow, Center for International Studies, Massachusetts Institute of Technology: United States-Communist Struggle in the Underdeveloped Areas.

Milton Katz, Harvard Law School: United States Foreign Economic Policy in Meeting the World Challenge.

Roy Refelson, vice president, Bankers Trust Co.: Implications of the World Challenge for the United States Economy.

Representative BOLLING. It will be our procedure to hear from each participant in turn, with a rather strict adherence to the tight time schedule we must of necessity follow. The subcommittee will minimize interruptions in these presentations except in the interest of clarification. After all five have been heard, there will follow a period of roundtable panel discussion and questions from the subcommittee. It is our goal to complete today's session during the noon hour, to avoid the necessity of returning this afternoon.

Before proceeding to the witnesses, however, I understand Senator Flanders has a statement.

Senator FLANDERS. Mr. Chairman, I sent to each member of this subcommittee a statement asking certain questions which would lead to more or less a complete reconsideration of the administration's trade policy. I likewise sent those questions to Mr. Hauge, to Mr. Burns, who without doubt transmitted them to Mr. Saulnier and to Mr. Sherman Adams in the White House because I felt these questions needed to be answered if the Congress was to go along with what had hitherto been the administration policy. By the way I have copies of these questions available and I think they are being distributed now.

I would like to call attention to one mistake where we have the word "autarchy" spelled with a "ch." That is definitely wrong. It must be spelled with a "k." If you spell autarky with a "k" it means a very different thing from spelling it with a "ch," as you will find out by looking in the dictionary.

I get a word that somebody—and I don't know who it was—suggested that in view of my previous positions, this series of questions must have been written by somebody else. I took that in a light and humorous vein but I would like to say here that in my 10 years in the Senate when that suggestion was made seriously as it has been on other occasions, it is the only comment or the only event in the 10 years that has ever raised my blood pressure and it has raised my blood pressure at times when it was meant as a vigorous criticism. I do not feel that way about this one because I think it was more or less a humorous comment. I just want to say I write my own speeches. I write them on yellow paper with a lead pencil, longhand, and from now on I am going to keep that yellow paper written with a lead pencil and longhand and put it in the file instead of throwing it in the wastebasket as soon as it has been copied.

I would like to say also that the point of view expressed by these questions was first expressed by me in an article in the Atlantic Monthly in the year 1931. It was the month of September 1931, when I first expressed these ideas. I later began to have doubts of them as the heavy professional support of greatly reduced tariff and reciprocal trade treaties and its most-favored-nation clause got underway. The argument which caused me to doubt my position that I had taken in 1931 was that any money that we paid for things from abroad came back home again in the purchase of American goods so that there was no diminution in trade and that seemed like a reasonable point of view and so I began to doubt my 1931 position.

There is not in that series of questions another thing which has changed, namely that dollars are now hoarded and held because they are practically as good as gold for the support of the various currencies of the countries of the world. So that it is no longer true at

least that dollars come back immediately, unless they have to. They constitute the balances of foreign countries in support of their economies and in support of their own currency.

I even went to the point of preparing a presentation on the stage of Constitution Hall before I went to the Senate before a very large audience, appearing with Charles Taft, in support of the reciprocal trade treaties and the most-favored-nation clause. My doubts began shortly thereafter and I think you will not find in the record anywhere since that time a speech of mine in favor of action which is based directly or indirectly on the old free trade theory. I have kept quiet. I have voted with the administration because it is my policy straight through unless I am sure of my ground to give the administration the benefit of the doubt. So I voted with the administration, in both administrations, Democratic and Republican, Truman and Eisenhower.

Well, that is for the record and to explain that in this memorandum I am coming back to a position now 26 years old instead of having suddenly gone off the handle. Thank you, Mr. Chairman.

Representative BOLLING. Senator, it would perhaps be a good idea to include your memorandum in the record at this point.

Senator FLANDERS. Yes. With the word "autarky" properly spelled with a "k."

(The document referred to is as follows:)

NOVEMBER 14, 1956.

Memorandum by Ralph E. Flanders, United States Senate.

To: Dr. Grover W. Ensley, staff director, Joint Economic Committee.

Subject: A Reexamination of Our Trade Policy.

Before the administration and the new Congress commit themselves too deeply to an extension of the presently accepted trade policy, it would seem wise to reexamine its basic assumptions. Among the questions which may properly be raised are the following:

1. Is expanded trade per se an aid to the maintenance of peace? World trade was predominantly on a free trade basis during the early years of this century; yet the driving attack of Germany on the industrial and commercial leadership of Great Britain formed the backdrop for the tragedy of World War I. Conceivably that rivalry may recur.

2. In a world wherein war is still a possibility, we have recognized the necessity for protecting industries and products necessary to the national defense. Is this the only exception to be considered in a world prepared for war? Can we afford to let pass into foreign hands any industry important to the American consumer? Is there not danger that war may cut off foreign supplies of products whose domestic production has been dried up by foreign competition?

3. In view of the expanding exportability of American capital and technical skill, do we not face contingencies not yet recognized in trade theory? What commodities are there which we may confidently assume to be safe from foreign competition using American equipment and management and lower paid labor? Perhaps the products of our extensive agriculture would survive if we were willing to put them into free competition. What else would?

4. -For how long would the expanded export of American equipment (and capital funds) play a significant part in maintaining a balance of trade under the conditions assumed in the preceding question? Would this be of short-term benefit or longer? Could it be a permanent support for a satisfactory balance?

5. What about basing our export volume on the value of needed imports, such as raw materials which we do not possess in sufficient quantity?

6. It might be worthwhile to give a little thought to a mitigated-autarky, such as is suggested in the previous question. Is there in our underemployed population a resource comparable to underdeveloped natural resources in other countries? Can we apply knowledge, wisdom, and energy to expansion of this home market, if competition slows down that abroad?

7. Considering further the possible usefulness of autarkies, what possible assistance can we render to Western European countries as great as they can

gain for themselves by forming a customs union? This would give them a mass market comparable in its possibilities to our own.

8. Should we insist on being admitted to this mass market as a member or should we encourage them to go on their own?

9. It would seem that the present voluntary restriction of textile exports by Japan cannot be counted upon as a permanent expedient. Would it not be better for us to encourage and assist in the formation of an autarky in eastern and southern Asia, extending from Pakistan to Japan? The free nations in this area largely supplement and complement each other economically and can move forward in cooperation further than in competition. They already have a bond of cooperation in the Colombo plan. Why not freely and gladly assist in such a program?

10. If the mitigated autarky of question 6 proves feasible, we would still have a bounteous production of wealth, sufficient for the development and expansion on which our increasing standard of living depends. Beyond that we would continue to afford, if necessary, the billions to be wasted in war and other billions for aid. Why not furnish this aid freely to underdeveloped countries whose principles, purposes, and interests most clearly parallel our own? Australia and the Philippines are examples.

11. Why not adopt the slogan, "Aid, Not Trade"? Questions like these must be carefully considered and valid answers given if the administration is to be assured that its trade program will have the wholehearted support of the Congress.

Representative BOLLING. The opening speaker in the hearing this morning of invited witnesses is Dr. Dexter M. Keezer, vice president and director of the department of economics of the McGraw-Hill Publishing Co., of New York. Dr. Keezer has had a varied career as a reporter, as a college president, and as a Government official both in Washington and in London during the war. But he is probably best known to those who follow economic affairs for his work on a succession of studies sponsored by McGraw-Hill on the economic outlook and on economic growth. We are privileged to have him here this morning to discuss "Growth of the United States Economy".

**STATEMENT OF DEXTER M. KEEZER, DIRECTOR, DEPARTMENT OF ECONOMICS, MCGRAW-HILL PUBLISHING CO.; ACCOMPANIED BY DOUGLAS GREENWALD, MCGRAW-HILL PUBLISHING CO.**

Dr. KEEZER. Mr. Chairman, I am honored by your invitation to participate in these hearings on Economic Growth Trends in the Industrial Nations. My formal part, as I understand it, is primarily to present—very briefly—a series of projections of the growth of our gross national product.

In our department of economics at the McGraw-Hill Publishing Co., of which I am the director, we maintain as part of our working equipment a standard set of long-range projections of our economic growth potentials. My associate, Douglas Greenwald, does the detailed work on the projections. He is here with me this morning.

Recently we revised these projections, as we are more or less continuously doing, and invited a group of people with expert understanding of the range of speculation and I underline the word "speculation" involved to spend a day with us and check over these projections.

The purpose was to see if the projections were as well as based as projections moving out into an unknown future could be.

I assume that it is because we have recently made as careful a check as possible on our long-range projections that I am asked to present them to you.

In making these projections of our gross national product, we are abundantly aware of the fact that we are not taking a photograph of things surely to come. There may be some limitations of these projections as sure-fire forecasters of which we are not aware, but I doubt if there are many.

Also, as a result of our continuing studies of economic growth and stability, we are equally aware of the limitations of the gross national product as a measure of economic growth.

In a paper on economic growth and stability submitted to your Subcommittee on Tax Policy some time ago, I remarked that, "As a measure of our Nation's economic growth, the gross national product \* \* \* leaves a great deal to be desired," and expanded on that point. I assume others will expand on it further this morning.

By way of multiplying the complications of work on which your subcommittee is embarked, we have the added fact that there is still a wide range of disagreement about what we are actually talking about when we talk about economic growth.

Herbert Stein, acting director of research of the Committee for Economic Development, recently summed up the difficulty by remarking that—

there is no \* \* \* accepted convention of what we mean by growth. We talk about increases in output, capacity to produce, resources, consumption, in the aggregate, per capita, per unit of output or per man-hour \* \* \* and there is no agreement on which concept of growth we really mean when choice is necessary.

In spite of limitations of the sort I have emphasized, I believe that the sort of projections I am presenting perform a useful role. They provide a rough gage of the growth potentials of our economy over the years ahead; and for governmental and business purposes a rough gage is better than none.

I shall indicate the more limited assumptions which are embedded in the projections as I run through them. Of the general assumptions on which they are based the most crucial, of course, is the assumption that we are going to manage to avoid blowing up the world with atomic bombs. If that assumption is no good, these projections involve a completely bootless enterprise.

Now, I propose to run through the projections, most of which I have put in chart form for your convenience, and indicate where they are and how they were put together.

Mr. Chairman, I suggest that you refer to the charts I have submitted to you. The first chart. In this chart we have calculated the gross national product of the United States for the years 1950, 1955, 1960, 1965, and 1970 in the standard manner. The calculations for the years 1950 and 1955 are made from the record. The calculations for the years ahead are based on estimates which are explained in charts to follow. The nature of the calculation is indicated on the face of the chart. The estimate of the number of workers, taking 1955 for example, is 63,100,000 workers, working an average workweek of 39.9 hours per week. In terms of averages, it is estimated that workers still work 52 weeks a year. We took an output per man-hour in 1955 prices of \$2.99, and by a process of simple multiplication came out for 1955 with a gross national product of \$390,900 million.

The same procedure follows right through for the following years in which we have made these projections. The 1960 total for the gross



national product becomes \$454 billion, all of course in 1955 prices, to avoid the element of price change.

The 1965 figure calculated on this basis becomes \$545 billion. The 1970 figure \$653 billion. That is the basic projection which I am asked to provide here today.

The second chart indicates our assumptions about population and of course the key assumption there is that of the number of people actually employed. In the interest of time—the time schedule is important at this time—I shall not, unless you wish to have me do it, go through the detailed assumptions and calculations at arriving at the work force figures.

I will be glad to if you wish to have them.

Representative BOLLING. You might proceed in a brief form to save time.

Dr. KEEZER. For our estimate of the labor force age group, we used the census projection of the number of persons 15 and over. Since all the people who will reach this age by 1970 have already been born, their number can be projected with some assurance, and the census provides only one estimate of the number for each of the years 1960, 1965, and 1970.

Next, we have tried to estimate how many of these people will actually be at work—or looking for work—in each of the years under consideration. These people will make up the active labor force, a group that includes all those employed, or seeking employment, in military or civilian jobs. Among persons 15 and over, there will also be many housewives, students, and retired persons who are not seeking employment. These do not count in the labor force.

We expect that the proportion of those 15 and over who are in the active labor force will be slightly higher in the projected years than it was in 1955: 59.5 percent compared with 59.2 percent. On the basis of present trends, a larger proportion of married women and older persons can be expected to take jobs, even though many of them will be part-time jobs.

Civilian employment will consist of the total labor force, less those who are in the Armed Forces or unemployed. Here is a basic assumption: The military forces are assumed to be cut about 300,000 in each 5-year period. It is our understanding that military plans for the future will place an increasing emphasis on complex weapons and less on numbers of men.

Unemployment—and this is a very basic point in this projection—is assumed to be 4 percent of the labor force, which we would regard as essentially full employment. On these assumptions, civilian employment will be 67.9 million in 1960, 73.9 million in 1965 and 80.5 million in 1970.

Chart 3 shows our estimates of output per man-hour and average hours of work. In past years, our economy has had remarkable success in producing a steadily larger total output, while reducing the hours of work by increasing average output per man-hour.

We assume this sort of success will continue.

I think, as a matter of fact, that chart III is a most impressive chart. Starting with 1930, it shows the workweek going down, down, down, and output per man-hour going up, up, up. I suppose if anybody wanted one single photograph of a magnificently successful economy, it might be this chart right here.

In the two decades 1930-40 and 1940-50, the average hours of work in industry, agriculture, and Government declined about  $3\frac{1}{2}$  hours per decade. It is expected that average hours of work will continue to decline but at a somewhat slower rate: about 2 hours per decade. By 1970 then it is expected that the average workweek will fall to 36 hours per week.

The next is one of the crucial calculations and speculations in this operation. It has to do with the increase in the rate of output per man-hour.

This increase in output per man-hour from the early 1900's to date has averaged about 2 percent per year. Since 1930 this rate has been somewhat higher, close to 2.9 percent per year. We have projected a rate of increase somewhere between these two rates. We are using an increase of  $2\frac{1}{2}$  percent per year in our projection.

This projection of output per man-hour was made on the basis of overall national output. We did not refine the projections of output per man-hour to show the individual trends in productivity in nonagricultural industry, agriculture and government. We have, of course, considered the various productivity trends of all these groups in making our overall projection.

Charts 4 through 6 can be checked through rapidly. They are essentially explanatory charts. Chart 4, portraying in a sense the major dynamo in our economy, shows the rise in research and development expenditures and their projection to 1960 when they are a little less than \$9 billion. We didn't dare go to 1970 in this chart because it would look so tremendous on the right side, it would look implausible.

Chart 5 shows one of the pressures to increase productivity, using power cost as one element and labor cost as another. With labor relative to power becoming more dear, we have a pressure to increase productivity and to do those things necessary to increase it.

The sixth chart is our projection of business capital expenditures over the period under question and is essentially an explanation of our expectation that increases in productivity, or increases per man-hour, will continue to take place as we have projected.

Chart No. 7 simply deals with the obvious fact that if we are going to produce all these things the purchasing power must be there to consume them and this is our projection of income per capita, after taxes. All of these figures are expressed in constant 1955 dollars in an effort to get measures of physical growth rather than dollar figures which include confusing price changes.

The final table in the series I have given you is a detailed breakdown of these projections of our gross national product.

I would be very glad at this point simply to insert the explanation of how these detailed projections were made and let it go at that.

I think some of these figures are—if the basic projections have some degree of plausibility, which I am sure they do—really eye-popping figures. You find consumer spending on goods and services, rising from \$254 billion in 1955 to \$434 billion in 1970.

Representative BOLLING. This whole table will be included in the record.

Dr. KEEZER. And this consumer expenditure will be made by people who have much more leisure with which to do this spending. I think perhaps I should mention the fact that expenditures on serv-

ices are expected to increase much more than expenditures generally. The increase in consumer durables is expected to be bigger than for nondurables. But in the interest of time I will simply, if you approve that procedure, submit the table and along with it the detailed explanation of how the calculations were made so that it may be clear just exactly what we have done.

Representative BOLLING. That material will be included in the record.

Dr. KEEZER. Thank you.

(Dr. Keezer's prepared statement and exhibits follow:)

STATEMENT ON GROWTH OF THE UNITED STATES ECONOMY BY DEXTER M. KEEZER, VICE PRESIDENT AND DIRECTOR, DEPARTMENT OF ECONOMICS, MCGRAW-HILL PUBLISHING CO., INC., NEW YORK CITY

I am honored by your invitation to participate in these hearings on Economic Growth Trends in the Industrial Nations.

My formal part, as I understand it, is primarily to present—very briefly—a series of projections of the growth potentials of the economy of the United States, as gaged by the possible growth of our gross national product.

In our department of economics at the McGraw-Hill Publishing Co., of which I am the director, we maintain as part of our working equipment a standard set of long-range projections of our economic growth potentials. My associate, Douglas Greenwald, does the detailed work on the projections. Recently we revised these projections, as we are more or less continuously doing, and invited a group of people with expert understanding of the range of speculation involved to spend a day with us and check over these projections. The purpose was to see if the projections were as well based as projections moving out into an unknown future could be.

I assume that it is because we have recently made as careful a check as possible on our long-range projections that I am asked to present them to you.

In making these projections of our gross national product, we are abundantly aware of the fact that we are not taking a photograph of things surely to come. There may be some limitations of these projections as sure-fire forecasters of which we are not aware, but I doubt if there are many.

Also, as a result of our continuing studies of economic growth and stability, we are equally aware of the limitations of the gross national product as a measure of economic growth. In a paper on economic growth and stability submitted to your Subcommittee on Tax Policy some time ago, I remarked that, "As a measure of our Nation's economic growth, the gross national product \* \* \* leaves a great deal to be desired," and expanded on that point.

By way of multiplying the complications of work on which your subcommittee is embarked, we have the added fact that there is still a wide range of disagreement about what we are actually talking about when we talk economic growth. Herbert Stein, acting director of research of the Committee for Economic Development, recently summed up the difficulty by remarking that "there is no \* \* \* accepted convention of what we mean by growth. We talk about increases in output, capacity to produce, resources, consumption, in the aggregate, per capita, per unit of output or per man-hour \* \* \* and there is no agreement on which concept of growth we really mean when choice is necessary."

In spite of limitations of the sort I have emphasized, I believe that the sort of projections I am presenting perform a useful role. They provide a rough gage of the growth potentials of our economy over the years ahead; and for governmental and business purposes a rough gage is better than none.

I shall indicate the more limited assumptions which are embedded in the projections as I run through them. Of the general assumptions on which they are based the most crucial, of course, is the assumption that we are going to manage to avoid blowing up the world with atomic bombs. If that assumption is no good, these projections involve a completely bootless enterprise.

Now, I propose to run through the projections, most of which I have put in chart form for your convenience, and indicate where they and how they were put together.

Chart 1: In this chart we have calculated the gross national product of the United States for the years 1950, 1955, 1960, 1965, and 1970 in the standard manner. The calculations for the years 1950 and 1955 are made from the

record. The calculations for the years ahead are based on estimates which are explained in charts to follow. The nature of the calculation is indicated on the face of the chart.

Chart 2 shows our estimates of prospective population growth, and prospective distribution of the population in major economic groups. Our overall population figures are based on the highest estimates of the United States Bureau of Census for the years 1960, 1965, and 1970. These estimates are taken directly from Census Bulletin P25, No. 123, dated October 20, 1955. In the past, the Census Bureau estimates have undershot the mark. One reason why we used the high side of the Census estimates of population growth is that these estimates have not assumed any additional decline in the death rate. The spread between the highest and lowest Census estimates of the population in the year 1970 is 13 million, all accounted for by varying estimates of the number of those under 15 years of age.

For our estimate of the labor force age group, we used the Census projection of the number of persons 15 and over. Since all the people who will reach this age by 1970 have already been born, their number can be projected with some assurance, and the Census provides only one estimate of the number for each of the years 1960, 1965, and 1970.

Next, we have tried to estimate how many of these people will actually be at work—or looking for work—in each of the years under consideration. These people will make up the active labor force, a group that includes all those employed, or seeking employment, in military or civilian jobs. Among persons 15 and over there will also be many housewives, students, and retired persons; these do not count in the labor force.

We expect that the proportion of those 15 and over who are in the active labor force will be slightly higher in the projected years than it was in 1955: 59.5 percent compared with 59.2 percent. On the basis of present trends, a larger proportion of married women and older persons can be expected to take jobs, even though many of them will be parttime jobs.

Civilian employment will consist of the total labor force, less those who are in the Armed Forces or unemployed. The military forces are assumed to be cut about 300,000 in each 5-year period. It is our understanding that military plans for the future will place an increasing emphasis on complex weapons and less on numbers of men. Unemployment is assumed to be 4 percent of the labor force, which we would regard as essentially "full employment." On these assumptions, civilian employment will be 67.9 million in 1960, 73.9 million in 1965, and 80.5 million in 1970.

Chart 3 shows our estimates of output per manhour and average hours of work. In past years, our economy has had remarkable success in producing a steadily larger output, while reducing the hours of work and increasing average output per manhour. We assume this sort of success will continue.

In the two decades 1930-40 and 1940-50, the average hours of work in industry, agriculture and Government declined about  $3\frac{1}{2}$  hours per decade. It is expected that average hours of work will continue to decline but at a somewhat slower rate: about 2 hours per decade. By 1970 it is expected that the average work week will fall to 36 hours per week.

The rate of increase in output per manhour from the early 1900's to date has averaged about 2 percent per year. Since 1930 this rate has been somewhat higher, close to 2.9 percent per year. We have projected a rate of increase somewhere between these two rates. We are using an increase of  $2\frac{1}{2}$  percent per year in our projection. This projection of output per manhour was made on the basis of overall national output. We did not refine the projections of output per manhour to show the individual trends in productivity in nonagricultural industry, agriculture, and government. We are not yet certain that these refinements add very much to the overall picture, except to spell out some of the details. We have, of course, considered the various productivity trends of all these groups in making our overall projection.

Charts 4 through 6, which are largely self-explanatory, are presented by way of amplification of our expectation, that continued increases in output per manhour are reasonably to be anticipated. The estimate of the prospective increase in business capital investment takes account of the Nation's population growth, the demand on the part of the consumer for new and better products and business' desire to lower costs and increase profits through more efficient operations. The projected increase in capital spending will provide for a necessary increase in capacity, as well as modernization and replacement of obsolescent plant and equipment.

Chart 7 shows the prospective increase in income per capita, after taxes. The increase in business capital investment will, of course, be realized only if there is the purchasing power to absorb the production made possible by this investment. Our estimates of disposable income per capita show an increase of 36 percent from 1955 to 1970.

In the table which follows our charts we have provided a detailed breakdown of the projections of the gross national product, which have been presented in chart form. An explanation of the calculations made in producing the breakdown of the gross national product into its components and an explanation of the assumptions follow.

The division of the gross national product into its three major sectors—consumers, business, and government—is based on past ratios of these sectors to the total, and on anticipated shifts in importance of each of the sectors. The growth shown for each sector is therefore consistent with the overall projections of the gross national product.

Consumer spending on goods and services is expected to rise from \$254 billion in 1955 to \$297 billion in 1960, \$358 billion in 1965, and \$434 billion in 1970. All of these figures are expressed in 1955 prices. Higher wages, larger payments to retired persons, the increasing variety of goods and services—and the leisure in which to enjoy them—will, we think, cause the consumer sector of the economy to grow somewhat faster than the other sectors.

The division of total consumer expenditures between goods and services was made by projecting each of these groups in terms of past trends and expected shifts in trends in the future. Thus expenditures on nondurable goods are expected to rise from \$126 billion in 1955 to \$145 billion in 1960, \$172 billion in 1965 and \$204 billion in 1970, all in 1955 prices. Consumer spending on durable goods in 1955 prices is expected to be \$40 billion in 1960, \$48 billion in 1965, and \$59 billion in 1970 compared with \$35.7 billion in 1955. And spending on services is expected to go up from \$92 billion in 1955 to \$112 billion in 1960, \$138 billion in 1965, and \$171 billion in 1970. The increase in services is especially large, and the increase for durables is slightly larger than for non-durables, because this seems to be the changing pattern of expenditure as income rises and people acquire more leisure.

#### *Private investment*

Residential nonfarm construction is assumed to increase from \$16.6 billion in 1955 to \$19 billion in 1960, \$22 billion in 1965 and \$26 billion in 1970. This assumes an increase in homebuilding to provide homes for new families, and for replacement or improvement of older dwellings. The fact that much of our population changes residence each year suggests a fairly high rate of replacement. And the present trend toward larger families may require additions or alterations to many otherwise serviceable homes.

Expenditures on plant and equipment by business, farmers, and private non-profit institutions are expected to increase, in constant 1955 dollars, from near \$40 billion in 1955 to \$49 billion in 1960, \$60 billion in 1965, and \$70 billion in 1970. (This series differs, for the most part, from the series on business capital expenditures shown in chart 6 in that it includes farm buildings and equipment. However, the reasons for the increase are the same.)

The annual increase in inventories is expected to be \$3 billion in 1960, \$4 billion in 1965, and \$5 billion in 1970. These estimates are about what will be needed in order to take care of the rate of increase in output expected over the future years.

#### *Net foreign investment*

We assumed that net foreign investment will be zero in the years ahead. In 1955 it was —\$0.5 billion. This year it will probably average about \$1 billion.

#### *Government expenditures*

It is expected that expenditures for national-security programs will rise in the years to come despite a decline in the number of military personnel. Complexity of weapons and increasing research will require larger dollar spending.

It is expected that more civilian Government personnel will be needed in the future, as our national economy expands, simply to meet the increase in demand for present Government services.

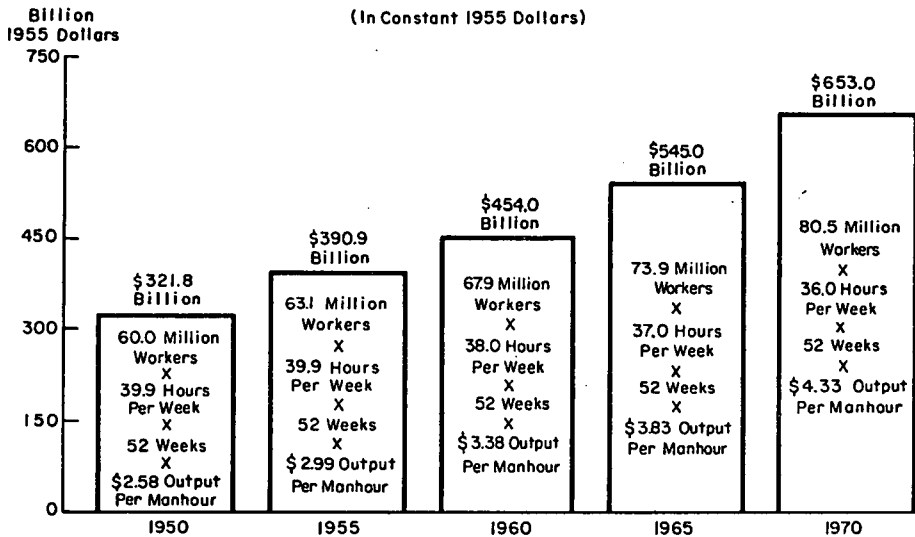
#### *State and local expenditures*

State and local spending must increase rapidly if our projected needs for roads, schools, etc., are to be met. The next 10 or 15 years will see some cutting down of the backlog in these fields—a backlog of needs which has been accumu-

lating since the depression years, and only recently been attacked with real vigor. But for most of the period we are considering, the only limits on this type of spending will be the ability to finance it and to obtain the necessary resources.

## Projection Of Gross National Product Through 1970 And How It Is Produced

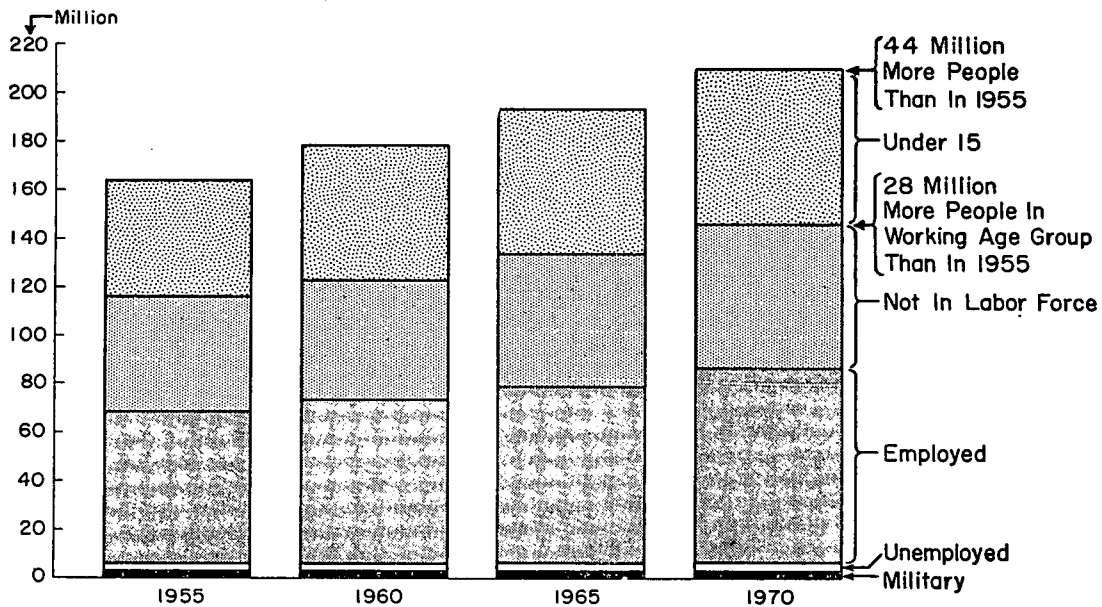
(In Constant 1955 Dollars)



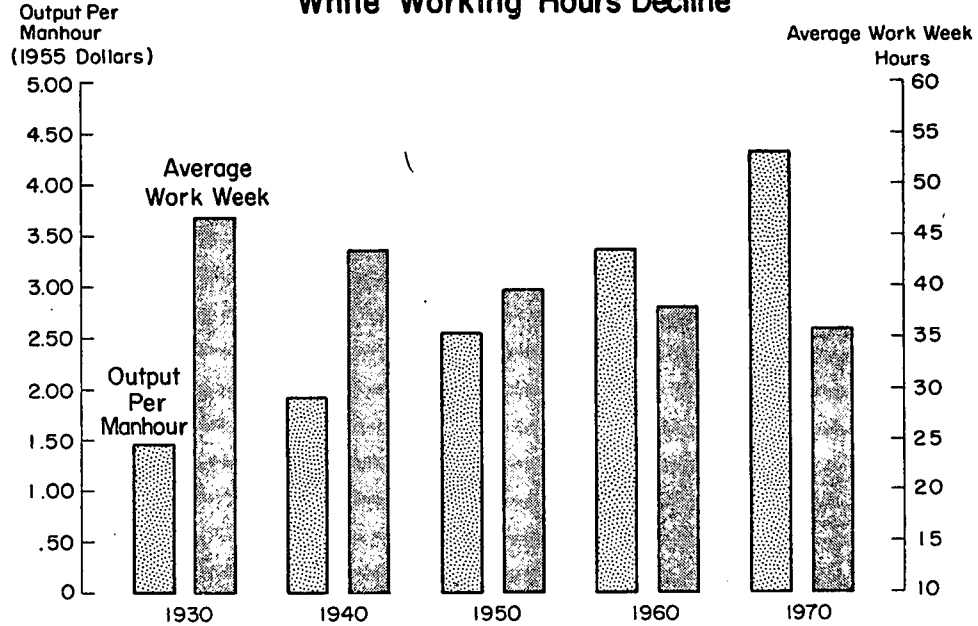
Source: U.S. Dept of Commerce, McGraw-Hill Dept of Economics

(1)

## Population Growth By 1970



## Output Per Manhour Increases While Working Hours Decline

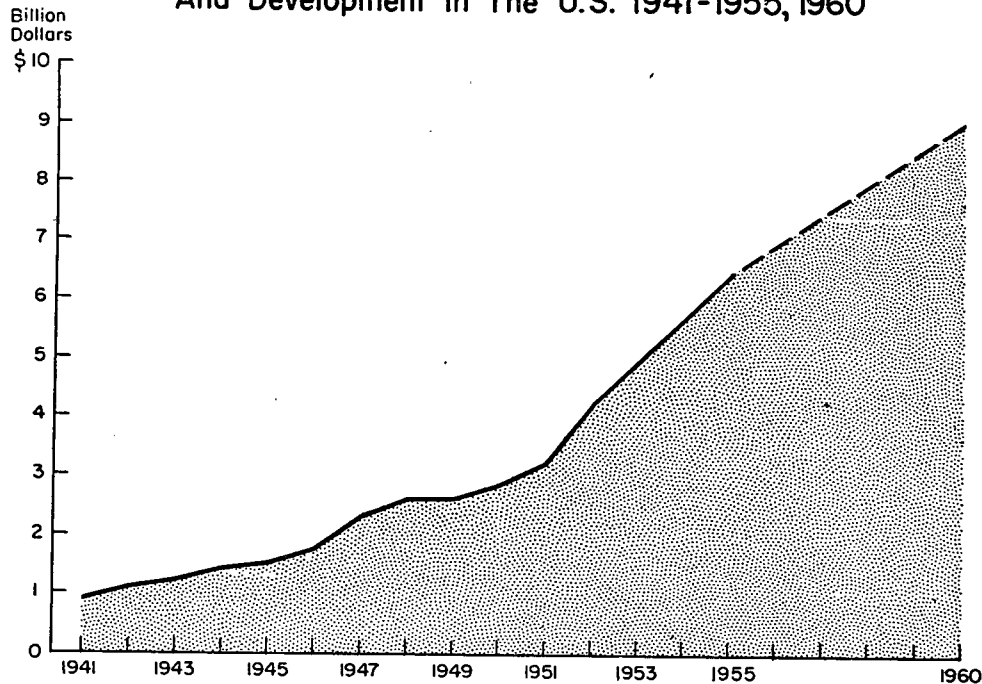


Source: McGraw-Hill Dept of Economics

(3)

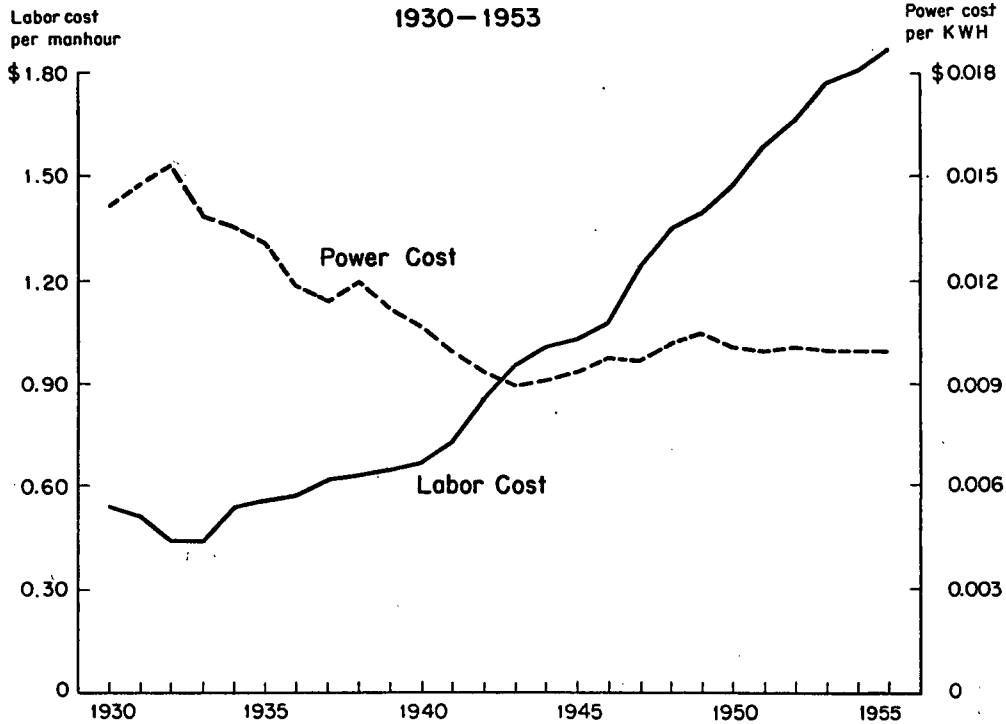


### The Growth Of Scientific Research And Development In The U.S. 1941-1955, 1960



Source: U.S. Department of Defense, McGraw-Hill Department of Economics

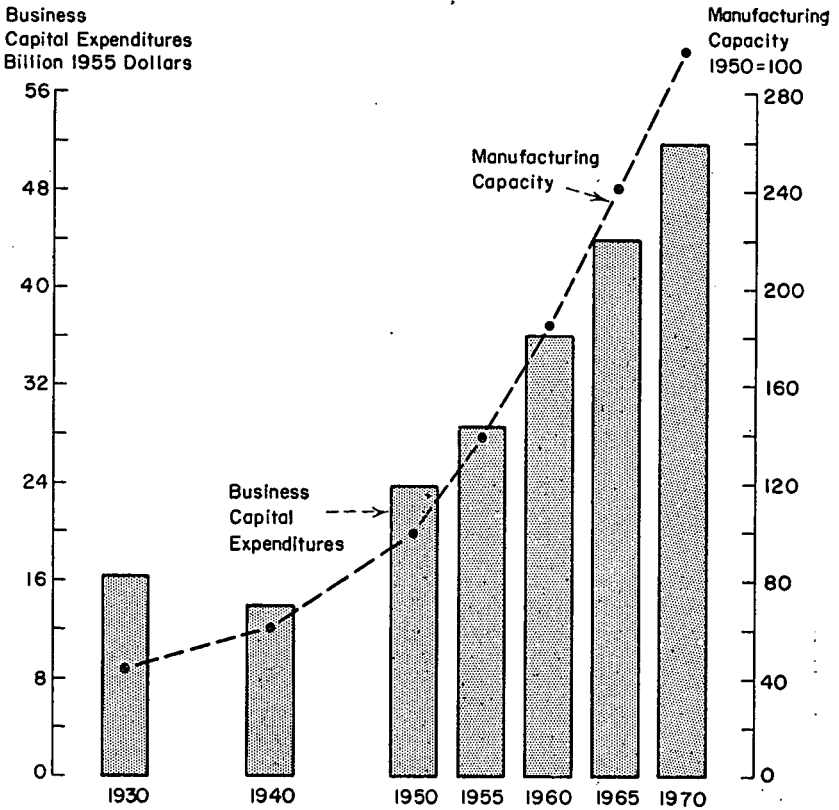
# Labor Cost Up—Power Cost Down 1930—1953



Source: Edison Electric Institute, Bureau of Labor Statistics

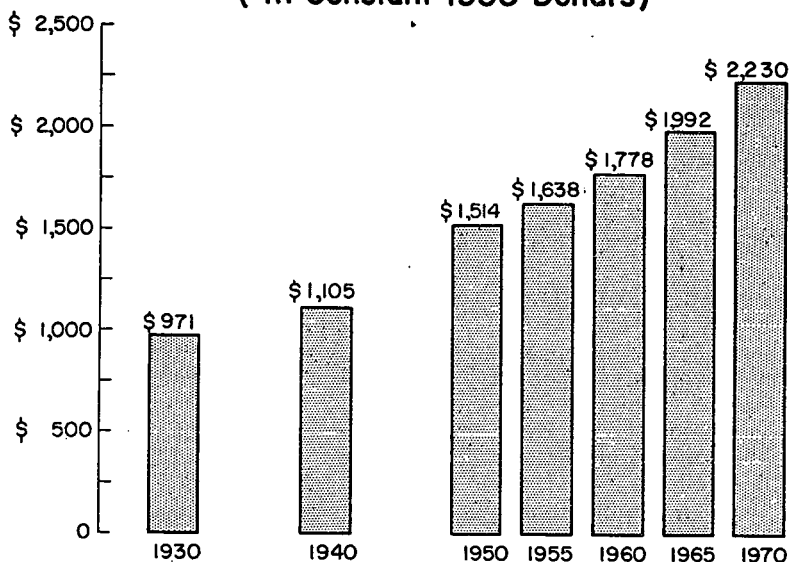
(5)

## Business Capital Spending And Capacity In Manufacturing



Source: McGraw-Hill Dept of Economics

### Income (After Taxes) Per Person ( In Constant 1955 Dollars )



Source: U.S. Dept of Commerce, McGraw-Hill, Dept of Economics

( 7 )

#### Projections of economic indicators, 1960, 1965, 1970

	1930	1940	1950	1955	1960	1965	1970
Population.....millions..	122.8	131.7	151.6	165.2	179.4	193.3	209.4
Labor force age group.....do....	86.7	98.7	110.9	116.4	123.6	133.6	144.8
Labor force.....do.....	50.1	56.0	64.6	68.9	73.5	79.5	86.2
Military.....do.....	.3	.4	1.5	3.1	2.8	2.5	2.3
Civilian.....do.....	49.8	55.6	63.1	65.8	70.7	77.0	83.9
Unemployed.....do.....	4.3	8.1	3.1	2.7	2.8	3.1	3.4
Employed.....do.....	45.5	47.5	60.0	63.1	67.9	73.9	80.5
Average hours worked.....do....	47.0	43.8	39.9	39.9	38.0	37.0	36.0
Manhours worked.....billion..	111.2	108.2	124.5	130.9	134.2	142.2	150.7
Output per man-hour.....1955 dollars..	1.48	1.92	2.58	2.99	3.38	3.83	4.33
Gross national product.....billion 1955 dollars..	164.7	207.7	321.8	390.9	454.0	545.0	653.0
Consumer expenditures.....do....	118.6	143.2	215.6	254.0	297.0	358.0	434.0
Nondurables.....do.....	61.3	79.8	109.3	126.2	145.0	172.0	204.0
Durables.....do.....	11.2	14.5	29.5	35.7	40.0	48.0	59.0
Services.....do.....	46.1	49.0	76.7	92.1	112.0	138.0	171.0
Gross private investment.....do....	24.4	29.8	58.5	60.6	71.0	86.0	101.0
New construction.....do.....	16.1	14.1	26.7	32.7	38.0	46.0	54.0
Residential.....do.....	5.3	7.6	14.4	16.6	19.0	22.0	26.0
Other.....do.....	10.8	6.6	12.3	16.1	19.0	24.0	28.0
Producers' durables.....do....	9.0	11.1	24.1	23.7	30.0	36.0	42.0
Business inventories.....do....	6	4.5	7.7	4.2	3.0	4.0	5.0
Government.....do.....	21.1	33.0	60.1	76.8	86.0	101.0	118.0
Federal.....do.....	3.4	14.4	25.6	46.7	50.0	57.0	63.0
National security.....do.....		5.2	21.4	41.2	44.0	50.0	55.0
State and local.....do.....	17.6	18.6	24.5	30.1	36.0	44.0	55.0

Representative BOLLING. The next speaker is Dr. Solomon Fabricant, Director of Research for the National Bureau of Economic Research and Professor of Economics at New York University. Dr. Fabricant has served in Government and as a Government consultant for many years; he is the author of a number of economic works which

throw light on the structure and operation of the economy. As the research director of the notable National Bureau, he has at his command tremendous facilities for analyzing economic problems, and the means to bring together the services of top economists of the country. The National Bureau has made great contributions to the understanding of our economy. Dr. Fabricant, we are pleased to have you with us this morning, to discuss the significance and shortcomings of economic comparisons.

**STATEMENT OF SOLOMON FABRICANT, DIRECTOR OF RESEARCH,  
NATIONAL BUREAU OF ECONOMIC RESEARCH**

Dr. FABRICANT. Thank you. Economic growth here and abroad is a matter of first-rate importance; not only with respect to opulence, to use the words of a famous economist, but also with respect to defense. I am very glad therefore to be able to appear before the subcommittee and appreciate this opportunity to participate in the discussion. I am sorry I don't have a prepared statement, and trust you will bear with me while I speak extemporaneously.

Economic growth poses a problem that involves many elusive facts, the interpretation of these facts and judgments on difficult questions of high policy. On all these things many things may and need to be said. I can emphasize only a few points of special importance. Particularly I wish to comment first on the difficulties of measuring economic growth in a single country and on the further difficulties of making international comparisons of economic growth.

We should recognize that the indexes of economic growth are crude and we ought not to worry unnecessarily about differences which may lie well within the margins of error of these estimates. If one were to tabulate the rates of growth in the score of countries for which some sort of national income per capita estimate is available over the past half century the United States might appear to be ranked in the upper half, but not in the upper quarter. But among the omissions are to be counted most of the underdeveloped countries, all presumably with very low rates of increase in national income per capita. And to judge from what is known of the methods by which the available indexes were calculated for the countries included, one could not be confident that the ranking indicates any more than that over the past half century a few other countries may have enjoyed rates of increase in per capita income approximately equal to our own.

Measures of growth are lacking or, if available, are rough, because information on the simple facts of output, population, and other basic economic quantities are not adequate.

While we have a fair idea of current levels of these quantities in the United States and other Western countries, our factual basis diminishes in scope and validity the further back we go in time.

The same may be said, also, of contemporary levels as we extend our view toward the less well-developed areas of the world and, of course, to the countries separated from us by the Iron Curtain. There is a related difficulty.

National income per capita is not the only measure of growth, as Dr. Keezer pointed out. There are also per capita gross national product figures and per capita gross national product exclusive of governmental goods and services, not to mention also the aggregates

before conversion to a per capita basis. Even for national income per capita several varying estimates are in existence. Unlike the rest of us, for example, the Russians like to omit services from their estimates of national income, and Western students of Russia have plenty of trouble putting services into the Russian figures. All too frequently measures based on diverse concepts are gathered together in the same table, despite the differences among them, because no standard sets of figures are available for all countries, or even for the same country, over any length of time. This heterogeneity of concept and measure would cause trouble in using the sort of table to which I referred a moment ago.

Even when the figures are apparently standardized, comparisons may be biased. To illustrate, most of our series on national product—whether gross or net—are based largely on market transactions. Non-market transactions, such as those involving production in the household, are very inadequately covered by statistics, yet it is one of the characteristics of economic growth and development that brings a decline in the relative importance of the nonmarket sphere in productive activity as a whole.

This particular deficiency tends to introduce an upward bias in all measures of economic growth. Furthermore, the bias is probably more serious during the earlier stages of transition from an agricultural to an industrialized economy than in the later stages, and, therefore, comparison of the economic growth of countries at different stages in the process of industrialization may be distorted.

Still another significant deficiency in our measures of growth lies in their failure to take adequate account of improvement in the quality and variety of economic goods and services, such as we and other Western countries have experienced. If, as appears to be the case, the Soviet-type economies have expanded their output without advancing as rapidly as other countries in the variety and quality of the goods they produce, the available figures must produce a biased comparison.

Fluctuations in the rate of economic growth brings me to my second point. Economic growth has not proceeded smoothly. I refer here not only to business cycles but also to the long swings, the swings in decade rates of growth that may be observed in the figures for various countries. In the United States, for example, the average rate of growth in national product or national product per capita during the most recent decade reflects a new primary trend. It might than the average rate of growth during the preceding or the following decades. This instability is especially disturbing when comparisons are made of the growth of different countries over relatively short periods of time.

A disparate rate of growth over a particular decade or so may reflect not a disparity of truly long-term trends but a difference between countries in the phase or intensity of the larger or shorter swings or in the presence of special and temporary factors.

The point is also of importance when we come to project rates of growth into the next generation or two. It would be hazardous to assume, in the light of our experience, that a higher than average rate during the most recent decade reflects a new primary trend. It might simply mean the ascending phase of a long cycle.

Projections stumble not only over the difficulty with long cycles but also over the biases referred to a moment earlier. To put the

point briefly in terms of a question, if Soviet Russia should decide to divert some of its resources to improving the quality and variety of the consumer goods and services that it produces, as well as their quantity, would Russia be able to maintain its past rate of growth in aggregate output as this is ordinarily measured?

There are many other problems encountered in making projections of our growth and that of other countries. No matter how carefully they are made, projections must rely heavily on and reflect many assumptions, the validity of which is at best doubtful. Can we be sure that the long-term trends of the past, or the trends over the postwar decade, in such variables as population, percentage of the population in the labor force, hours of work, output per man-hour particularly, and so on, will be maintained? Yet every projection that has been made is based in large degree on the assumptions that past trends may be extrapolated, with or without adjustments that must also be based on assumptions.

Mr. Gainsbrugh, I am sure, will want to comment on this in fuller detail, and my own views have been set forth in a paper which I offer for the record, Mr. Chairman, if you so wish.

(The document referred to is as follows:)

#### THE LONGER FORWARD LOOK: SOME CRITICAL REMARKS

(By Solomon Fabricant\*)

Of course, the coming year is not our only concern. The economic outlook is not bounded by a horizon fixed by the conventional calendrical unit. We stand here and look forward along a road that extends indefinitely into the future.

To look is not necessarily to see. The landscape before us is shrouded in mist. Yet it is obvious that virtually all of us expect continued growth in our economy. We look forward to a rising trend in real income per head of the population, in population itself, and, therefore, also in aggregate real income.

This is not merely a hope. It is an expectation, and it is an expectation shared by persons with diverse views about the forces that make for growth, or even agnostic about them. Those who disclaim knowledge of the causes of economic growth do not hesitate to extrapolate trends of long standing. Those who believe in the power of individual enterprise to generate progress in the future, as it has in the past, are willing to do likewise. And so, too, those who feel they have seen signs of weakening in the power of individual enterprise or detected hardening in its task—they rest their expectations of continued growth on faith in the power and willingness of collective enterprise, particularly government, to offset the factors tending toward stagnation. In all cases, expectations about future trends are deeply, if not entirely, colored by the pattern and rate of growth in the past.

The expectation of continued growth is so widely held and based so heavily on past trends that reductions of it to arithmetical terms, of the sort more or less descriptive of the past, look eminently reasonable to most of us. We are all familiar with the figures. They have appeared in greater or less detail in statements of the President, in reports by the staff of the Joint Committee on the Economic Report, in publications by research institutes, and in private reports prepared for businessmen. And they are all much alike.

We need not take the time here to add to the list. Rather than repeat the exercises, let us review the figures already available. And for this purpose we may take advantage of the labors of the staff of the joint committee.<sup>1</sup> I should mention that my choice of their particular set of figures is not in any way meant to be invidious.

\*Dr. Fabricant is director of research, National Bureau of Economic Research, and professor of economics, New York University.

Source: Paper presented at the Third Annual Conference on the Economic Outlook at the University of Michigan, November 10 and 11, 1955.

<sup>1</sup> Potential Economic Growth of the United States During the Next Decade, materials prepared for the Joint Committee on the Economic Report by the committee staff, Washington, 1954.

You will recall how the projections from the 1953 level to 1965 run. The population of working age, 14 and over, is expected to rise at an annual rate of a bit over 1.3 percent. Projecting a slight average increase in labor-force-participation rates, total labor force will then rise a little faster, 1.4 percent. With only a moderate reduction in the absolute size of the Armed Forces (which assumes, of course, substantial continuation of the cold war), the civilian labor force would rise closer to 1.5 percent. Then, on an assumption of something like 4 percent unemployment in 1965, compared with 2.5 percent unemployment in 1953, civilian employment would rise at a rate of a little less than 1.5; say, 1.4 percent. Hours per worker are projected at a falling rate of 0.8 percent; man-hours put in would then go up at a rate of 0.6 percent. Output per man-hour is projected at a rate of 3 percent for agriculture, 2.5 percent for the rest of the private economy, or a little over 2.5 percent for both combined. This, together with an assumption about stability in the proportion of income that originates to government, leads to a projection of 3.2 percent for total gross national product in constant prices. With population projected at a rate of 1.5 percent, slightly above that for labor force, we have 1.8 percent per annum for real gross national product per person. This, it may be noted, is practically the same as the rate averaged over the past 75 years.

Here we have not simply a goal, but in the words of Grover Ensley, the joint committee's staff director, also "a consensus of what leading economic analysts at this time consider to be reasonable assumptions for use in private and public planning for the decade ahead."

These projections, and others of similar type, are designed "for use." In order to use them properly, if we are to use them at all, we must bear in mind a number of questions that cannot be excluded from our formulation of future prospects. Let me, by confining our attention to them, emphasize two thoughts: One relates to the range of economic experience in the past, assuming that experience continues to have significance for the future and thus for long-time projections. The other, naturally, focuses on the validity and meaning of this assumption.

As I have said, long-range projections are heavily dependent on the trends we have experienced in the past. But our experience has been a varied one; no economic series, of which we have knowledge, has been characterized by a trend that may be called uniform for every decade in the record. Over some decades the trend has been at a rapid pace; over others at a slow pace. And the variation has usually—in the case of a series of particular concern here, has always—been sufficiently great to cause some concern when we examine projections made for a decade ahead.

Consider the decade trends of output per man-hour, a piece of information that is crucial in all projections of gross national product. For private nonagricultural industry, John Kendrick's estimates for the past half century indicate that decade-average rates of increase range from 1.2 percent per annum to 2.8 percent per annum, with 3 of the figures under 2 percent and 5 between 2 and 3 percent. And for agriculture, the range is from a third of 1 percent per annum to 3.2 percent, with 4 of the figures under 1, 2 between 1 and 2, and 2 over 2.<sup>2</sup> It is difficult to know how much reliance may be put in a projection for a single decade ahead that is based on any one or an average of any group of these diverse decade rates.

Mere variation in decade trends would not be as troublesome in making projections for a decade ahead if the variation were itself systematically related to time. But neither of these two series, not even agricultural output per man-hour when the data are pushed back to 1870, reveal any clear-cut and systematic pattern of deviation from a straight-line secular trend. Nor can we see any reasonable approach to periodicity in the swings about the secular trend. "The crux of the difficulty in establishing an orderly pattern of long-term change," as Simon Kuznets put it in his important paper on the subject,<sup>3</sup> "lies in the fact that, in the absence of effective theory or even of working hypotheses, a great variety and wealth of data are needed to discriminate among the many models that can be used to describe the major characteristics of change. Yet no such variety of data is available. \* \* \* With the available data, it is extremely difficult to choose even among the simple models used to describe the underlying,

<sup>2</sup> There are eight figures for the period covered, 1899-1953, because the decade rates are derived from comparisons of the level in 1899-1908 with the level in 1909-18, 1909-18 with 1919-20, etc., and of the level in 1904-13 with the level in 1914-23, 1914-23 with 1924-33, etc. The estimates will be given in detail in Dr. Kendrick's report, to be published at a later date by the National Bureau of Economic Research.

<sup>3</sup> Concepts and Assumptions in Long-Term Projections of National Product, in Long-Range Economic Projections, Studies in Income and Wealth, vol. 16, 1954, p. 14.



primary secular trends. Yet our projections into the future will differ significantly as we use one model rather than another. \* \* \* If, Dr. Kuznets added, we try to allow for long cycles in our projections—and this would seem to be essential in making projections for a decade or two—"the possibility of deriving a given pattern becomes even more remote. The power of discrimination which our limited data permit us to exercise in choosing among the possible patterns for purposes of projection is still weaker."

Of course, the joint committee staff, and others engaged in making projections, have recourse to some "working hypotheses," in selecting out of the diversity of experience a basis for their projections. Thus, in the case of agricultural output per man-hour, the rate selected, 3 percent per annum, is "somewhat less than the average of recent years, but higher than the 1910 to 1953 average of about 2 percent. This assumption reflects the continued effects of technological changes on agriculture, such as increased mechanization, improvements in plant and animal breeding, use of antibiotics, and increased use of improved fertilizers."

We might grant that it is these factors that accounted for the spurt in labor productivity in farming after the middle thirties. But we would need to be reasonably sure, also, that they could and would continue on into the decade ahead of us. This means not merely that we would expect use of fertilizers, for example, to continue; it means that we would expect growth in the use of fertilizers, and improvement in their quality, to continue, and that we would expect, also, these to lead to further increases in yields. How much of the past spurt reflects temporary factors associated with the high level of farm income and short labor supply during World War II and later, remains a question. So, also, does the adequacy of the slight allowance made in selecting a rate somewhat less than the average of recent year.

A footnote to this section of the joint committee staff report opens up another question—the choice among alternate estimates of past trends. Kendrick's estimate of farm-labor productivity over the period 1910 to 1953 is 1.2 percent per annum, as compared with the estimate used by the joint committee staff—one derived by the Department of Commerce—of 2 percent per annum. When differences reflect improvements in the underlying data, as is partly the case here, no problem of choice arises. But part of the difference is the result of shifting the weight-base from 1939 to 1947-49. This shift is not an improvement. It merely provides an alternative estimate, and the choice must be made on other grounds.

Statisticians among us may find it amusing to consider the question. In looking forward from the current period to the future period  $t+10$  are we projecting an index calculated on the weight-base  $t$ ? And is the extrapolation to be made using the trend of an index on the weight-base  $t-10$ , or on the weight-base  $t$ ? My offhand opinion is that we aim at projecting the index on the base  $t$ , and that the historical index should be on the base  $t-10$ . But that choice is arguable. A choice has to be made, for the alternatives may be expected to differ. Economic growth, we know, is definitely associated with relative price changes. That such changes may be expected to occur and should be free to occur is explicitly noted in the report of the joint committee staff.

As in the case of agriculture, the rate of increase selected for output per man-hour in private nonagricultural industry is somewhat below the recent average but above the 1910-53 average. The latter average is about 2 percent; the rate selected for projection is 2.5 percent. This assumption, the report states, "reflects crudely the effects expected from the high rate of investment and technological advances in recent years, which are assumed to continue over the next decade."

Here we may raise a question, first, about the strength of the impact of high investment upon output per man-hour. That the historical relation between capital investment and output per man-hour is affected by the presence of other important factors, is clear from a recent paper by Daniel Creamer.<sup>4</sup> Relative change in output per worker was only moderately correlated with relative change in capital per worker between 1900 and 1929, when change in each industry over this period is taken as the unit of observation. For manufacturing as a whole, when changes over different time periods constitute the units, the picture is even muddier. Between 1919 and 1929 capital per man-hour rose by 32 percent in manufacturing, while output per man-hour went up by 50 percent. But between 1900 and 1909, a rise of 32 percent—the same figure—in capital per man-hour was

<sup>4</sup> Capital and Output Trends in Manufacturing Industries, 1880-1948, Occasional Paper 41, National Bureau of Economic Research, 1954, pp. 71, 74.

accompanied by a rise of only 8 percent in output per man-hour. While none of us would doubt that investment contributes to the increase of productivity, it is not obvious how much may be expected at any particular time from a high rate of investment. So much seems to depend on what is happening to other things.

The second point is as important. "Technical advance" is a short and sometimes misleading term for a host of influences of which we know little more than the names which we have given them. These include not only technology in the narrow sense but also management and labor effort and efficiency associated with training and attitude, as well as a variety of institutional factors of importance. Current discussion of the rate and probable effects of automation have served to reveal our ignorance in that particular area. Nor do we know, to turn to another problem, whether output per man-hour would move up more rapidly than in the past if business cycles were moderated, as is assumed in the projections.

We can see why, in this connection, the joint committee staff report adds the highly qualified statement that "there is some evidence that a period of high investment, such as is assumed, would be accompanied by a rate of increase (in output per man-hour in nonagricultural industry) as great as 3 percent per year, which, if true, would result in adding about \$30 billion at 1953 prices (that is, about 5 percent) to the potential annual gross national product in 1965."

The total population figures will be discussed at another point in the conference's program; we, therefore, need not examine them in any detail at this time. In any case, it would seem, it is the population of the group 14 and over in 1965 that is important for us. Except for minor questions about mortality and immigration, the size of that group can be reliably estimated from the population already in existence today.

However, the future fertility rate may affect the labor-force participation rate of women in 1965. The troubles encountered by the Bureau of the Census in projecting fertility rates are well known. In fact, the Bureau of the Census has already made significant revisions in the estimates which underlie the joint committee staff projections.

When we look into the future, it is difficult to say what effect continued high prosperity, such as is postulated, may have on the participation of women in the labor force, not only through its effect on births but in other ways as well. But the point is more general. Changes in labor-force participation rates have varied from one decade to another for other sizable groups besides women of child-bearing age. The Census Bureau has indicated its uncertainty about the future labor-force participation of older persons.

As for the decline in hours, it may suffice merely to mention the discontinuities revealed by the record, and the bearing this has on the assumption that the secular trend in hours may be projected over the next decade. Hours are strongly influenced by severe depression and war. These have been assumed out of the picture. If the other factors that affect hours lead to no significant change, such as was their net result over the past 20 years, then, as the joint committee staff report points out, gross national product in 1965 might be close to a tenth higher than the projected figure.

So far we have been considering the output side of the projections. There is also an income side. Naturally, the aggregate on the income side must be consistent with, that is, equal to, the aggregate on the production side. This criterion of consistency is met in the projections made.

But the criterion does not help in projecting the distribution of income, even if only by type of income. The income side is not given in detail in the report of the joint committee staff, but it is made clear that substantial continuation of the 1953 percentage division of income between property income and service income is assumed. This means, first, a considerable rate of increase in real hourly earnings, one approximately equal to the assumed rise in real gross national product per man-hour. It implies, second, approximate stability or perhaps even a slight decline in the rate of return on capital. This projected distribution of income is not out of line with average long-run experience, insofar as we can tell from our records. But here, too, we discover variation in the trend from one decade to another.

Another question arises with respect to the assumption that the income side of the projections is adjusted to the production side. The reverse is also true, as is noticed briefly in the joint committee staff report. What happens in the markets for labor and capital influences not only factor rates but also factor supplies, and thus the volume of output. The two sides of the account must, in fact, be calculated simultaneously. But we have only fragmentary knowledge of the

theory of production and distribution in an expanding economy. Anyone of a rather large variety of simultaneously determined and apparently consistent projections of income and output might look reasonable to our innocent eyes.

There is, further, an expenditure side on which most projectors, including the joint committee staff, are more explicit. Distribution of the 3.2 percent annual increase in GNP among types of expenditure (all, of course, in constant prices) is projected as follows: Consumer expenditures at 3.5 percent per annum, gross private capital formation at 4.2, and Government expenditure—with national-security expenditures held at approximately present absolute levels, which, of course, is lower than 1953—at only 1.1 percent. (If the base is shifted from 1953 to 1954 or 1955, the rate becomes 2.1 percent for Government expenditures.)

These projections mean an increase in the proportion of private gross capital formation to gross national product from about 14 percent in 1953 to about 15 percent or so in 1965, or of private net capital formation to net national product of about 6.6 to 6.8 percent. This increase in net capital formation, \$11 billion in 1953 prices, is assumed to be financed by an increase of \$3 billion in personal saving, \$2 billion in corporate saving, and a reduction in Government deficit of \$5 billion.

These, in turn, involve a number of further assumptions, some of which touch on such major problems as the connections between fiscal policy and the goals of full employment, economic growth, and price stability. It is here that the joint committee staff makes one of its excursions into the realm of policy, and turns to the view that the projections are designed to uncover problems. But the comment is brief—that Federal tax reductions can in some way “facilitate adjustments in consumer budgeting patterns,” adjustments which may be required to take goods off the market.

The projection of personal savings is, with some hesitation, that of decline from 8 to 6 percent of disposable income. Support for this projection is a “consensus” of “a trend toward a somewhat lower savings rate.” Raymond Goldsmith’s figures, the longest available historical series, may possibly suggest a slight downward secular trend in the ratio of personal savings to disposable personal income (when savings are defined, as we must for consistency with the joint committee figures, to exclude consumer durables).<sup>3</sup> But a safer conclusion might be that the trend is approximately horizontal. As the joint committee staff report stresses, the statistics of savings are less reliable than in other areas, and we know too little about the factors that affect savings.

Indeed, the whole field of savings theory is in ferment. Exciting work is going on, here in Ann Arbor and elsewhere: Dr. Mueller referred to the work being done by Modigliani and Freedman. This work promises significant advances in our knowledge. At the moment, however, there are still differences of opinion about the reasons for the relative stability or slight decline of the personal savings-income ratio in the past. Nor, therefore, can there really be a general consensus of opinion about the future course of savings, even if the factors operating in the past persist into the future—factors like the rise in family income, the increase in wealth, the shift of population from farm to city, the change in size of family and in other structural characteristics of the population, and the change in the rate of return on capital. The report stresses that “judgments vary as to the weight each factor should receive, and even in some cases as to the direction in which it might influence the savings rate.” But, in addition, we are not sure how all these factors will change. The changes in some of them are explicitly set forth in the projections; for example, a shift from the farm to the city and changes in the population structure. Others, however, are only implicit and lie deep.

There are also some new items that need to be added to the list of factors affecting saving. The very assumption of high-level employment in 1965—and during years intervening between now and 1965—is one. The uncertainty of income is surely a major reason why people put money aside for a rainy day. Consider, therefore, the possible implications, for savings, of 20 years of high stability of employment, and along with it penetration into the consciousness of the mass of the people, of the contribution of social insurance and other Government programs to the promotion of personal security.

As the report states in discussing the savings projection, “when approaching the problem of projecting for a period over a decade into the future, the possibilities fan out over a greater range than with many economic data.” Indeed,

<sup>3</sup> A Study of Saving in the United States, vol. I, Princeton University Press, 1955, ch. III, sec. 4.

"equally rational analyses can be constructed which would justify placing the rate as low as 4 or 5 percent or as high as between 9 and 10 percent," rather than at the 6 percent selected. This means, of course, that not only the savings but also the investment and Government deficit projections, not to mention other variables, are in doubt.

Having touch on investment, let me add a further word. In the discussion of the demand for capital it is merely stated that investment opportunities will exist, that the sum projected could be financed, and that the postulated rise in corporate profits after tax should provide incentive. There is no systematic effort to discuss the subject. Nothing explicit is said, for example, about the capital-output ratio, of which much has been made in the literature. But we can understand the difficulties that would confront anyone who tried seriously to come to grips with the problem. As in the case of savings, not only is our knowledge of factors operating in the past scantier than we would wish, but it is difficult to know what to say about new factors. Here, too, we must ask, what effect might long experience with, and therefore increased confidence in, stable growth have on the demand for capital?

And what about the implications, for investment, of the assumption of a steady price level? Let me merely point to what seems to be only a technical question—the effect on depreciation charges, and therefore on calculated profits, of a shift from a period of rising prices to a period of stable prices.

Since I have referred to long cycles, I should mention also the possible bearing on projections of investment of such important components as building construction. Kuznets, who has been doing more work on the question of long cycles than anyone else of whom I know, has expressed the opinion that long swings in the rate of growth are likely to recur. Immigration's role may be smaller; but that of birth rates, for example, larger.

Long-range projections may be viewed as estimates made on reasonable assumptions which may provide the basis on which public and private planning may proceed; that is, as forecasts—conditional forecasts, of course, but nevertheless, forecasts. They may be viewed, alternatively, as goals to be striven for or as means of unearthing the problems that may be encountered in attaining these goals.

Do they really have value for these purposes? When we view projections as forecasts, our first complaint, I daresay, is that they usually fail to cover the crucial questions. As we look 10 or more years ahead, are not the really crucial questions whether the cold war will heat up, whether we will see any serious depressions, whether price levels will change appreciably?

Let us grant immediately that economists are entitled to confine themselves to conditional forecasts that exclude the possibility of war. But are we ready to grant that they may properly assume the avoidance of severe depression? And if we grudgingly say "Yes" to this question, must we be satisfied with projections that also assume no inflation?

With this off our chests, we may consider the projections as they are, with the conditions that are attached to them.

When we view these projections as conditional forecasts for general purposes, our discussion perhaps boils down to this conclusion. In the absence of adequate knowledge of the process and causes of economic growth, the projections should be presented not as unique quantities or as unique quantities qualified with some textual observations, but as a variety of alternative possibilities, weighted (to the extent possible) with the aid of an analysis of historical experience.

I can imagine the complications that would result from the variety of combinations possible—all internally consistent—if the projections were to be made in terms of the many factors considered by the joint committee staff and by other projectors. For what I have in mind is something more complicated than the threefold type of estimate presented, say, in the Twentieth Century Fund study of America's Needs and Resources. The variety of combinations would constitute a frequency distribution of alternatives corresponding to just 1 of the 3 estimates in that list. But the moral would be quickly drawn. The morass of figures could be avoided, and perhaps little lost, if the whole procedure were to be drastically abbreviated. A few alternative projections of gross national product, based simply on a set of assumed trends as to labor force and income per member of the labor force, might suffice. If general expectations of the sort we all have concerning future long-term growth need to be put into quantitative form, these crude estimates might serve that vague purpose. They would serve it more cheaply, and with less risk of misleading the man

in the street—at any rate so long as so much of the basic knowledge needed is still to be acquired.

As for long-term projections viewed as goals, the difficulty here, of course, arises out of a simple fact. Our people are free to make their own decisions. The appropriate national goal, therefore—excluding military considerations—is not a particular level of gross national product, or employment, or even productivity. It is, rather, an environment within which our people may be able to work and live and improve themselves in the manner dictated by their moral sense and their zest for life.

Probably the major objective of projectors is to discover what is needed to further our national goal. This, of course, is the objective of all scientific work in economics. I wonder, however, whether any of the elaborate projections of the economy as a whole so far made—that is, projections of the sort that we have been discussing—have helped us significantly to get closer to this objective. It seems to me highly doubtful, in the present state of our knowledge, that a serious claim can be made that long-term projections might help to uncover inflationary or deflationary “gaps” or similar threats to our economic advance. The responsible advice that we as economists have so far to offer, for safeguarding and strengthening the sources of economic progress, suggestions for stimulating competition, and so on, has not been improved by these projections. To the extent that resources have gone into them—resources that could have been used to widen our knowledge of the connections among economic variables—we are not as close to our objective as we might have been.

A final word to make my position clear. I do not reject attempts to outline the several probable futures in general terms. We all have to make such efforts. But I must confess to feeling uneasy when I encounter a set of numerical projections for the economy as a whole that seems to provide a carefully drafted, detailed, and scaled map of the road before us. It is hard to see how this can be useful in the present state of our knowledge. Those of us who have attempted to plot in some integrated and quantitative fashion the historical development of the several parts of the American economy, and to trace their subtle interrelationships, are keenly aware of the gaps in our facts and in our understanding of these facts. Many of these gaps are open even today. Even the current state of affairs is seen as through a glass, darkly. We are simply not yet ready to do the sort of job of probing the future that we would like to do and hope someday to be able to do. Must we pretend to do what cannot yet be done?

Dr. FABRICANT. I have the feeling that in making these projections we have been performing arithmetical exercises of doubtful value. Indeed these exercises may be diverting us from more important analyses by posing artificial problems like the danger of a savings—investment gap 10 or 20 years hence. We need to further our understanding of the causes of economic development if we are to improve our projections.

We must go inside the aggregates to which so much of our attention is being devoted.

I have already mentioned that a characteristic of economic development is the transfer of work from the household to the market economy. The two sectors grow at different rates. This difference is but one example of many such differences. Growth in the volume of goods and services per capita is accompanied by constant fluctuation in the kinds and quantities of goods and services produced, in the types of industries in which workers and capital find employment and in the distribution of activity among geographical areas.

For economic progress takes place through the development of new products, better materials, more efficient machines, and superior methods of organization and this means also that old products become obsolescent, inferior materials are discarded, one occupation loses workers to another. Economic growth necessarily means diversity in rates of growth in different parts of the economy and in fact actual decline in some sectors.

This divergence of rates of growth in the several parts of the economy is a major source of some of our difficulties in measuring the economic growth, for in our measures of the aggregate we must somehow express this great diversity in a single figure. It also makes dangerous generalizations about aggregate growth that are based on any limited components of the aggregate.

But this divergence is even more important for another reason. It points also at the basic causes of our growth and at the policies that need to be strengthened if we are to maintain growth here and in the economies of our friends.

The development of new and improved products, materials and methods, and the transfer of resources from declining to expanding sectors of the economy reflect the efforts of our people to improve themselves economically. These essential steps in the process of economic growth do not happen by themselves. Businessmen seek new sources of profits. Workers move to better paying jobs. Investors put their capital into industries with superior prospects. Parents educate their children. Government plays a part by maintaining competition and investing in necessary public improvements. Economic growth results from enterprise and investment on the part of all sections of the population.

Each section has an essential contribution to make. Each must be permitted and encouraged to make that contribution. There is far too much emphasis in our thinking and in the thinking abroad on the role of some one factor, whether that be government, the entrepreneur, the investor, or the saver.

Thank you.

Representative BOLLING. Thank you, sir.

The next speaker this morning is Prof. Gregory Grossman of the department of economics of the University of California and presently working at the Russian Research Center of Harvard University.

He is already the author of a number of important studies on Soviet economic affairs, building a high reputation for his careful and objective scholarship.

We are pleased to have you, Dr. Grossman, to discuss growth of the Soviet economy.

#### STATEMENT OF GREGORY GROSSMAN, RUSSIAN RESEARCH CENTER, HARVARD UNIVERSITY

Dr. GROSSMAN. Thank you, Mr. Chairman.

It is a privilege indeed to appear before your subcommittee this morning.

I should also like to remark that I agree wholeheartedly with the qualifications to any study of economic growth which have just been introduced by Dr. Fabricant.

It is never easy to summarize in a few minutes the growth of a complex industrial economy.

It is particularly difficult to do so in the case of the Soviet Union, where the published statistics are sketchy and often intentionally misleading, where money values are of uncertain meaning, where the development itself has been (at least by our standards) extremely uneven, and where there have been very few periods that can be even

remotely characterized as normal. To anticipate your interests and at once to simplify my task I shall concentrate on the most recent past and on the immediate prospects, sidestepping both the fuller historical record of Soviet economic development and long-range projections into the future.

The job of repairing wartime damage in the Soviet economy was not, by and large, completed before 1950, so that if we wish to study the recent record we must restrict our attention to the period of the fifth 5-year plan, which ran from 1951 through 1955.

This is obviously not a very long period on which to rest an appraisal of the Soviet rates of growth; nor were the years particularly normal for they witnessed the Korean conflict, Stalin's death and the change in leadership, and several major revisions in domestic and foreign economic policy. Nonetheless, it may not be entirely useless to examine briefly the record of accomplishment over the last half decade.

I need hardly stress that the creation of the implements of war and of the sinews of industry, both products of heavy industry and of construction, enjoys the foremost priority in the Soviet pattern of development. While I have no direct evidence to offer regarding the growth in the output of munitions over the 5 years in question, such indirect economic evidence as can be marshaled corroborates the general public impression that progress in this area has been a rapid one. As to civilian goods, the output of many important products of basic industry—fuel, power, metals, basic chemicals, and building materials—increased by 50 to 90 percent over the period, or at the average rate of  $8\frac{1}{2}$  to  $13\frac{1}{2}$  percent per year. Construction activity and the output of civilian machinery increased to approximately the same degree. The output of major industrial consumers' goods—processed foodstuffs, textiles, and footwear—rose by some 30 to 60 percent, or  $5\frac{1}{2}$  to 10 percent per annum on the average, although production of certain consumer durables, still largely in the luxury class in the Soviet Union, grew much more rapidly.

Bracketing together all industry and construction we might find, in my opinion, an overall increase of, say, 60 to 70 percent, or 10 to 11 percent per year. Though very high by western standards, this overall rate of growth is probably even somewhat lower than that which obtained during the first two 5-year plans, 1928–37.

Since agricultural production only barely kept ahead of the growing population it was primarily industry and construction that enabled the national product as a whole to rise quite rapidly, too.

By very rough estimate, the Soviet gross national product may have grown between 1950 and 1955 by some 6 to 7 percent per year on the average. Although the total population increased by almost 9 percent, and the urban population by 20 percent, per capita consumption levels improved very considerably over the 5 years in question, with the major exception of urban housing where the situation continued to be very tight even by Soviet standards. And lastly, activity in the fields of science, education, and medical care expanded greatly.

This creditable, though spotty, performance took place in spite of very large diversion of resources to military end-use and an apparently growing export of capital to China and other countries in the Soviet orbit. How was it done? There is no miracle or mystery about the rapidity of Soviet economic growth. Let me list some of the major factors that tend to explain it:

(1) An extremely high and steadily growing rate of gross investment probably averaging a quarter or more of the gross national product for the years in question. In our much richer country this proportion has varied in recent years between one-sixth and one-fifth. A comparison of the rates of net investment, that is allowing for depreciation of capital, would probably go even more in favor of the U. S. S. R.

(2) Very high selectivity in the orientation of investment, with industry, transportation, and the building industry receiving over half the total, and of this—heavy industry getting the lion's share. It is this pattern of investment—the plowing back of much of the output of heavy industry into its own expansion—that has enabled the Soviets to develop very rapidly their capacity for the production of capital goods and to undertake investment.

(3) Rapid growth of the nonagricultural labor force (by 25 percent over the fifth 5-year plan period), and very extensive training in scientific, technical, professional, and industrial skills.

(4) In agriculture, expansion of the area sown to crops by 27 percent.

(5) Continued large scale borrowing of western technological progress combined with some indigenous technological advances.

(6) Full—though not always effective—employment of labor; some improvement of incentives to labor and management, particularly in agriculture; and such beneficial effects on productivity as rising standards of living and general educational levels may exert.

(7) And last but not least, the firm determination of the regime to industrialize with the utmost speed, not bounded by the checks of a democratic process.

Most of these factors will carry on into the near future, so that continuing high rates of growth should be expected, although some retardation in these rates may well be anticipated for reasons to be mentioned presently.

Thus the current (sixth) 5-year plan, which is to run from 1956 through 1960, provides for a 65-percent increase in total industrial output and a similar increase in investment activity, that is about the same as or only slightly less than what was in fact achieved over the preceding 5 years.

This target may well be approximately attained. On the other hand the planned 70-percent increase in gross agricultural output seems to stand a very much poorer chance of fulfillment, as it largely rests on a highly optimistic intention to expand graincrops to about the same degree.

As a result it is not likely that the gross national product will grow any faster if as fast during the second half of the fifties as it did during the first half.

In looking ahead, we can discern both accelerating and retarding elements in the Soviet economic picture; among the factors tending to accelerate growth I might mention the rapidly expanding capital goods industry and its corollary, a rising rate of investment out of national product and the fast accumulation of technical and scientific skills. Perhaps somewhat greater flexibility in administration and planning, some improvement in incentives belong here too. The list of retarding elements is longer. It includes the difficulties in agriculture and the closely related problem of labor shortages; the



necessity to allot a higher share of investment to transport, housing, and other sectors which have hitherto been relatively neglected, but cannot be so much longer; the need to begin replacing obsolescent equipment and to invest in such capital-intensive pursuits as automation and atomic power generation; the virtual absence of suitable additional land to expand crop production; the appreciable, though as yet not very serious, exhaustion of the better mineral deposits; and perhaps a decline in immediate opportunities for further technological borrowing.

Lastly, and I shall return to this point in a moment, overshadowing all these factors in its implications for the rate of Soviet growth is the degree of diversion of resources to military end-use.

I shall devote the few remaining minutes to a discussion of some of these points. We have heard much lately of difficulties in Soviet agriculture.

With population growing rapidly and nutritional standards low, a stagnant agriculture such as obtained in the last years of Stalin's life unquestionably threatens the very basis of a country's existence. But the extensive measures taken since by the new leadership seem to be bearing some fruit, so that at least for the immediate future the danger of retrogression has been stayed.

We must not be misled by the record grain crop collected this year, an achievement that Khrushchev regards as a personal triumph and as a source of strength in the international arena.

The longer outlook is still quite uncertain in this project.

In terms of growth prospects, the significance of the agricultural problem is that attempts at its solution will absorb so much capital and detail so much labor as to retard the expansion of those sectors of the economy which the regime wishes to expand most.

While in its early years Soviet economic development was carried along largely by enormous transfers of manpower from villages to the cities, in the present 5-year plan the agricultural population is apparently expected to maintain its size, and nonagricultural employment is expected to rise by 10 to 15 percent, which will barely compensate for the promised shortening of the workweek—If that shortening, of course, takes place.

While the shortage of housing is probably another reason for holding down the size of urban population, we must also bear in mind that for demographic reasons the additions to the labor force will be quite small for the next several years.

With nonagricultural labor scarce in this sense, renewed emphasis is being placed on its productivity. For instance, all of the scheduled increase in industrial output is to come out of the growth of man-hour productivity. This necessitates not only better work organization but also very extensive modernization and replacement of equipment.

Hence the heightened emphasis on automation, on borrowing of foreign technology on an enormous scale, and on industrial research. Labor productivity in many industries and individual processes is still so very low by our standards that a large potential for improvement clearly seems to exist.

At the same time Soviet machine-building capacity and engineering skill have by now reached a level where such a large-scale modernization effort can be launched, though it will of course be expensive in terms of capital.

Yet, productivity targets have not in general been met in the past, and it remains to be seen how successful this second Soviet technological revolution will be in this regard. Should the rise in productivity fall behind plan while agriculture continues to perform short of Soviet expectations, a very tight situation with respect to both capital and labor may develop, and Soviet professions of concern for the consumer and the worker may be put to a severe test.

But the dominating element in the picture—and it is largely an unknown—is the degree of diversion of resources to military end-use in the near future. The magnitude of such diversion at present must be enormous. Though I have only the questionable budgetary figures to go by for any overall appraisal of the Soviet military effort, it must surely be currently withdrawing a volume of resources at least half as large, and possibly nearly as large, as those going into net investment.

Further the physical nature of the resources going into defense is such that given the intention they could, by and large, be much more easily shifted to investment use than to the satisfaction of consumer needs, at least in the short run.

Moreover, given the Soviet system of priorities, it is reasonable to expect that precisely this type of shift would be preferred by the regime, though perhaps some of the resources may also be channeled to help solve the agricultural problem and to expand economic and technical assistance abroad. Thus, we may well expect that any major disarmament on the part of the Soviets, without here even affecting basic weapons development and research, would sharply raise the volume of capital formation, and hence would substantially boost the speed of industrial development and the rate of growth of the national product. We may note that the two times when the opposite happened, that is, when military preparations were sharply stepped up in the late thirties and again at the time of the Korean conflict, investment was forced to bear, and bear heavily, the brunt of these decisions.

Needless to say, even a few additional percentage points per year in the rate of growth of Soviet industrial output and gross national product may shift decisively the balance of world economic power a decade or so hence.

I thank you.

Representative BOLLING. Thank you.

So far this morning we have been given brief pictures of the development of the United States and Soviet economies, and have been afforded some discussion of the problems of making comparisons over time and between nations. Now we will have an opportunity to hear the discussion broadened into a balance sheet comparison, as it were, of the economic strength not alone of the two major powers, but also of associated states of the Communist and non-Communist worlds.

Our next speaker is one of the best known analysts of Soviet affairs because of the position he holds with the New York Times.

We are glad to have with us Dr. Harry Schwartz, the specialist on Soviet and satellite affairs of that newspaper. Dr. Schwartz has served in Government as well as contributing widely quoted articles to the Times. Today drawing upon his work in economics of the Iron and Bamboo Curtain countries, we will be interested in having his views on what is a very confused subject.

Dr. Schwartz?

**STATEMENT OF HARRY SCHWARTZ, SPECIALIST ON SOVIET AND SATELLITE AFFAIRS, THE NEW YORK TIMES**

Dr. SCHWARTZ. Thank you, Mr. Chairman. I am grateful for the privilege of appearing before this committee. Before commencing with my testimony, and I must apologize for not having a prepared statement, I should like to first have it noted on the record that I am speaking for myself and not for the New York Times, and secondly, I should if I may, like to introduce just two pages of tables, basic tables, into the record.

Representative BOLLING. They will be placed in the record.

Dr. SCHWARTZ. Thank you, sir.

(The documents referred to are as follows:)

*Estimated production of coal, oil, steel, and electricity in 1938, 1950, and 1955 in the entire world and in the parts of the world which were Communist and non-Communist in 1955*

I. 1955

Commodity	Unit	World	Communist	Non-Communist
Coal <sup>1</sup> .....	Million metric tons.....	1,800	700	1,100
Oil.....	do.....	778	84	694
Steel.....	do.....	269	62	207
Electricity.....	Billion kilowatt-hours.....	1,521	260	1,261

II. 1950

Commodity	Unit	World	Communist	Non-Communist
Coal <sup>1</sup> .....	Million metric tons.....	1,580	460	1,120
Oil.....	do.....	523	44	479
Steel.....	do.....	189	36	153
Electricity.....	Billion kilowatt-hours.....	954	140	814

III. 1938

Commodity	Unit	World	Communist	Non-Communist
Coal <sup>1</sup> .....	Million metric tons.....	1,307	372	935
Oil.....	do.....	272	37	235
Steel.....	do.....	110	27	83
Electricity.....	Billion kilowatt-hours.....	460	70	390

<sup>1</sup> Coal includes hard coal equivalent of brown coal and lignite output.

Sources: Derived from data in the United Nations Monthly Bulletin of Statistics, October 1956, pp. x and xi; Statistical Yearbook of the United Nations, 1954, passim; official statements of the governments of the Soviet Union and Communist China; Voprosy Ekonomiki, No. 3, 1956, p. 165.

*Estimated output of coal, oil, steel, and electricity in the Communist countries in 1956 and the 1960 output goals for these countries*

Commodity	Unit	Estimated 1956 output	Planned 1960 output
Coal <sup>1</sup> .....	Million metric tons.....	750	1,000
Oil.....	do.....	97	165
Steel.....	do.....	68	95
Electricity.....	Billion kilowatt-hours.....	287	470

<sup>1</sup> Coal includes hard-coal equivalent of brown coal and lignite output.

Sources: Estimates of 1956 production obtained by adding announced anticipated 1956 output of the Soviet Union and Communist China to the 1955 production of other Communist countries. This assumes other Communist countries, in 1956, will be unchanged in total because of Polish and Hungarian difficulties; 1960 plan figures based on data in Kommunist, No. 7, 1956, pp. 68-69.

*Output in Communist Eastern Europe<sup>2</sup> of coal, oil, steel, and electricity in 1938, 1949, and 1955*

Commodity	Unit	1938	1949	1955
Coal <sup>1</sup> .....	Million metric tons.....	188	271	395.9
Oil.....	do.....	6.6	5.6	12.2
Steel.....	do.....	5.9	7.4	13.7
Electricity.....	Billion kilowatt-hours.....	24.8	41.1	73.8

<sup>1</sup> No allowance made for different caloric values of hard coal, brown coal, and lignite.

<sup>2</sup> Includes Poland, East Germany, Czechoslovakia, Rumania, Hungary, and Bulgaria.

Source: *Voprosy Ekonomiki*, No. 3, 1956, p. 165; United Nations Statistical Yearbook 1954 passim; United Nations Economic Survey of Europe in 1955, pp. B-36, B-41.

DR. SCHWARTZ. We meet at a time of stupendous change, change which has caused many analysts including myself to reexamine old preconceptions and to glimpse the possibilities of new horizons. I think it is not unfair to say that, say, 6 months ago many analysts in this field were hypnotized by what seemed to be an almost fatalistic and inevitable trend for Communist economic power to grow at fantastic speed and—within the relatively near future as nations must measure their future—to overtake and then surpass the economic and therefore also the military power of the free world. In the last 2 months, however, a series of developments, particularly in Poland, Hungary, and Northern Vietnam have called this fatalism, this hypnotism, sharply into question.

I would argue that we now have a new uncertainty in any effort to measure the future of Communist economic growth. This arises from the political tensions built up within the Communist-ruled countries by the Draconian methods used to achieve the very substantial growth obtained to date.

I shall return to this point shortly but I think it will be useful to first look at the record. I have tried to draw up a very tentative and approximate comparison of the production achievements of the total Communist bloc, that is everything from East Germany through Russia, China, North Vietnam, North Korea, and Mongolia, and including the Eastern European countries of course on one side, and the non-Communist world on the other. The latter includes both countries firmly in what has been called the Western Alliance and countries which consider themselves neutrals such as India. I have given the absolute figures in the tables I have put into the record, sir. I should merely like at this point to make a few comparisons. Comparisons of economic growth depend very greatly upon the base points one selects.

For that reason I would like to consider the record over two stretches of time, first between 1938 and 1955 and secondly between 1950 and 1955. We get a rather different picture in these two periods. I shall confine my remarks to four basic commodities, coal, oil, steel, and electricity, inasmuch as there are no satisfactory data for gross national product or national income for the total Communist world and for the total non-Communist world. If one looks at these commodities coal, oil, steel, and electricity between 1938 and 1955, one gets a picture which is not too disquieting, with perhaps the possible exception of coal. In the case of coal the Communist world increased its production between 1938 and 1955 by 80 percent roughly.

The non-Communist world increased its production by under 20 percent. On the other hand, since coal is primarily important as a fuel, this Communist advantage would seem to be at least partially if not entirely overshadowed by the rather different record with respect to petroleum. In the case of petroleum the Communist world increased its production between 1938 and 1955 by about 125 percent. That is the percentage of gain. Whereas the non-Communist world percentage of gain was almost 200 percent, substantially higher.

In the case of steel, the percentages of gain are almost equal: 145 percent for the Communist world between 1938 and 1955 and 150 percent for the non-Communist world. So if any advantage exists is on our side. Finally in the case of electricity the Communist world percentage of gain between 1938 and 1955 is 270 percent, and the non-Communist world 225 percent.

While this is a mixed record, it is not one which by itself might be thought to give rise to very great concern in view of our overall absolute lead. Of course, it should be remembered that 1938 was a year of substantial unemployment in the non-Communist world, a year in which there was much unused capacity so that in part the growth achieved by the non-Communist world between 1938 and 1955 was actual growth in the sense of the addition of new facilities plus growth resulting from the utilization of previously idle capacity and manpower.

A rather different picture however is obtained if one looks at the situation between 1950 and 1955. It is this picture which has given rise to alarm. In coal for example, the Communist world increased its production by about 45 percent, between 1950 and 1955. In the non-Communist world, however, coal production remained virtually unchanged.

In oil, the Communist world almost doubled its production between 1950 and 1955. The non-Communist world increased its production by about 45 percent. In steel the Communist world increased its production by about 70 percent between 1950 and 1955, the non-Communist world by about 35 percent.

In electricity the Communist world increased its production by about almost 90 percent between 1950 and 1955. The non-Communist world over the same period increased its production by about 55 percent. In all 4 of these commodities therefore we see a very substantial lead in rate of growth over these past 5 years. We are obviously dealing with a very dynamic system when we speak about the Communist world and our competition with it.

Now it may be helpful if I illustrate my remarks a bit further by talking about Eastern Europe, which is also a key part of the Communist world.

In Eastern Europe we find this record: Between 1938 and 1955, coal production increased over 100 percent. Oil production increased about 90 percent between 1938 and 1955. Steel production increased more than 100 percent. Electricity production almost tripled, roughly tripled between 1938 and 1955.

Now these are very substantial gains. Let me focus a little more sharply on one commodity in the more recent period. In the case of steel, between 1949 and 1955 Communist Eastern Europe—and this excludes Yugoslavia—almost doubled its production, going from 7½ million metric tons to almost 14 million metric tons.

However, the four chief producing nations of Western Europe—England, France, Western Germany, and Italy—increased their steel output in the neighborhood of 60 percent between 1949 and 1955, from 38 million to almost 60 million tons. This year, I might add, these four countries of Western Europe will produce about 68 million tons of steel, an increase over 1949 of 75 percent.

There we have a little more reassuring picture in the sense that, while there has been great dynamism in Eastern Europe, there has been very great dynamism also in Western Europe. The latter dynamism has not only been confined to Western Germany, which is perhaps the single outstanding example of economic growth in Western Europe in recent years.

There is, however, at least one major difference between the economic growth in the Communist world and in the non-Communist world which has to be taken into account.

The economic growth in the Communist world has been produced by the use of tremendous compulsion. The system we call Stalinism, with its related unpleasant features of secret-police control, slave-labor camps, complete repression of freedom of speech, freedom of press and the like, was required because the Communist's goal of achieving maximally rapid increase of heavy industry could only be achieved at the cost of keeping down the standard of living of those people.

Put another way, if there had been a market economy operating in the Communist world in past years, there might very well have been economic growth, substantial economic growth, but it probably would have been slower. Moreover that growth certainly would have been different in composition; housing, food, clothing would have received much higher priorities than they actually did in fact.

Now the enormous tensions created by the compulsion and coercion used to secure the rapid economic growth in the Communist world are now finally coming home to roost. One result has been the peaceful political revolution in Poland which brought Mr. Gomulka to power. A second result has been the very violent armed revolution in Hungary which is still going on, according to the news reports. There has also been the smaller scale, but still interesting, armed revolt in Northern Vietnam. All of these are primitive expressions of the resentment of the people affected at the sacrifices they have been forced to undergo in order to achieve this growth.

I would disagree somewhat with Dr. Grossman, much as I respect him and his opinion. I do not think that the chief unknown variable in the future, if we regard either Soviet or Communist world economic growth, is simply the resources diverted to military purposes.

This is certainly a major variable. The really key variable I would argue myself, however, is the conclusion which the leaders of the Communist countries, including the Soviet Union, draw from the revolts in Eastern Europe and in Northern Vietnam of the past 2 months. The possibility arises that because of the political difficulties, the political discontent which these revolts have symbolized so very vividly, the general line of the Communist Party may be changed. Mr. Khrushchev has defined the line as holding that heavy industry must always and under all conditions increase at a rate faster than the production of consumer goods and of items involved in the standard of living. This general line may be changed.

Certainly we know that in Poland Mr. Gomulka in his pronouncements since becoming first Secretary of the Polish United Workers Party, which is the Communist Party of Poland, has indicated his intention of cutting back very sharply upon investment in heavy industry and of trying to focus resources to the maximum extent possible upon improving the standard of living of the people. Mr. Gomulka has gone so far in fact as to let it be known through his subordinates that he would very much like a loan from the United States, and there has been some talk for example of Poland desiring a loan of \$200 million to \$300 million from the United States simply for raw materials.

I might add in that connection that a Communist economist has told me recently that the Communist world overall has a severe shortage in at least three fields today: grain, textile materials, particularly cotton, and fats and oils. This despite the very large grain and cotton harvest in the Soviet Union this year.

I do not think this is the time for any fancy or long-range projections. I do not think the leaders of the Communist world themselves know where they are going to be 5 years from now and certainly not 10 or 15 years from now.

They are faced today with what is in many ways the most serious political problem of their history. Their people want a better standard of living and they want it fast. There is no question but this has produced already major changes in economic policy in Poland.

By implication the Kadar puppet regime in Hungary has promised that if the situation in Hungary normalizes it, too, will make changes in economic policy according to those in Poland. The Soviet leaders are under the same pressure from their people. In short the possibility—and I stress the word “possibility”—arises that this political discontent may cause some fundamental changes in economic policy throughout the Communist world.

If this should happen, this might very materially slow down the rate of growth, particularly in heavy industry, of the Communist world.

While I find a certain degree of comfort in that, I must stress that this is simply a possibility and, in the meantime and perhaps most appropriately, I might conclude on another note. Even if the rate of growth of production in the Communist countries declines, any major depression in the Western World would cause the careful projections of the people like Dr. Keezer to become simply arithmetic exercises. If, in the future, the world were to be faced by a Western World full of unemployment and economic misery as against a Communist world which was improving the standard of living of its people, the political consequences of that would be disastrous in the struggle between freedom and Communist slavery. I should think it must be the key objective of our national and international policy to assure that there is a healthy free-world economy in the future which is capable of competing with the Communist world whatever line or policy on economic growth the Communist world adopts.

Thank you.

Representative BOLLING. Thank you, sir.

Our final witness this morning is Prof. Martin R. Gainsbrugh, chief economist of the National Industrial Conference Board and

adjunct professor of economics at New York University. Mr. Gainsbrugh has served in Government, including many advisory councils and committees such as for the Bureau of the Census, Federal Reserve, Bureau of Labor Statistics, and Council of Economic Advisers. He is the author of a number of economic studies. The National Industrial Conference Board is one of the most prolific and best producers of economic series, often presented in clear, graphic form.

With his great practical experience in handling economic series, it is especially appropriate that Professor Gainsbrugh discuss for us the problems of economic projection, as they bear on our discussion this morning.

**STATEMENT OF MARTIN R. GAINSBROUGH, CHIEF ECONOMIST,  
NATIONAL INDUSTRIAL CONFERENCE BOARD**

MR. GAINSBROUGH. Thank you, Mr. Chairman.

I have taken as my target for today the development of a check list to be kept in mind by users of economic projections, particularly comparative economic projections.

The essence of what I have to say might be put in capsule form to this effect:

If you are using an economic projection, shake well before using.

Much of what I have set down will serve to underscore what Messrs. Fabricant and Schwartz have already said about the limits of economic projection.

Economic projections are always difficult, even for a country well stocked with basic data. It is well to recall the numerous forecasts that were made toward the end of World War II, most of which were fairly wide of the mark. And these were short-range forecasts, so that under one line of reasoning the results should have been closer to actualities.

Our focus here today is in comparing projections for two or more countries. The difficulties are, of course, multiplied in such an endeavor. And yet, despite the dangers that are inherent in all such forecasts, it is often necessary to make some types of predictions. It is possible that continued effort in this direction will eventually result in a fair degree of accuracy. Most of the projections we have had postwar have not made sufficient allowance for the many complicating factors in our economic life. These are usually assumed away or held constant, and the reservations and the limitation are tucked away in the footnote or the appendix to be noted only by the most careful of readers.

It is these particular points that I would like to emphasize.

Going on with the reservation list, first is the inadequacy of long-term data; we are just beginning to develop a statistical skeleton of long-term trends in United States. We have not yet put bones on this framework. Our official national figures were developed only two decades ago. The gross national product figures are a byproduct of the research of World War II and our national balance sheet is a development of the last 10 years.

There is a distressing lack of information on long-term growth of most nations in the world. It is only lately that there have been efforts made in the United States to trace, in measurable form, our economic progress. And even this work in the United States shows



particularly poor results the further back we go in time. The margin of error is greater. For most nations of the world, data are simply not available to permit us to get a long-term picture.

What data we have are largely concentrated on commodities and even there we assume that our distributive and transportation margins remain constant. That is the first reservation, the lack of long-term data from which to derive measures of long-term growth.

The second reservation: Changes in industrial composition or in product mix. Some progress has been made, even with the inadequate data that exist. A favorite technique has been to attempt to determine the pattern of development in the past and to project that into the future. Such a crude approach, of course, assumes that no discontinuities will appear in the economic life of the future.

For example the growth of the United States during the past 100 years was characterized by shift to a rapidly growing industrial economy.

During the latter part of that period, the growth was of such a nature as to reduce the relative importance of agriculture.

As of now, most projections assume the industrial character of our Nation will either continue its past trends, for example, agriculture will become even less important, or it will remain approximately the same as it is now. But since none of us is given the power to peer into the future, it's obvious that these assumptions may be wrong. Even more important, the inclusion of defense spending, for example, heavily conditions the growth performance of the past decade. Can we safely project the current defense demand, in absolute or relative terms, for the decades ahead.

Or how about the shift to the service industries to which Dexter Keezer referred earlier? These are typically low-value-added industries. How will that shift, for example, affect the productivity figures? A shift to the service industries should lower rather than accelerate the productivity trends. A third reservation, technically a most important one, is selecting the best fit for the data to hand.

The analyst is faced with the problem of first selecting the proper pattern of change to describe the past; that is, the type of trend curve that best fits the data to hand. Often a great variety of curves can provide a fairly adequate description; each, however, yielding different projection levels for the future. Furthermore, different segments of the past with different rates of change may be chosen for extrapolation.

For example, in the case of projecting population estimates, the extension of the pre-World War II data yields a significantly different outlook than would be extrapolated from using the trend during the forties and the fifties.

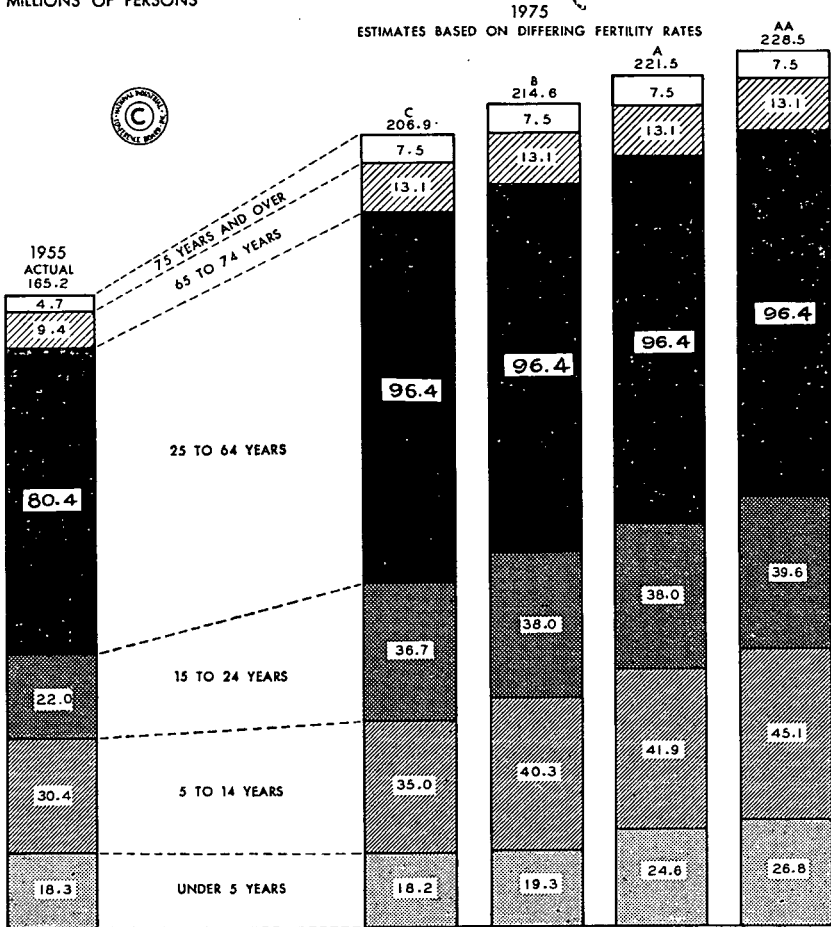
I would like to submit for the record in this connection a roadmap we have just released of the United States population and its projection through the year 1975. Using one set of assumptions, the Census Bureau gets a population of 207 million; using another set of assumptions, it gets a population of 229 million. There is a difference of 10 percent.

Mr. BOLLING. That chart will be included in the record.

(The document referred to is as follows:)

**UNITED STATES POPULATION**  
**ACTUAL AND PROJECTIONS, BY AGE, 1955 AND 1975**

MILLIONS OF PERSONS



FERTILITY RATES (BIRTHS PER THOUSAND WOMEN)

AA - 1954-1955 RATES REMAIN CONSTANT TO 1975

A - 1950-1953 RATES REMAIN CONSTANT TO 1975

B - 1950-1953 RATES REMAIN CONSTANT TO 1965, THEN DECLINE TO ABOUT PREWAR LEVEL BY 1975

C - 1950-1953 RATES DECLINE FROM 1953 TO ABOUT PREWAR LEVEL BY 1975

SOURCE: BUREAU OF THE CENSUS

COPYRIGHT, 1954, BY  
**THE CONFERENCE BOARD**  
 460 PARK AVENUE • NEW YORK 22, N. Y.

PRINTED IN U.S.A.  
 ROAD MAPS OF INDUSTRY  
 NO. 1093  
 DECEMBER 7, 1954

MR. GAINSBROUGH. In the case of productivity, coming directly to the data exhibited this morning, choice of the typical long-term pattern or of the pattern of the last decade would yield significantly different answers. Even a difference of just a half percent a year would, compounded over the long run, make for substantial disparities.

For example, a 2-percent-a-year increase over a 25-year period results in a gain of 64 percent, while a 2.5 percent yearly increment means a gain of 85 percent.

See the leverage you get from just a half-point percentage projection.

My fourth reservation is about our inability to allow for social-political changes. Even assuming that the difficulty of selecting a curve and representative time period is solved, can the past be projected into the future?

In other words, will the changes in the future be within the rate of changes that characterized the past, and will they yield a realistic persistent pattern?

Consider what a projector for the United Kingdom would have done had he looked at the long-term rate of growth of the United Kingdom through 1914 and projected that to mid-20th century and how far he would have been wrong, again because of social-political changes. Another illustration: The continued entrance of more and more women into the labor force will depend upon job opportunities in the future but will also be influenced by the set of social values in existence in the future. Will there be as great emphasis on extending the material standard of living as, for example, there has been in the past decade?

The fifth reservation is the influence of prevailing psychology upon judgment.

What the analyst making the projection will emphasize may depend quite often on the psychological atmosphere that exists at the time. For example, during most of the thirties the stagnation thesis was propounded by a great many economists. At that time projections were of the pessimistic sort.

Few could see the possibilities of sustained growth in the United States.

In contrast to that period, we in the postwar period have been largely optimistic. Everyone now it seems sees little, if any, barriers to the continuation of our economic growth. There are fashions in projections as in other branches of the arts or sciences. Furthermore, judgments may differ legitimately with respect to just how past experience should be modified when extrapolating the future.

The sixth reservation surrounds the use of total population or per capita projections. Projections of growth have most often been stated in aggregate terms. This is the most convenient method of operation for the analyst.

Accordingly, either gross national product, or net national product, or some variation thereof has been used as an overall measure. In some cases if a measure of economic welfare is desired, these aggregates are expressed in per capita terms; not too frequently, however, in United States-U. S. S. R. comparisons.

In the first instance, the use of aggregation, such as gross national product or its variants, may not be too meaningful. The same measure may have different implications in comparing countries with different economic systems or in different stages of economic growth.

That is the point that Dr. Fabricant made.

Conversely to take per capita output as a unit of measurement suggests that population is a passive factor in the development of any nation, particularly the U. S. S. R. But the interaction between an

industrial economy and the growth of population is an important factor in any assessment of growth.

Let me offer one example from a forthcoming publication of the conference board. This is a statistical handbook of the U. S. S. R. Dr. Harry Schwartz acts as our commentator in this new statistical handbook for the U. S. S. R. Dr. Schwartz points to one of the difficulties that Russia will be experiencing in the next decade. In 1945 there were 15 million fewer persons than in 1940 as a result of war losses, the drop in the birthrate and the rise in infant mortality. Now there are approximately 8 million less children in the first 4 grades in Soviet schools than in 1940.

In the next decade, this lowered number of children will in turn affect the size of the labor force. The relatively small number of new entrants into the labor force will present a problem to a growing Soviet economy.

The seventh reservation refers to the inadequacies of capital formation estimates. Economists stress the connection between capital formation and economic growth. We have heard that again this morning. An important relationship exists between these two variables, although no one has yet been able to state precisely the relationship. However, as usually expressed in the national accounts, capital formation relates primarily to expenditures on physical capital, such as machinery, buildings, roads, harbors, and the like. No compilation as yet regards expenditures on education, research, recreation, and health facilities as a part of capital formation. Yet, if we are to make any accurate projection of economic growth, such expenditures on welfare may play an increasingly important part in the future. They not only contribute to individual welfare, but even more in point to greater productivity of the economic system.

The eighth reservation: Shall we use gross or net capital formation in our projections?

In compiling the series for capital formation, the usual practice is to state it in two ways. First an estimate is made of gross capital formation which consists of all the goods referred to above. Thereafter an allowance is made in the form of depreciation and other types of capital consumption to arrive at a figure of net capital formation.

For purposes of economic projection it would initially appear that the net figure is more appropriate as the capital that is presumably wasted or consumed does not contribute to future growth.

But in some circumstances the gross figure may be more appropriately used. For example, in our society capital consumption results more often from obsolescence, rather than from a physical deterioration of plant and equipment. The old equipment which is displaced still exists and may be used as a productive factor.

In underdeveloped countries in contrast, capital consumption typically takes the form of sheer physical deterioration of plant and equipment. The old one-horse shay collapses. In such a situation it is evident that net, rather than gross, capital formation would be a more important variable to consider in any economic projection.

I come now to an extremely important point. No. 9. The adequacy of natural resources as they relate to economic projections.

One factor almost always assumed away in economic projections is the state of the natural resources of the country. The United States

for example has been blessed with most of the raw materials needed for an expanding industrial economy. But the Paley Commission and others suggest that we are running short, and perhaps will continue to do so in the future.

This means that we may have to rely more heavily on imports or resort to more difficult resources within our own borders at a higher real cost. This development may mean that we will have to devote more effort to making available the same raw materials for the operation of the economy. Such a development would have a natural slackening effect on our growth. Similar thought should of course be given to the natural resource position currently and prospectively of the nation with which we are being compared.

And I there underscore the emphasis that Dr. Schwartz placed on the tightness and inadequacy of fats and oils, particularly.

Now a favorite bogey of mine, No. 10; the influence of terminal points upon the rate of growth. The common comparison very frequently drawn is to relate the rate of growth for the United States for the past decade with the rate of growth of the U. S. S. R. for the past decade and then to project the rates of growth for each of the two countries for the next decade or next two decades and come to some conclusions. Much of the warrant for those conclusions pivots primarily around the terminal points selected.

In comparing the growth, and particularly the future growth of two countries, attention must be paid to their different economic stages. For example, a comparison of the United States and Russia from 1945 to 1955 involves a comparison of two unlike terminal points. U. S. S. R. in 1945 started from a much lower point because of the physical toll of World War II and hence its rate of growth is biased upward. Similarly, longer-term comparisons must also be qualified. The United States as a full-blown industrial economy has completed the transition from the agricultural base upon which it rested in the early decades of the last century.

The U. S. S. R., on the other hand, is a relatively new industrial power, still resting upon a large agricultural base. Its growth in recent years may have been more rapid than that in the United States, but that situation may be simply a reflection of the stage of its economic development. A more proper comparison might be the rate of growth of the U. S. S. R. currently with that of the United States in the last century, when it represented a stage more comparable to that of the U. S. S. R. currently; Kuznets' historical work reveals an extremely rapid rate of economic growth in the United States a century or so ago. His estimates show that net national product in constant dollars increased 30 percent to 40 percent during the 1870's and 1880's—a rate 2 or 3 times that of the last decade for the United States of America.

I won't comment on my last reservation which deals with price and exchange rates, since I have already taken more than my time.

(The omitted material follows:)

#### PRICES AND EXCHANGE RATES

Projections have always been stated in terms of fixed prices in order to focus on the real changes that will take place. The assumption of fixed prices removes one of the factors that has acted as a guide to productive activity in the past and may render any projection erroneous. This is especially true if it is assumed that the relative prices of various elements remain the same.

We can expect price changes to continue to take place in the future and consequently influence industrial activity. If so, the projection would be improved if stated in both current and constant dollars.

Furthermore, the comparison of GNP of two economies involves the use of different currencies and consequently the need to convert them to a common monetary unit. It has been demonstrated that current exchange rates cannot do this job effectively because of the many controlled rates. Investigators have generally found that goods and services of one nation are under valued if converted to the currency of another. This phenomenon is a reflection of the different importance placed upon the goods and services by the citizens of the two countries.

Mr. GAINSBURGH. I would like instead to close with some statements from the foreword we are publishing in our statistical handbook of the U. S. S. R. :

The statistics released for the Soviet Union emphasize the economic growth, its rapid economic growth, in the past decade but they pay little attention to the economic status of their population as compared with the Western World.

The compilations released, for example, show that since 1913 the output of producers' goods has increased by 52 times. Consumer goods by contrast increased by only 10 times.

But even these figures give no indication of the inadequate output of goods in relation to human needs. Our own president substantiates from his personal observations during a recent visit to U. S. S. R. what many travelers have so frequently reported, namely the emphasis given to heavy industry which has left the bulk of the population of Russia with living standards that are woefully inadequate as compared with what the masses everywhere enjoy, here and in the industrialized nations outside the Russian orbit. The existence of a planned economy and a political dictatorship makes it possible for the Soviet Union to force its development along certain channels. Impressive overall gains have been made, but compulsion and fear still underlie the record of U. S. S. R. growth and the growing pressures for better living among the Russian people and their satellites are raising more and more doubts as to whether such gains can be continued in the years ahead.

Representative BOLLING. Thank you, sir.

Senator FLANDERS, do you have any questions?

Senator FLANDERS. Yes, I would like to ask some questions. I just want to say that I think this has been one of the best panel discussions we have had, that it has been very informing and very objective.

I would like first to ask Dr. Keezer a question. He projects shorter hours, which has of course a historic basis, well a projected basis, probably supporting the projection. He projects higher hourly wages, also historical as well as prophetic. And he projects higher output per hour, again historical as well as prophetic.

I wonder whether you have taken the occasion to calculate from these three projections a projection from the major labor cost element in the cost of goods?

Dr. KEEZER. In other words you mean whether we have come out with a dollar cost per unit of labor over this period?

Senator FLANDERS. Yes.

Dr. KEEZER. It has not been a part of these projections but I think we can do it.

Senator FLANDERS. Would you have more or less confidence in such a projection than you have in the elements of which it is composed?

Dr. KEEZER. That probably would lead to the question of whether we will continue to have price increases, I take it.

Senator FLANDERS. The next question I wanted to ask of you, sir, was in your projection of higher production, it was based of course on research and development. It has been said by many people at

different times that the great stimulus to research and development is war. Do you have any thoughts as to the effect of an era of peace—although it looks improbable—and a great decrease in the defense expenditures and activity? Have you any thoughts as to whether that would tend to put a stop to research and development applicable to peace use?

Dr. KEEZER. I think we have some very definite evidence on that. As a part of our annual survey of business plans for investment we asked this year for expenditures on research and development, present and prospective, and the figure for 1956 from a very broad sample of American industrial firms was that they are spending \$5½ billion this year for research and development. About one-third of that comes initially from the Government, about two-thirds of that comes from industry itself.

That is an increase of approximately 50 percent from 1953 when the Bureau of Labor Statistics made a survey for the National Science Foundation. We have no way to measure how much a cold war may be contributing. But, we have evidence now that a very new and tremendously important element has been added to the American economy in the fact that American industry on its own motion and without regard to war but simply with regard to markets is making a tremendous investment in research and development. And it is increasing this investment sharply. We asked for the figure of estimated expenditures for 1959 and came out with a figure of \$6,300 million as the prospective expenditure by American industry for research and development in 1959.

So I think we do have some impressive evidence that this is not geared up to war or emergency, but it is geared up to estimates of how properly to take advantage of market possibilities.

Senator FLANDERS. Thank you.

Now I would like to turn to Dr. Grossman. On page 8 you speak of the diversion of resources to military end use and say that the magnitude of such diversion at present must be enormous.

With any lessening of military tension, is there not the possibility of a diversion of similar magnitude that might result from the increase and the present diversion into the international economic contest? Aren't the possibilities there, for instance the building of steel mills and dams and other things of that sort, as great as is the military expenditure and might we not find in any endeavor on our part to compete in building up the resources and production of the underdeveloped world, might we not find under these conditions of virtual disarmament that diversion so large as to be very difficult for us to meet?

Dr. GROSSMAN. Sir, if I understand you correctly, you are wondering whether a reduction, a very drastic reduction in Soviet armament expenditures might not be diverted to Soviet aid or other programs in the underdeveloped countries; is that correct?

Senator FLANDERS. Yes.

Dr. GROSSMAN. Yes, I think this is a very real possibility but perhaps rather than answering it with one sentence I may say a few words about it.

It is true that the resources liberated, if they should be liberated—and I might add at this point that I for one, this is more a matter of crystal ball gazing than anything else, I for one do not anticipate

in the near future a very drastic cut in Soviet armament expenditures, but this is anybody's guess—but should such a drastic cut take place, and you will undoubtedly agree that such a drastic cut will be a result of developments in the international situation in which we are as much a factor as the Soviets, and to a large extent it is in our hands whether the Soviets will cut their armament expenditures—then I think we may very well witness a sharply stepped-up flow of resources from the Soviet Union into the underdeveloped areas and in part precisely for the reason I mentioned in my statement, namely that these are, these resources are of such a physical nature, namely engineering skill, metals, equipment and so on, which were relatively little, with relatively little conversion could be used for the purpose you indicate.

However it is very difficult for me to foresee a flow of Soviet aid to the underdeveloped countries which would in any way be of comparable order of magnitude to the resources they are now committing to defense.

They are just so huge and any substantial cut is likely to be so huge if realized that it is difficult to see that all these billions and billions of dollars worth, let us say, would be flowing.

But it is an economic leverage, shall we say, that they will undoubtedly attain if they should so liberate some of their resources. I don't know whether I have answered the question.

Senator FLANDERS. I think you have given us as good an answer as can be given. I would like to ask you another question. On page 9 of your manuscript you use the phrase "World economic power." Can you define that term, or will you? I think you can.

Dr. GROSSMAN. I will try for I obviously had something in mind when I wrote it.

I did not have anything very clear in mind. What I had in mind is this though: That it does take of course a certain economic base to support a certain posture, as the phrase these days goes, in the international scene. Now perhaps we tend to think of this economic base sometimes too much in terms of the guns themselves. I feel pretty certain that the figures that weigh in the Soviet calculations is the economic base of a broader nature, the general industrial potential of the country. And any stepping up of the rate of capital formation may permit them to expand their general industrial base, not necessarily the production of guns immediately but the production of machinery and equipment which at some time in the future will be very helpful in producing guns, and also an industrial potential which may with time also be very helpful in attracting politically the uncommitted countries of the world. So that should there be this stepping up of the rate of creation of this industrial base, we may very well find ourselves, say 10 years from now, facing a much more formidable adversary in the general economic sense than we might if this adversary continued to pour large resources into what after all is in the long run unproductive use, namely guns and tanks and so on. This is a general notion of economic power. It is admittedly vague but, I submit, perhaps not entirely irrelevant.

Senator FLANDERS. Thank you. Now I have some questions I would like to ask of Dr. Schwartz.



One of the thoughts that has occurred to me in connection with competition between the Soviet sphere and the free world is this: Can we not present that competition not in terms of tons of steel and barrels of oil but in terms of the living standards of the people?

Shouldn't the contest lie there and should we not emphasize that politically is the contest? I was interested I think it was you or Dr. Grossman perhaps referred to Gomulka's shifting of the direction of economic development to the raising of the standard of living of the people. Isn't that a contest in which we should advertise and which we should gladly enter into?

Dr. SCHWARTZ. I would quite agree with you, Senator Flanders. The fact that I did not present the relevant data does not mean I consider them unimportant. I consider them quite important. However, I think that this point should be made that from a psychological point of view the Russians have been extremely skillful these past several years in using their data on the growth of heavy industry and using their new plants and their impressive equipment which is turned out in these plants to win friends and gain influence among the underdeveloped countries of the world.

I think if one reads the statements of leaders of countries such as India, for example, Indonesia and so on, one finds to one's dismay that many of the leaders of the presently neutral and underdeveloped countries of the world have been swept away by this Soviet mirage, this notion that if a country concentrates upon building steel mills and machinery plants and so on that this is really what is meant by economic development. So in that respect perhaps the recent developments in Poland and Hungary and to a lesser extent in North Vietnam may have the exceedingly salutary influence or effect upon the leaders of these underdeveloped countries of bringing sharply into their attention the fact that the impressive gains in heavy industry have been purchased at very heavy human cost and that it is really questionable whether a country which is relatively underdeveloped such as India, Indonesia, or Burma should follow the Soviet pattern of industrialization.

I quite agree that the tremendous advantage we have in all areas of the standard of living is one of our very strongest points in the world competition for the minds and hearts of men.

Senator FLANDERS. Thank you.

Now I may say that a year ago last summer I attended an Interparliamentary Union meeting at Helsinki to which for the first time was admitted a Soviet delegation. I was very much opposed to the admission of a Soviet delegation because supposedly the principles of the Interparliamentary Union are that that is the nearest to a direct meeting between people and people you can get.

It represents the meeting presumably of government officials who have been selected by the people. So you get a nearer approach to people to people meeting. The Russians did not meet that definition or that term but there they were.

And since they were there, I addressed myself to them and I made the suggestion in my talk that the time might come when the successful exercise of leadership and of power in the Soviet Union might fall into the hands of intelligent leaders who devoted themselves to the well-being of the people and I have since suggested that in some broadcasts over the Voice of America.

I believe the more we can do so to impress the Russian people with the possibilities of their great country in terms of the welfare of the people, the better we can serve the interests not only of the free world but the Russian people themselves. It is a kind of an offensive that hurts nobody except rascals.

Now, with regard to your statistics on iron and steel and end products, does your information suggest that there is a very high percentage of scrap clear through from the blast furnaces and the pig iron through the conversion into steel and the fabricating of the steel and the production of the end products? Is that large enough in your judgment to in any degree vitiate the overall statistics of tons?

Dr. SCHWARTZ. This of course is a matter on which there are no very satisfactory statistics. There are merely fragmentary statements which appear from time to time. And so all I can give is a qualified and very tentative impressionistic kind of answer.

My judgment would be—and this is purely a judgment—that within the Soviet Union industrialization is now so far along and workers are so experienced that the percentage of scrap of metal which is turned out, which is turned out to be waste metal, which I think you have in mind, sir, is probably not so large as to vitiate these comparisons, any comparisons with say the United States or Great Britain. They obviously have some scrap and then so do we.

Senator FLANDERS. Scrap iron is fed back into the cuppola and scrap steel is fed back into the open hearth furnace, so that to that extent, that can escape the statistics.

Dr. SCHWARTZ. Yes. On the other hand there have been indications that Eastern Europe where industrialization of some countries is a more recent phenomenon and the workers are not as well trained that the percentage of spoiled metal is at times significant and that this might perhaps, if we had the adequate data, somewhat reduce the apparent growth rate in iron and steel production.

But overall, I should not think that any correction made for this factor would have any major impact upon these data. It might change things but for a few hundred thousand tons perhaps in the aggregate for all the countries by a million or 2 million tons but I don't think it would change the essential character of the data.

On the Chinese situation I have no information whatsoever but one might suppose from the newness of the industrialization in China that this is an even more serious problem in China probably than it is in Eastern Europe or the Soviet Union.

Senator FLANDERS. You mentioned the great lacks in the Soviet system in feed and grain, textile raw materials, particularly cotton and fats and oils. What has become of the great Danube Valley, the Great Granary of Europe? What has happened to it?

Dr. SCHWARTZ. That is a very fair question, Senator, and I think that the answer by and large is that the institutional pattern which the Communist leaders of Eastern Europe have attempted to impose upon the agriculture of Eastern Europe has been a manmade disaster.

If one reads the Polish press these days and the Polish press these days is being amazingly frank, one learns that the chief characteristic of economic management this past decade in Poland has been that men sent to run a particular field knew nothing about that field. This was particularly true in agriculture. That is one reason.

The second reason is of course that the peasantry of Eastern Europe has by and large been opposed to collectivism. Very frequently where it has been collectivized very heavy coercion has been employed. The peasant's only possible resistance has been a passive resistance. He simply did not do his job as well as he might have. So the really fundamental answer to what has happened to the Great Danube granary is that the ills of Communist management have so deprived peasants of incentive and have so mismanaged agricultural affairs in Eastern Europe that the countries like Rumania, Hungary, and Poland are today countries which badly need imported grain to feed their own people.

Senator FLANDERS. Before the First World War—I can remember this and you can't—there was a typical line of political action by the Austro-Hungarian Government that was known as pig politics. If they wanted to embarrass the Balkans they shut down on the import of pig products including lard and if they wanted to relieve them they let up the bars. There again there is a great field in which the Communist economy does not open up.

Dr. SCHWARTZ. Much the same answer would apply to this, sir. The raising of livestock is of course a very delicate operation which requires not only care but one might say devotion on the part of the farmer.

The farmer needs an incentive in the way of a proper price structure, and so on, and all these things are missing. In addition, of course, we should remember that although it has not been on as large a scale as perhaps in the Soviet Union during the 1930's in part the peasant's answer to the collectivization in Eastern Europe has been to eat up his pig rather than turn it over to the collective farm.

Senator FLANDERS. Now, you spoke about the necessity, I believe it was you, for our maintaining the prosperity of the free world if we ourselves are not to be overtaken by disaster.

In my series of questions, I think a copy was handed to you—

Dr. SCHWARTZ. Yes, sir.

Senator FLANDERS. No. 7. What possible assistance can we render the Western European countries as great as they can gain for themselves by forming a customs union? That would give them a mass market comparable in its possibilities to our own. Can we do anything better for Western Europe than to encourage what they can do for themselves?

Dr. SCHWARTZ. I take it that this question is intended as a long-range question because obviously in the immediate situation Western Europe very badly needs American oil, but that is an immediate situation.

Senator FLANDERS. Yes, I am speaking of that as long range.

Dr. SCHWARTZ. I do not have particular knowledge about Western Europe. But so far as I have general knowledge, I would agree with the implication of your question that the formation of a customs union so Western Europe would be a unified market would be a tremendous step forward for the benefit of all of Western Europe.

The difficulty lies there in the many vested special economic units in each of these countries of Western Europe which feel that their own special narrow interest would be damaged if faced with competition from other nations.

This is a similar problem to that which we had in the United States for some time.

Senator FLANDERS. May I mention my experience at a conference I attended? I asked this question and asked it after 2 or 3 speakers had developed that the European customs union was a fine idea but, but, but—and I called the attention of the conference to the fact that these but, but, but, but, but were exactly the arguments that American business used with reference to lowering the tariff barriers of the United States. And one other question I asked, the answers intrigued me. I said now it is proposed that there shall be a customs union of European countries, is the United States to be admitted into that too or is the United States to be shut out?

Well, that question wasn't directly answered but I could see in the rest of the American delegation an attempt to rather shush me down. What was evidently the situation was that the administration, the economic administrative policy of the administration to date looks simply to the extension of the free-trade area by means of the reciprocal trade treaties and most-favored-nation clause and in the minds of the administration people present this was just simply another approach to the reciprocal trade treaties and most-favored-nation clause.

Everybody, if the United States is to get in on the European customs union, everybody should be allowed to get in and then it loses its specific advantages as I see it for the people of Europe.

Now, I will try to proceed rapidly, more rapidly here. You mentioned the compulsion in production due to the planned economy and their ability to do with their citizens whatsoever they will. And that gives them certain material advantages as compared with the necessities of our free enterprise system.

These questions of mine, Mr. Chairman, are directed among other things toward a matter I ask here in—you would think I had not written this and I was hunting for something but I assure you that I did write it with a lead pencil on a legal size yellow pad with lines on it.

Oh, yes, in six, is there in our underemployed population a resource comparable to underdeveloped natural resources in other countries? It is a labor resource not a material resource. Can we apply knowledge, wisdom, and intelligence to the expansion of this home market if business slows down abroad?

As you know, Mr. Chairman, I have been in strong support of two low-income-group studies that we have had. I have had in mind possibilities for that which have not yet materialized.

I think we have found some of it—at least I personally have found from these hearings some things that I did not know. One is that the great mass of the stubborn low income is to be found in agricultural regions. It is not to be found in cities, even in the slums of cities, there is nothing comparable to the persistent low-income situation in the low-grade agricultural areas of the country.

Now, feeling as I do and as I set forth in these questions that we are liable to run into difficulties in dependence on foreign trade for our industrial activity I raised the question which I just read.

Is there in our underemployed population a resource comparable to underdeveloped natural resources in other countries?

And the thought has been raising itself in my mind as to whether, let us say, in the unlikely event, the unlikely but necessary event of some period of a more or less stable peace, in which we are permitted

to divert a large part of our regular resources from the present wasteful diversion to arms and armament, whether some of a considerable measure of the resources diverted cannot be applied to enormous—because we are talking about tens of billions—to enormous developments of public works, of which one example would not merely be the highways which we have recently embarked upon but also for instance such a widespread provision of sewage disposal that one can take a cup and take a drink of water safely out of any river or stream in the United States. That would take billions.

But would there not be an opportunity there to draw in—that is just one example—to draw in these low-income groups not by picking them up in the dead of night and putting them into freight cars and sending them somewhere but offering them opportunities that they have never had before. And it seems to me that a massive approach to this low-income group problem may become possible, and I hope the members of the committee at least will keep that in mind.

Mr. Gainsbrugh, on page 8 of his paper, on page 8, the fifth and sixth lines, speaking about the productive activity, "The projection would be improved if stated in both current and constant dollars." I have more than once and again within the past fortnight tried to persuade the committee of which I am a senior member to put into its monthly report of economic indicators a gross national product in constant dollars as well as in current dollars and I am very hopeful that my third attempt to get this done will result in its inclusion in the January issue and I submit that for the staff.

I think that is all.

Representative BOLLING. Thank you, Senator Flanders.

At this time I would like to call on the panel as a whole as individuals if they have further comments on comments of other panelists.

Dr. FABRICANT. Mr. Chairman, I would like to note the importance of Senator Flanders' remarks about the standard of living in the Western Countries as compared with the standard of living in those others on the other side of the Iron Curtain, and his further remarks about wage costs and about the low-income distribution. I think it is extremely important that we keep in mind that our economic system prospers the way it does because it draws into the productive process all the energies and efforts of all our people, and by distributing to all our people the product of their efforts in a more or less automatic way. Not only have we increased our standard of living in the United States, but we have improved the distribution of income in the United States in a way I think that could not be matched by countries on the other side of the Iron Curtain.

I think we ought to publicize the fact that, not only a higher standard of living but a better distribution of that standard of living among our people is one of the results of our economic progress.

Senator FLANDERS. Dr. Fabricant, Professor Fabricant, I would like to suggest that if you can get hold of a copy of a little book I published last May entitled "Letter to a Generation" and will read chapter 3, you will see the title of the chapter is "Be Assured." I tried to describe our whole economic system in such a way that the young people would have confidence in it and it would please me very much if you would ask your bookseller for a copy of the book because the principal customer to date has been myself and I am very grateful to anyone who spends his own money for it.

Dr. KEEZER. Mr. Chairman, I would like to make one remark. I think I share all the reservations of this group about the technical and substantive difficulty of projections. I think you have never heard more modest statements about projections in a long time than those made here. But having presented these projections in the first instance, I think I would like to just add that I don't know how you get along without some kind of projections. You are continually making comparisons, you are continually trying to figure out where you are going and where somebody else is going and where you are both going relatively.

If you concentrate solely on the limitations of projections, nothing every happens. With all these limitations we must have projections. We can only make them as best we can.

Mr. GAINSBROUGH. Dexter said you make the projections as good as you can. We would all say that is laudable. But I think we also ought to keep examining them continually from the point of view of, are they good enough?

How can they be improved? What has been the limitations and the reservations of past efforts? Are we building too many models of a similar type? Are we concentrating too much on one type of approach? Are there other approaches that can be employed? I don't think there is any dissent within the panel on the desirability of model building. I think our dissent is primarily upon techniques that are employed. And our emphasis was upon recognizing the limitations of the techniques that are currently employed, with the hope that as we do more of these we perhaps can do better ones—in a sense, learn by doing.

Dr. KEEZER. My point is that there is no dissent in the panel. That is the beauty of it.

Mr. GAINSBROUGH. I am inclined to put a qualification on that. I think too many of these projections are presented as being the best that can be made. I doubt that they are. They are the best that can be made with the resources that are now being committed to this particular problem. But are we putting in enough resources? Do we have enough men at work on this particular job? If it is as important as Dexter says it is from the point of view of business planning and from the point of view of public policy, is this an adequate flow of resources?

Are we continuing to be constantly niggardly about our allocation of resources for this particular purpose? My own feeling is that we have not recognized the significant overtones surrounding these particular projects and that we limit the capacity of the science and the fraternity to perform by our very niggardly ways.

Representative BOLLING. Of course, you know very well as chairman of a subcommittee of this committee, on statistics, we have been working one aspect of that problem and I tend to share the view that the Congress was a little niggardly on occasion. With regard to certain things that might be useful in this particular field, that is.

Dr. SCHWARTZ. May I make two brief observations, one on Senator Flanders' point regarding the low-income population of the United States. I think he has a tremendously important point there. But I think we have to be aware that it is not simply a matter of economics. A very large fraction of these low-income people are Negroes, mainly, Mexicans, and other nonwhites who sometimes tend to be, at least in

practice, if not legally, in the position of second-class citizens. This has very undesirable effects which go far beyond merely the economic sphere. I think this country stands to gain enormously from any effort made to give these underprivileged peoples, and particularly those who suffer from color or similar barriers, the education they need to utilize their native ability to the highest advantage and also the opportunity to become members of our economy and our society on a full-fledged basis. If we were to do that, we would deprive the Communists of one of their most effective political and propaganda arguments: the thesis that the colored person in our society is a second-class citizen subject constantly to the fear of discrimination, bodily harm, lynching. This is terribly important.

The second point I would like to make is with reference to Martin Gainsbrugh's very important qualification regarding the assumption of raw material plentitude. That is, I have been appalled sometimes looking at some projections, not Dr. Keezer's but others which go out to the year 2,000 and seem to give everybody a Cadillac. In making such projections, nobody seems to look at the question, Do we have enough iron or do we have enough coal, do we have enough aluminum? We have tended to assume too freely in the past that natural resources are there and can be had more or less easily. Actually the United States is now in the transition from a have to a have-not nation.

I think we have before our eyes today a tremendously instructive and to some extent frightening example of what happens when you become dependent upon an imported raw material which may be cut off from you. I am referring, of course, to the case of Western Europe and its need for oil from the Middle East. I don't think this is a matter on which I or anybody else has any easy solutions but it would seem to me to be a prime function of the United States Government in these days to do some very careful looking ahead on the raw-material needs of the American economy and the possible resources, domestic and foreign, for meeting these needs. We need to insure that our children and grandchildren have the same access to raw materials that we have had.

On that point, one disturbing factor we know when one looks at the competition between the Communist and non-Communist world is the fact that the most industrialized portions of the Western World, that is the United States and Western Europe, are relatively far along in the depletion of their raw materials. England, for example, once built its economy on coal. Today coal is brought to Newcastle in defiance of the ancient adage.

We built our economy on cheap iron ore and today we are having to bring it in from Labrador, Venezuela, and Liberia and other places. The Communist countries, particularly the Soviet Union and Communist China, are still in very infant stages of depletion of their raw materials. If one looks ahead 10, 20, 30, and 40 years from now they are likely to be in a much better position in terms of raw materials available from domestic sources than we are. This raises some very grave problems which I think the planners of our Nation's future must stay and take into serious account.

Representative BOLLING. One aspect of which my area is involved is the very simple fact one of the limitations of our future growth is the limited availability of something as ordinary as water.

Dr. SCHWARTZ. That is right.

Representative BOLLING. Dr. Grossman?

Dr. GROSSMAN. Mr. Chairman, I have been very interested in all the statements made today but particularly in the statement made by Dr. Schwartz; his remarks were after all addressed to the same part of the world or about the same part of the world that my statement referred to. And I must say that he did an admirable job in the very brief time he had at his disposal. I was particularly interested to hear him make a couple of remarks: one that a major battle ground in this contest is the United States domestic economy itself, that by maintaining full and productive employment, we can go far in winning this contest. I can only applaud these remarks. Incidentally what Dr. Schwartz just said about the problem of second-class citizenship and its bearing on the propaganda contest that we are facing I think is very true too.

But to proceed to another point which I was also very interested to hear, namely the possibility that the most recent events in Eastern Europe such as happened in Poland and Hungary might gravely affect the allocation of resources as between consumer, investment and so on.

I think he is quite right in proffering this possibility, namely that in the Eastern European countries, the pent up privations have come to the point where even the Communist regimes will not be able to ignore the need of the people for a better standard of living. Certainly what has been happening in Poland greatly underscores that.

However, I would like to draw a distinction here between the Eastern European satellites and the Soviet Union. Not that in the Soviet Union the standard of living is so high that the problem does not exist. Certainly it does.

We have heard a few words said on that this morning and I will be the last one to claim otherwise.

However, it seems to me that the political situation is such that we must differentiate between the prospects there and the prospects in Eastern Europe.

For one, it seems to me the Soviet leaders probably have their population better in hand than did the puppet regimes in Eastern Europe until the recent outbreak; and secondly of course the element of nationalism which was so important in Hungary and in Poland has a completely different complexion in the Soviet Union. But still I think Dr. Schwartz is completely right that a reallocation of resources away from military end use even in the Soviet Union is very likely to be in some part in the direction of improving standards of living.

However, I would like to enter this very brief qualification or several qualifications.

One, the physical pattern of the production plant and of the resources is such that it will be much easier for the Soviet planners to shift the resources now going to military use into investment, into foreign economic assistance and perhaps a few other uses than to benefit the consumer immediately and directly.

Secondly, the institutional structure of the Soviet economy is such that even if they tried hard, within the same institutional structure, to do much for the consumer, they would find as they perhaps did



under Mr. Malenkov's previous tenure, very serious internal resistances.

The machine just isn't geared to provide butter and shoes as well as it is geared to provide guns and machine tools.

It is true that the institutions can be changed and if they are changed, from our point of view, so much the better, but in the very near term I am not sure that this is a very likely prospect.

And then finally it seems to me that the very developments in Eastern Europe, call them Titoism or call them what you wish, may engender the reverse reaction in the Soviet Union.

Now that the satellites are going their own way from the point of view of the Kremlin may it not be that the reaction of the Kremlin within its own territory would be even further to strengthen what it considers to be the basis of economic power, namely heavy industry.

In other words if you can no longer depend on Polish heavy industry and on the Polish armies in the case of a showdown, is it not likely that it will be the Soviet heavy industry that will have to be strengthened from the point of view of the Soviet rulers. So if there are actual resources to be reallocated such as in the event of a major disarmament which as I said before I do not see in the cards at the moment, if there are such resources to be reallocated I am not too sure for the reasons I have just listed that they will by and large go to the consumer.

My guess would be that they would go into further investment, by and large, and, as Senator Flanders indicated in his question, very possibly for aid to the underdeveloped countries. In both instances, of course, perhaps not entirely to our comfort.

Dr. SCHWARTZ. May I comment briefly on Dr. Grossman's remarks, Mr. Chairman. I certainly agree with Dr. Grossman in his evaluation of what the Soviet leaders would like to do. The really interesting question—we don't have any answer but it is interesting and we have to be aware of it, whether in the new atmosphere and the Soviet leaders have as much freedom of action internally as Mr. Stalin had 5 years ago.

To me it is very interesting, within 6 months of Stalin's death Mr. Malenkov, who was then Premier of the Soviet Union, felt it necessary to announce a policy which promised the Soviet people a sharp upsurge in the standard of living of the Soviet people within 2 or 3 years. He is a politician operating in a different framework than our politicians operate but the characteristics of a politician is that he is sensitive to public pressures.

It seems to me there is a tremendous pressure in Soviet Union for an increased standard of living and that factor the Soviet leaders have to take into account.

The really interesting field for speculation is what line the Chinese Communist leaders will draw from the events of Eastern Europe. If you extend your time horizon to 30 or 40 years, the really frightening thing about the Communist growth is possibility of Communist China with its vast human resources and its not inconsiderable natural resources becoming a major economic power.

Now, the possibility arises and there are no guaranties that the Communist Chinese leaders will look at the events in Eastern Europe and perhaps—I stress "perhaps"—decide that they themselves don't wish to risk disturbances similar to those in Hungary, certainly, and

that they may therefore recast their plans for extremely rapid economic growth.

I don't know. But this is a very interesting possibility and I would hope, I would expect that this committee might interrogate Dr. Eckstein, who is going to testify on China here on Wednesday, I believe on the potential effect upon Chinese economic growth from the political lines to be drawn from the recent turmoil in Eastern Europe.

Representative BOLLING. Thank you.

Are there further comments? If not, gentlemen, I want to thank you very much and say for myself and for Senator Flanders this has been the most interesting and stimulating panel that I have had the opportunity to listen to.

We are very grateful to you for giving to us and others your time and your wisdom.

Have you a further question?

Senator FLANDERS. No.

Representatives BOLLING. With that the subcommittee will stand adjourned until 10 o'clock on Wednesday, when it will meet in this same room on the subject, Economic Growth Trends in Underdeveloped Areas.

(Whereupon, at 12:35 p. m., the subcommittee adjourned, to reconvene at 10 a. m., Wednesday, December 12, 1956.)

# WORLD ECONOMIC GROWTH AND COMPETITION

---

WEDNESDAY, DECEMBER 12, 1956

CONGRESS OF THE UNITED STATES,  
SUBCOMMITTEE ON FOREIGN ECONOMIC POLICY,  
JOINT ECONOMIC COMMITTEE,  
*Washington, D. C.*

The subcommittee met, pursuant to adjournment, at 10:10 a. m., in room 1301, New House Office Building, Washington, D. C., Hon. Richard Bolling presiding.

Present: Senator Ralph E. Flanders.

Also present: Charles S. Sheldon II, staff economist; Grover W. Ensley, executive director; and James W. Knowles, staff economist.

Representative BOLLING. The subcommittee will be in order.

Last Monday when these hearings were opened, I explained their rationale and objectives. In that connection we heard from a panel of nationally known experts on the general problems of making international comparisons and economic growth projections. Attention was concentrated primarily on the relative development of the great industrial nations with emphasis on the United States and the Soviet Union. Today we are continuing our inquiries by examining particularly the problems of the underdeveloped nations.

Many of these countries are not yet fully committed either in their political alignments or to any single course toward economic development, but they do share some common desires at least among the influential members of their societies. They want to better their material well-being in order to raise living standards but they may also want to industrialize even at some cost to current comfort in the interest of long-run greater bargaining power in the world scene.

The economic resources of the great nations which have already industrialized may be available to influence the course of development and trading relations in these underdeveloped regions. Because so much of the world has yet to experience extensive development and conditions vary widely, we have had of necessity to limit our discussions primarily to a single region. This morning we are going to hear mostly about Asia and the Far East.

We are concerned with the different paths to development open to these countries. We are also concerned about the trade implications for the United States and for these countries themselves.

Before proceeding to the witnesses, I understand that Senator Flanders would like to make a statement.

Senator FLANDERS. I would like to have distributed to the members of the panel, Mr. Chairman, my memorandum of November 14 to Dr. Ensley in which I asked for a reexamination of our trade policy.

I may say that this memorandum was sent to Dr. Hauge and Dr. Burns who doubtless passed it down to Dr. Saulnier and doubtless to Sherman Adams. I believe we need to take a new look at our whole trade policy and the agenda of this particular series of three hearings only touches on these questions in spots. With your sufferance, Mr. Chairman, I will raise them as we go over the spots.

I was interested to find the administration was not going to be represented and I heard it rumored that it is because they were making a new examination of our trade policy. I hope that that rumor is a true one.

Thank you.

Representative BOLLING. Senator, I believe that each of the witnesses today was furnished a copy of your memorandum by mail and I think that each one of them now has one before him.

Our first speaker this morning is Dr. Henry G. Aubrey who is currently the director of a major research project still in its early stages at the National Planning Association.

It is most appropriate that he be here today for that project is in the same context as some of our interests. It is called the economics of competitive coexistence.

Dr. Aubrey was engaged in foreign-trade business for many years, and also since 1950 has been a visiting professor of the graduate faculty of the New School for Social Research. He has been a consultant to the United Nations, Pakistan, and the Organization of American States. Until coming to the NPA, he was on the economic staff of the Federal Reserve Bank of New York. He is the author and co-author of several books. His topic this morning will set the scene for what is to follow. It is the Meaning and Importance of Economic Development in World Affairs.

Dr. Aubrey, you may proceed as you wish.

#### **STATEMENT OF HENRY G. AUBREY, DIRECTOR OF RESEARCH ON THE ECONOMICS OF COMPETITIVE COEXISTENCE, NATIONAL PLANNING ASSOCIATION**

Dr. AUBREY. Mr. Chairman and members of the committee, economic growth of course is nothing new in history. Why is it then that the economic development of the less advanced areas of the world has recently become the subject of such intense preoccupation in world affairs?

And why, in particular, has an active interest in this development become a touchstone of the international performance of an industrial country?

I propose to confine my brief remarks to this question, in order to focus on economic development abroad as an important consideration in the formulation of foreign economic policy.

In the past, the process of economic growth was much more generally taken for granted than now. Over the last two centuries, since the so-called industrial revolution in Europe, economic growth had been left to proceed at its own pace, rapid at some times in certain countries, more slowly in other periods and places. In our time, the less developed countries will not wait; they want their economic revolution now, and they expect its fruits within 2 generations rather than 2 centuries.

The reasons for this radical change of temper and rhythm are, I submit, partly economic, partly psychological-political.

Historically, in the heyday of western economic growth, population increased only slowly and the needs of growing numbers did not call for an accelerated schedule of progress. Today, by contrast, most underdeveloped countries are already densely settled and their population is increasing at unprecedented rates. It takes therefore more rapid growth just to keep up with growing needs. Even faster growth is necessary to raise the generally depressed standard of living. This, then, is an economic reason for making haste deliberately.

While it is increasingly difficult to provide for growing numbers, vast masses of people have become aware of the better things of life and are demanding a greater share. Quite naturally, most governments could not remain passive in the light of such social and political pressures. They feel compelled to act instead of waiting for growth to come about in its own good time.

Thus, as gradual growth is replaced by accelerated development "under forced draft," the role of Government is being transformed in the process: if changes have to be brought about quickly, the Government tends to take on functions of assistance, promotion, or even operation which a more leisurely course of events would not seem to call for. This trend has taken distinct forms in Communist-controlled countries and in free nations. In the former all initiative and activity is centrally controlled, while in the latter important functions are reserved to free enterprise, notwithstanding a measure of programing or planning.

It may be well to recall that a tendency toward broader Government functions is not by any means unprecedented even in the more advanced free-enterprise economies. In times of stress most countries, including our own, have assigned far-reaching functions to Government. Moreover, historically, most free-enterprise economies in the Western World have, at one time or another, relied on State intervention to a much greater extent than is often realized. Nonetheless, such periods of increased Government activity have been followed in due course by more—not less—private initiative after the preconditions for faster growth had been created.

Hence, the prevalence of Government activities in early stages of economic development need not necessarily be taken as *prima facie* evidence of socialistic tendencies. The need to marshal scarce resources, to coordinate scattered efforts, and to formulate a judicious path of development makes measures of planning unavoidable. It is eminently desirable to distinguish between this need and the overall direction of enterprise which characterizes a Socialist economy.

In fact, the creation of planning institutions that are compatible with democratic concepts offers the best prospects for the new countries to develop a stable alternative to the lure of totalitarian centralism.

By the same token, it would be harmful to allow the Communists to monopolize the idea of premeditated economic development, for they are already trying very hard to be identified with the cause of industrialization in the minds of the people in retarded areas.

In this respect, the Communists have shown themselves well attuned to one of the strongest emotional drives in large areas of the world today—the desire for economic and social betterment.

This drive, in fact, has linked up with a second and perhaps even more powerful urge—the desire for independence and equal status in international affairs. To be free in a formal sense is no longer enough for those who have already acquired political independence. To be economically dependent upon powerful industrial nations is resented in some instances by underdeveloped countries almost as deeply as the political aspects of colonialism.

Diversification of the economy and, especially, industrialization are seen as a means to reduce this dependence. The urge towards economic development is thus grounded in some of the most dynamic aspirations at large in the world. Hence, we should not be surprised by the near-religious fervor with which it is supported in areas where many people believe, rightly or wrongly, that they have been denied an equality of opportunity in the past by bad fortune or perhaps even intentionally.

No wonder, then, that a country's attitude towards economic development has come to be regarded in underdeveloped countries as a touchstone of its identification with their needs and aspirations. The advanced industrial nations, already under a cloud on account of their accumulated wealth, are alternatively suspected of neglect and of ulterior motives. Russia by contrast postures as a newcomer who pulled himself up by his own bootstraps and who is therefore capable of the best disinterested advice. No matter how historically false the claim and how frightful the cost of the prescription—the example looks attractive to many.

The degree of identification with the development goals of the underdeveloped countries has thus become an outstanding issue in international politics. Moreover, much more than sympathy and interest is expected from the industrial nations. Economic development requires resources which are scarce in underdeveloped areas—financial, technical, managerial, and administrative. These countries are therefore looking to those more advanced for trade and assistance in many guises. However, since such dynamic aspirations are involved, decisions to give or withhold cooperation symbolize much more than the material contribution in question.

The crucial ingredient is an evidence of identification with what these people want most—a better life, greater economic security and independence, and a respected place in the family of nations.

To cooperate or to deny—down to the last detail of negotiation and implementation—the issue is loaded with the emotional impact of those strong desires.

Thus political implications of truly explosive potency have been superimposed on economic issues. When it comes to discussing policies and programs, it may be well to bear in mind that they involve the international manifestations of the most fundamental human aspirations in the world today.

Representative BOLLING. Thank you, Dr. Aubrey.

Our second speaker today is Dr. Alexander Eckstein, of the department of economics at Harvard University. After service in the United States Army in World War II, he was with the FAO of the United Nations and then had a fellowship in Geneva. While in the Department of State, he was a senior economist on far-eastern problems. An important reason for inviting him here today was his recent coauthorship of a book entitled "Prospects for Communist

China." This morning his topic is Red Chinese Development and Prospects.

Dr. Eckstein?

### STATEMENT OF ALEXANDER ECKSTEIN, DEPARTMENT OF ECONOMICS, HARVARD UNIVERSITY

Dr. ECKSTEIN. Mr. Chairman, in trying to think through how I might serve the purpose of the committee best, it seemed to me worth while to concentrate on a few major aspects of Chinese Communist economic development, rather than attempt to give a comprehensive and fully integrated analysis of the economic-growth process in Communist China. With this in mind, I would like to address myself briefly to the following five questions:

1. How has mainland China's economy fared since Communist takeover in the fields of agricultural and industrial production?

2. How does this performance compare with that of India and the Soviet Union?

3. Does growth in production seem to be matched by parallel trends in consumption?

4. What effect is Chinese Communist agricultural policy likely to have upon farm output and the character of economic growth?

5. What role does Soviet economic assistance play in Chinese Communist economic development?

In an attempt to answer the first two questions, I assembled the data presented in appendix tables A, B, and C. In these tables you will find output and rail freight turnover data for the principal industrial and agricultural commodities produced in China, India, and the Soviet Union.

In the case of India and China, these refer to developments during recent years and targets for the second 5-year plans.

The Soviet statistics, however, relate to the prewar period and are designed to place the rates of Chinese and Indian expansion against the background of Soviet plan performance from 1928 to 1937.

Proceeding on the basis of the physical output and freight volume data, I then calculated the average annual rate of increase in production and freight volume for China, India, and the Soviet Union.

The results of these computations are presented in table I of the statement that is before you.

One of the things that all of these data indicate is that China's mainland economy seems to have been expanding very rapidly, both during the period of rehabilitation following Communist takeover (1949-52) and since the inauguration of the first 5-year plan.

As one might expect, production grew much faster in the investment-goods industries than in consumer-goods manufacture or in agriculture. However, even in these fields, this appears to have been a period of marked growth.

One of the questions that naturally arises in this connection is, How reliable are the statistics on which these conclusions are based?

In this respect, the situation facing an economist analyzing developments in Communist China is much more complex and difficult than that confronting the Soviet specialist.

In the absence of a central authority capable of exercising full and effective control over all provinces of mainland China, and owing to

a host of other reasons too detailed to be considered here, pre-Communist Chinese statistics were grossly inadequate, and even considerably below the standards of other underdeveloped areas.

What, in effect, has happened is that, while in the last statistical organization and collection was poor, statistical findings were more or less freely reported.

TABLE I.—Average annual rate of growth in production of selected industrial and farm products in China, India, and the U. S. S. R.

[In percent]

Commodity	1st 5-year plan period			2d 5-year plan period		
	China <sup>1</sup>	India <sup>2</sup>	U. S. S. R. <sup>3</sup>	China <sup>4</sup>	India <sup>5</sup>	U. S. S. R. <sup>6</sup>
Coal.....	13.8	2.6	16.1	12.1	10.3	14.7
Pig iron.....	24.1	.....	17.1	.....	.....	18.5
Crude steel.....	28.4	73.4	8.2	21.5	27.0	24.6
Crude oil.....	30.4	.....	16.5	22.3	.....	5.9
Cement.....	16.3	12.2	17.1	16.7	15.8	9.4
Electric power.....	19.1	88.1	28.2	21.2	14.9	21.8
Paper.....	16.6	9.6	13.5	18.8	14.2	12.0
Cotton yarn.....	3.1	6.3	.....	11.2	4.0	.....
Cotton cloth.....	5.0	6.9	15	8.6	.....	5.1
Sugar.....	18.1	9.1	-10.4	.....	6.2	23.9
Food grains.....	3.9	3.8	-1.1	6.4	2.9	11.4
Rail freight volume.....	17.7	.....	16.0	.....	.....	16.0

<sup>1</sup> These rates based on first 3 years of the Chinese 5-year plan running from Jan. 1, 1953, to Dec. 31, 1957

<sup>2</sup> Based on the full 5 years of the plan that ran from Apr. 1, 1951, to Mar. 31, 1956.

<sup>3</sup> Based on rates of growth during the 1928-32 period.

<sup>4</sup> Based on projected rates of growth for 1958-62.

<sup>5</sup> Planned rate of growth for 1956-57 to 1960-61.

<sup>6</sup> Actual rate of growth during 1932-37 period.

<sup>7</sup> Finished steel.

<sup>8</sup> Electric power capacity.

Source: Computed from data in appendix tables.

Dr. ECKSTEIN. Now, however, we are faced with greatly improved standards of data collection accompanied by systematic attempts at statistical camouflage.

However, one may detect a noticeable improvement in the quality of Chinese Communist statistics since late 1952. Paradoxically many of the inconsistencies in Chinese Communist statistics are a byproduct of this change in the quality of data; as a rule, statistics published since 1953 are based on a broader coverage and are methodologically more consistent and sounder.

All of this, of course, raises the old problem of the credibility of data published by the Chinese Communists. Are these outright falsifications? It seems to me that this does not seem too likely since the very requirements of internal administration, planning and rational accounting (whatever the criteria of rationality may be), are such that a system of double bookkeeping—1 for propaganda and 1 for economic accounting—would be bound to lead to profound confusion among plant managers, party cadres, and bureaucrats in charge of economic organs.

Thus it is not so much sins of commission as rather those of omission with which the investigator has to contend. He is constantly plagued by conceptual obscurantism, by methodological vagueness, and by a proneness to make exaggerated claims for increases in production or other accomplishments that at times may reflect improvements in statistical coverage and reliability rather than real advances.



These difficulties and statistical pitfalls, however, apply more to magnitudes expressed in money terms where the basis and method of valuation is uncertain than to the type of physical output and volume figures used here.

With these notes of caution in mind, China's performance during its first 5-year plan seems to be more impressive when compared with that of India and the U. S. S. R. than when viewed independently.

Thus, in respect to every category—except cotton textiles—China outdistanced India, at least in terms of rates of growth, and in most cases in terms of absolute levels as well. It is particularly noteworthy that this statement applies even to agriculture, that is to that branch of the economy to which the Indians allotted 33 percent of their public investment resources, as compared to about 7 percent by the Chinese during 1953–55.

At the same time, the rates of industrial growth in China seem to compare quite favorably with Soviet rates based on the 1928 to 1932 period.

However, these comparative relationships may be rapidly changing during the second 5-year plan, with India placing much greater emphasis upon industrial development to the point that in some fields India may be pushing ahead faster than Communist China.

Yet, comparisons based on increases in production alone may be grossly misleading. What about changes in the levels of consumption? Unfortunately the data for assessing the latter are much less satisfactory, particularly for China, so that in this field systematic comparison is not possible.

However, on the basis of the information that is available it would seem that in this respect comparisons may be more favorable to India than to China.

In part this is a matter of deliberate choice and thus reflects two quite different approaches to planning, with the consumer looming much larger in India than in China.

Numerous examples could be cited to illustrate these differences. If I may, let me allude just to one, i. e., the different pattern of railroad utilization in India as compared to China.

In India, about 40 percent of rail transport volume is devoted to passenger traffic, while in China—with freedom of movement controlled and closely circumscribed—it is negligible.

In contrast, the Chinese utilize their rail system for movement of freight to the limit of its capacity. This naturally means that while Indian rail transport does better by the consumer, the Chinese by concentrating on freight movement can make their limited transport capacity go further in serving the purposes of increasing production and commercialization.

These different rates of growth in production versus consumption inevitably raise the question as to what are the appropriate criteria for assessing economic progress in different countries. Obviously from the standpoint of military and war-waging potential, the rate of industrial growth is of prime importance.

From an economic welfare point of view the rate of growth in per capita personal consumption may be the most meaningful criterion.

In terms of political appeal, rising standards of living and dramatic industrialization programs, accompanied by an aggressive power posture, may compete with each other.

Therefore the outcome of an India-China comparison may yield different results depending upon which of these or other possible performance criteria are applied.

I would like to turn to a different set of questions now, namely what effect may Chinese Communist agricultural policy—most particularly land and collectivization policy—have upon farm output and the character of economic growth?

From an economic point of view, collectivization can be viewed as a means for forcing a high level of saving upon agriculture, or to put it another way, it is a mechanism for transferring resources out of agriculture without compensation.

In the Soviet case, this policy was carried to the point that one can legitimately speak of a pattern of industrialization which took place at the expense of agriculture in several respects; that is, in terms of farm output and farm consumption levels.

Agriculture was kept on a comparatively short investment ration while rates of extraction from agriculture were so high that they consistently undermined farmer incentives, even in the collectives.

Yet, it is probable that in spite of these unfavorable factors Soviet farm output would have risen appreciably if not for the two major setbacks incurred by violent collectivization and the devastation of World War II.

This has important implications for assessing economic prospects in mainland China. Mao and his colleagues in adopting the Soviet model of economic growth, embarked upon a collectivization campaign as soon as their plans for a 5-year plan began to crystalize.

However they were apparently determined to learn from the Russian experience and do everything in their power to avoid the violence and the negative consequences of Soviet collectivization, reflected in wholesale slaughter of livestock and radical curtailment of farm output between 1928 and 1932.

Therefore, the Chinese adopted a policy of what may be termed "high-pressure gradualism." This involved a relentless pursuit of the collectivization objective, but based on a series of transitional forms—each successive form involving a greater degree of farm cooperation—and using the weapons of persuasion, propaganda, economic pressure, and economic incentives. In effect, it entailed the use of carrot and stick techniques in judicious combinations.

As a result, according to Chinese Communist pronouncements, 62 percent of farm households were collectivized by May 1956. According to all of the available evidence and contrary to the expectation of most observers, this was and is being carried through without large-scale organized peasant resistance.

There seem to be tensions and excesses here and there, but there is no evidence of mass violence, of livestock slaughter, and of disruption of output.

Unless the situation changes, this may have far-reaching implications for the future course of China's economic development.

It could mean, that unlike the Soviets, the Chinese Communists may be able to have their cake and eat it too. That is they may be in a position to pursue their industrialization objectives and concurrently attain at least modest increases in farm output.

In such a case, the Chinese Communists would be in a position to relax their pressure on agriculture and on the consumer sector in general.

This in turn could mean that other things being equal, the Chinese could place greater reliance upon incentives, even in agriculture, than the Soviets were able to do.

Finally let me turn to the issue of Soviet aid which obviously has an important bearing upon the rate at which the Chinese Communist economy will grow.

May I say that my remarks on this problem are based on a rather detailed study of Sino-Soviet economic relations which I have recently completed for the Council on Foreign Relations.

It should also be added that this is a most complex problem and one on which our information is more incomplete than perhaps on any other aspect of the Chinese Communist economy.

It would obviously be beyond the scope of your present inquiry to go into all these complexities.

I will therefore confine myself to reporting the conclusions of my study with the understanding that the supporting evidence and analysis are pulled together there.

Given Mao's "lean-to-one-side" policy and free world strategic trade controls, Communist China has become almost exclusively dependent upon the Soviet Union for her imports of capital goods and technical skills.

However on the basis of all of the available evidence, the preponderant bulk of these imports seem to be paid for with Chinese exports. Sino-Soviet economic relations have been largely governed by two successive agreements.

The first of these, concluded in 1950, provided for a line of credit equivalent to US\$300 million to be extended over a period of 5 years.

The second, negotiated upon expiration of the first at the end of 1954, was much more vague, apparently providing a new loan of 520 million rubles or US\$130 million at the official rate of exchange. If this new line of credit was to be extended again for 5 years, the annual proceeds of the loan would not even quite cover the annual payments or repayments due on the first loan. This in combination with (a) the Chinese claim that their trade is essentially in balance, and (b) other bits of scattered evidence, would strongly suggest that Soviet economic grants-in-aid or loans to Communist China may have been negligible in the last 2 years, the bulk of assistance being confined to military deliveries.

This conclusion would seem to be belied by widely publicized expressions of gratitude for the Soviet aid rendered.

However, in the Chinese Communist vocabulary all imports from the Soviet Union are viewed as aid, and this is quite explicitly stated.

This of course does not mean that the economic ties between China and the Soviet Union are not very intimate or essential from the standpoint of Chinese economic growth.

It only indicates that Communist China's economic link to the Soviet Union is primarily based on trade rather than aid in our sense of the term. This trade naturally carries with it, more or less automatically, a great deal of technical assistance.

Thus on the basis of Sino-Soviet agreements, 156 of the key capital projects inaugurated by Communist China during its first 5-year plan are to be designed, equipped, and installed by the Soviets.

These are projects which the Chinese could never carry through on their own at their present stage of development. But they are projects which are not apparently financed by Soviet grants or loans, but are paid for with Chinese exports.

(The appendix tables previously referred to follow:)

APPENDIX TABLE A.—*Selected economic-growth indicators, Communist China, 1949-55, and targets for 1957 and 1962*

I. INDUSTRIAL PRODUCTION<sup>1</sup>

	Previous peak		1949	1952	1955	1957 plan	1962 plan
	Year	Production					
Coal.....	1942	61,875	30,984	63,528	93,604	112,985	190,000-210,000
Pig iron.....	1943	1,801	246	1,900	3,630	4,674	-----
Steel.....	1943	923	158	1,349	2,853	4,120	10,500-12,000
Crude oil.....	1943	320	122	436	966	2,012	5,000-6,000
Cement.....	1942	2,293	661	2,861	4,503	6,000	12,500-14,500
Electric power.....	1941	5,955	4,308	7,261	12,278	15,900	40,000-43,000
Cotton yarn.....	1933	2,447	1,803	3,618	3,968	5,000	8,000-9,000
Cotton cloth <sup>2</sup> .....	1936	45,008	30,178	89,273	103,220	(163,721)	(235,000-260,000)
Sugar <sup>3</sup> .....	1936	(414)	-----	249	410	686	(2,400-2,500)
Flour.....	-----	-----	-----	2,990	-----	4,670	-----
Paper.....	1943	165	108	372	589	655	1,500-1,600
Cigarettes.....	1947	2,363	1,600	2,650	3,567	4,700	-----

II. AGRICULTURAL PRODUCTION (IN 1,000 METRIC TONS)

	1949	1952	1953	1954	1955	1957 plan	1962 plan
Food crops <sup>4</sup> .....	113,181	163,913	166,832	169,512	183,933	192,810	262,500
Rice.....	48,645	68,426	71,272	70,851	78,024	81,770	-----
Wheat.....	13,808	18,123	18,281	23,332	22,965	23,725	-----

III. RAIL FREIGHT VOLUME

	1950	1952	1955	1957 plan
Actual (billion ton-kilometers).....	39.4	60.2	98.1	120.9
Index (1952=100).....	65.4	100.0	163.1	201.0

<sup>1</sup> Units: Coal, pig iron, steel, crude oil, cement, sugar, flour, and paper in metric tons; electric power output in millions of kilowatt-hours; cotton yarn in 1,000 bales; cotton cloth in 1,000 bolts; cigarettes in 1,000 cartons.

<sup>2</sup> Figures in parentheses include handieraft production using machine-spun yarn.

<sup>3</sup> Figures in parentheses include sugar produced by nonmechanized methods.

<sup>4</sup> Including soybean.

I. INDUSTRIAL PRODUCTION

	Index (previous peak year=100)		Index (1952=100)		
	1949	1952	1955	1957 plan	1962 plan
Coal.....	50.1	102.7	147.3	178	315
Pig iron.....	13.6	105.5	191.1	246	-----
Steel.....	17.2	146.1	211.5	306	834
Crude oil.....	38.1	136.3	221.8	462	1,261
Cement.....	28.8	124.8	157.4	210	472
Electric power.....	72.3	121.9	169.1	219	572
Cotton yarn.....	73.7	147.8	109.7	138	235
Cotton cloth.....	67.1	198.3	115.6	(147)	(222)
Sugar.....	-----	(108.9)	164.7	276	(543)
Flour.....	-----	-----	-----	156	-----
Paper.....	65.5	225.3	158.4	176	417
Cigarettes.....	67.7	112.1	134.6	177	-----

## II. AGRICULTURAL PRODUCTION

	Index (1952=100)					
	1949	1953	1954	1955	1957 plan	1962 plan
Food crops.....	69.0	101.8	103.4	112.2	117.6	160.1
Rice.....	71.1	104.2	103.5	114.0	119.5	-----
Wheat.....	76.2	100.9	128.7	126.7	130.9	-----

Sources: 1. State Statistics Bureau of the People's Republic of China, Report on the Fulfilment of the State Plan in 1955. Statistical abstracts of this document contained in Hsin Hua Pan-yueh-kan (New China Biweekly), No. 17, Sept. 6, 1956.

2. Eighth National Congress of the Chinese Communist Party, Recommendations on the Second 5-Year Plan (1958-62) Jen Min Jih Pao (People's Daily), Peking, Sept. 29, 1956.

## APPENDIX TABLE B.—Selected economic growth indicators, U. S. S. R., 1913-37

Production	Unit	1913	1928	1932	1937	Index (1913=100)		
						1928	1932	1937
Coal.....	Million tons.....	29.1	35.5	64.4	128.0	122.0	221.3	439.9
Pig iron.....	do.....	4.2	3.3	6.2	14.5	78.6	147.6	345.2
Steel.....	do.....	4.2	4.3	5.9	17.7	102.4	140.5	421.4
Cement.....	do.....	1.78	1.85	3.48	5.45	103.9	195.5	306.2
Crude oil.....	do.....	10.3	11.6	21.4	23.5	112.6	207.8	276.7
Electric power.....	Billion kilowatt hours.....	2.0	5.0	13.5	36.2	250.2	675.0	1,810.0
Cotton cloth.....	Million meters.....	2,672	2,678	2,694	3,448	100.2	100.8	129.0
Sugar.....	Thousand tons.....	1,358	1,283	828	2,421	94.5	61.0	178.3
Paper.....	do.....	269	284	471	832	105.6	175.1	309.3
Grain.....	Million tons.....	80.1	73.1	69.9	129.0	91.3	87.3	150.0
Rail-freight volume.....	Billion ton-kilometers.....	76.4	93.4	169.3	354.8	122.3	221.6	464.4

Sources: Central Statistics Office, Narodnoe Khozaistvo S. S. S. R., Statisticheskii Sbornik, Moscow, 1956. State Plan Commission, Third 5-Year Plan, Moscow, 1939. Naum Jasný, The Socialized Agriculture of the U. S. S. R., Stanford University Press, 1949.

## APPENDIX TABLE C.—Selected economic growth indicators, India, 1950-51 to 1955-56, and targets for 1960-61

Production	Unit	1950-51	1955-56	1960-61	Index (1950-51=100)	
					1955-56	1960-61
Coal.....	Million tons.....	32.3	36.8	60.0	113.9	185.8
Finished steel.....	do.....	1.1	1.3	4.3	118.2	390.9
Cement.....	do.....	2.7	4.8	10.0	177.8	370.4
Electricity (installed capacity).	Million kilowatts.....	2.3	3.4	6.8	147.8	295.7
Cotton yarn.....	Million pounds.....	1,179	1,600	1,950	135.7	165.4
Mill cloth.....	Million yards.....	3,718	5,200	-----	139.9	-----
Sugar.....	Million tons.....	1.1	1.7	2.3	154.5	209.1
Paper.....	Thousand tons.....	114	180	350	157.9	307.0
Foodgrains.....	Million tons.....	154.0	65.0	75.0	120.4	138.9
Cereals.....	do.....	146.0	55.0	-----	119.6	-----

<sup>1</sup> Relates to the year 1949-50.

Source: Government of India, Planning Commission, Second 5-Year Plan—A Draft Outline, February 1956.

Representative BOLLING. Thank you, sir.

Our next speaker is well known not only to this committee but also to the Nation. I will not recite his illustrious career in full this morning in the judiciary, the Army, the United States Senate and in diplomacy. Senator John Sherman Cooper has had a rare opportunity to observe at first hand the problems of India as our Ambassador.

As most of you know, he has just returned from a flying trip back to that country. Having just considered Red Chinese development, we

are now privileged to have Senator Cooper contrast for us The Development Effort of India.

Senator Cooper, you may proceed as you wish, sir.

**STATEMENT OF HON. JOHN SHERMAN COOPER, UNITED STATES  
SENATOR FROM THE STATE OF KENTUCKY**

Senator COOPER. Congressman Bolling and members of the committee: I thank you for this opportunity to testify briefly before you. I might say that only yesterday I returned from India and I have not had the time to prepare a statement, so I will speak without a prepared statement. I am certain a great many of the things that I am going to say are known to the committee and they represent more a statement of aims and of progress in India rather than of the philosophical ideas which lie behind the efforts that India is making toward development.

I would say that I do not believe that in our country there is a wide impression of the problems which India faces in its development and of the real progress that it is making and as I see it, the importance of that progress to the democratic world.

I think we should always remember that India is the second largest country in the world in point of population with over 380 million people, and that it is the sixth largest in land area. I believe myself from my experience in India that it is because of these facts and so many other factors that India is the actual leader of the countries in that area of the world.

Some of the difficulties which India faces in its industrial development can be very easily pointed up when we realize that its gross national product amounts to about \$22 billion, that its average per capita income is approximately \$55 and that only 5 to 10 percent of the people of India earn over \$300 per year.

Those facts point up the difficulty of securing funds for investment which are necessary for development.

As you know, India has just completed its first 5-year plan, and in March of this year began its second 5-year plan. Its first 5-year plan called for an investment, both public and private, of \$7½ billion.

Four and a half billion dollars by what is called the public sector, that is by funds furnished by the Government, both the central Government, or the center as they call it, and the States, and \$3 billion by private industry.

Not all of that money was actually spent, but I think perhaps 90 percent of it was actually put into development.

The second plan calls for an investment of about twice that amount, approximately \$14.9 billion.

Four billion nine hundred million will come from the private sector, that is through private investment, and \$10 billion will be invested from funds secured by the center and by the state governments.

I know the question arises—and it arose in my case—as to why these sums should be fixed as the sums for investment either in the first plan or the second plan.

First, I think that the first plan was a natural extension of the problems which India faced at the coming of its independence.

The British had formed in India some kind of an industrial economy. For example, there was a railway system embracing about

34,000 miles. I think it is the third largest in the world and that system, as with many railway systems at the end of the war, had greatly deteriorated and needed rehabilitation.

Second, there were great imbalances in the kind of administration that England had given India and despite this industrial development, the food and clothing needs and educational needs and many social needs of the Indian people had not been taken into full account.

So the purposes of the first plan might be stated to have been directed toward raising the living standards of the Indian people as quickly as they could be. And that meant an emphasis upon agriculture.

That meant, too, attention to the use of fertilizer, to irrigation, and to bringing land back into production.

I think it can be said that their first 5-year plan had quite a measure of success. It raised agricultural production by about 12 million tons of food, an increase of about 20 percent. It raised their cotton production, I think, about double, for clothing. The national income went up by about 18 percent, that is the gross national product; and industrial income in all of its different phases went up about 50 percent.

The second plan in a way, then, became an extension of the first plan. The progress which had been begun during the first plan called for additional expenditures in the second plan. For example, in the first plan multipurpose projects had been initiated in the field of hydroelectric power and there were others which called for increased and continued expenditures.

But in the second plan a new emphasis was given to industrial expansion. There was indicated the need for steel, the need for cement, the need for machine tools. Those things which would build industry and also the tools which would permit the building of other tools which would in turn generate industry in India and produce capital goods.

And yet I think it is important to note that unlike what is generally thought about China, there has not been placed in India the tremendous emphasis upon complete industrial expansion. A great part of (the procedures which are to be developed from) all their resources during the second 5-year plan again go to agriculture to provide food for their people, and for clothing and for social purposes.

It is estimated that the second 5-year plan can raise the gross national product of India by 25 percent and that it can supply employment for the new labor force of about 8 million people.

No one knows exactly how many people are employed in India or what part of employment is in terms of part time, but it is estimated that this second 5-year plan—if it can build industry—can provide jobs to take care of the 8 million who will become employable.

It is also projected that these gains will permit an increase in per capita income from about \$55 a year to \$66 a year. The gross national product, as I have just said, will increase from \$22 billion to \$28 billion a year, about 25 percent. And in individual consumption from 12 to 20 percent.

The second 5-year plan provides for public investment of \$10 billion and private investment of \$4.8 billion. The problems which are inherent in the plan I think can be stated briefly. The first problem is that of financing. The Indian Government assumed it would be able to provide for the financing of half the public sector, that is \$5

billion in taxes and borrowing; and that means increased taxes and increased borrowing.

It calls for deficit financing of about \$2½ billion. And there is needed foreign exchange of \$2.3 billion. The Indian Government believed that it could secure about \$200 million in new investment; that from different sources of grants or loans, not taking into account the United States, it could secure around \$300 million; that it would draw down something like \$400 million of its sterling resources, all totaling roughly a billion dollars and that there would be left a gap of something like a billion three hundred million dollars which is unaccounted for.

While Colombo powers make available a very reasonable amount of aid in different forms not only to the Indian Government but to other governments who are members of the Colombo powers, the two biggest sources left are the Soviet Union and the United States. I think the committee has been acquainted with the efforts that the U. S. S. R. has been making particularly in that part of the world.

The committee now knows that the Soviet Union has agreed to fabricate and build a steel plant in India amounting in cost to about \$100 million.

That is, it has agreed to sell India about a million tons of steel. Recently it has made available to India a credit of something over a hundred million dollars.

I don't need to emphasize at great length the political implications of India's plan but I do want to mention it. India, I would think, is the one country in that area other than Japan which has an integrated plan for development. It has a good economic background. It has good economic resources. It has an able, if small, corps of administrators. It is attempting to carry out this development, it is carrying out this development, by democratic methods, by voluntary and cooperative methods.

I would not expect that either India or China would say that they are in competition with each other, but nevertheless a fact is a fact.

They are in competition. And the Indian people have been aroused as to the possibilities of development and the benefits that can flow from development.

If India should fail to achieve its aims, I think there will be a large measure of disappointment in India and there will also be questions raised throughout the whole area as to whether democratic methods of development are efficient and can meet the need of these newly independent countries.

So there are large political problems involved.

I testified at some length before the Foreign Relations Committees and the Appropriations Committees of House and Senate early this year. I myself believe that our aid programs, while they are good and while they have given great help, yet fail to be as effective as they can be in relation to the underdeveloped countries for at least three reasons.

One is the lack of assurance of continuity. We know the constitutional problem which the Congress faces, but these countries must operate under long-range plans for development, particularly if they are developing large scale projects which involve large expenditures of money. But they cannot rely, of course, upon the assurance of congressional action each year. It means that our aid



tends to be used in fringe projects, most of which are not the great wealth generating projects.

Second, even though we are able to furnish money each year to these countries which represents foreign exchange, there isn't any real assurance that that money can be used to buy capital goods in the United States. We know the problem of price has one bearing upon it. But that is not the only factor involved. There is such a tremendous demand for our own product that we are not able to assure the delivery of capital goods to these countries.

I believe this example is significant. India needed the assurance of 6 million tons of steel. It was able to get the assurance of 1 million tons of steel from Russia, 300,000 tons from Poland, the usual deliveries from Great Britain, but as far as I know, they could not get the assurance of a single ton of steel from the United States. There are many factors involved in that. I know those factors. I am not now trying to argue the different reasons which constitute that difficulty. But what I am trying to say is that no matter how much money we furnish in aid, unless we are able in some way—and it must, of course, be through voluntary and cooperative methods—to see to it that some of our great production is available upon assured terms to these underdeveloped countries when that second problem presents itself.

The third problem is one of training. These people are tremendously interested of course in being able to run their own country, to be economically independent, and this demands training.

Our point 4 programs are valuable, but they do not furnish exactly the kind of training that I think is necessary. What is required is the skilled working man or the engineer who will give training in the actual operation and running of the factories and industries that are built.

I might say that with respect to all three of these points, continuity, the assurance of capital goods and the training, the Soviet Union has developed its plan to meet these points.

We have not.

I know they can do it by fear, by order; we can't. But it seems to me that in a country like ours which prides itself, and rightfully so, upon its ability to produce, that in some way—if we are to be effective with our aid to these underdeveloped countries—we have to develop some method of cooperation with industry, if we are going to furnish money and make available some assurance of supply of capital goods and training.

I suppose my time is exhausted, and I will not continue longer, except to say that although I wasn't in India very long, about 15 months altogether, yet I came away with the conviction that the Indian Government was making a great and tremendous effort to develop, and that what it does, whether it intends it or whether we intend it, will have a tremendous impact upon democratic progress in Asia. If India is able to succeed in its development plan, I think it will give impetus to democratic processes in Asia, and I don't think we can fail to take that into account.

We may disagree with policies. We may disagree upon many matters, as we do, but as I see it the important thing is that 10, 15, or 20 years from now India and these other countries emerge as stable, successful democratic countries. That will perhaps be more important

to us in the long run, too, than whether we agree on every matter of policy that presents itself year after year.

Just now this problem of foreign exchange is very urgent for India. It has been heightened by the Suez Canal problem, and by rising costs and some inflation in India and it is a very, very urgent problem.

What the Congress does about it certainly is a matter for the Congress to consider carefully, and I find myself now to be a Member and I will have to be thinking about it myself.

This has been very general, but I wanted to give you these general ideas.

Representative BOLLING. Thank you very much, sir.

Our next speaker is Prof. Jerome B. Cohen of the City College, New York. Dr. Cohen, after service with the Navy in World War II, was for a period in the Department of State and went on a special mission to Japan. His writings on the economic problems of Japan have established him in his profession as this country's leading authority on that subject. Our two previous speakers have given us sketches of the two approaches to economic development.

Japan faced the problems of economic development in an earlier period, and we have asked Dr. Cohen both to contrast the Japanese approach to the problem of development and also to discuss the Japanese economic outlook.

Mr. Cohen, you may proceed as you please.

**STATEMENT OF JEROME B. COHEN, PROFESSOR OF ECONOMICS,  
BERNARD M. BARUCH SCHOOL OF BUSINESS AND PUBLIC ADMINISTRATION,  
THE CITY COLLEGE, NEW YORK**

DR. COHEN. Mr. Chairman and members of the committee, I find my statement of 37 pages is considerably longer than I can cover in 15 minutes, so let me sample here and there.

In one sense I am here on the wrong day. Your outline puts Japan under the heading of underdeveloped countries. It is far from that.

Over the past century it has undergone an amazing transition in both agriculture and industry so that today it is the leading industrial nation in Asia and it has in agriculture achieved those gains in productivity, which the underdeveloped countries of Asia seek, at present, to attain.

Japanese rice yields per acre, for example, are among the highest in the world. I would suggest that in your printed volume if you have one, you interpose Japan between the industrially developed countries of the west and the less developed ones of Asia.

It may be well to begin by considering Japan in its present Asian setting. Since you are concerned with industrial development will you please turn to page 5 in my statement.

If experts had been assembled a hundred years ago and had been asked to forecast which country in Asia would be the most industrialized a century later, the country they would have been least likely to have chosen was Japan. The Japan of the 1850's was a barren, backward country, largely shut off from the rest of the world for more than two centuries.

Lacking in resources, the 35 million people eked a scanty and precarious living from the seemingly inhospitable soil. So great was

the pressure of population on the land at that time that infanticide was widely practiced by parents too poor to feed another mouth.

Governed by an idle, unproductive, and unimaginative horde of local lords and retainers, the country was torn with dissension and lacked political stability or constructive central government. Yet a century later in this country an economic miracle had come to pass.

A vast economic transformation had made Japan the leading industrial country in Asia. In manufacturing capacity, only Japan and India have significant plant, in all of free Asia.

The region produces only 5 percent of the world's crude steel, 10 percent of cement output, and has 20 percent of world cotton spinning capacity. Japan produces 9.6 million tons of crude steel, 4.3 percent of the world total. India 1.7 million tons. Japan produces 10.6 million metric tons of cement annually, 5.8 percent of the world total. India produces 4.5 million tons. Japan produces 42 million metric tons of coal, 3 percent of the world total, India 37 million tons.

In cotton textile output, however, India exceeds Japan. India has 11.4 million cotton spinning spindles, Japan has 8.1 million, which is 8.6 percent of world capacity.

Japanese output is a major share of the total industrial output of the whole ECAFE region. Japan produces 49 percent of the total coal output of the ECAFE area, 22 percent of the iron ore, 61 percent of the cement, 69 percent of the electric power generated, 66 percent of the steel produced, 35 percent of the output of cotton yarn, and 34 percent of the production of cotton fabrics. By what means and processes Japan transformed herself into the leading industrial country of Asia is a complicated story told so well elsewhere that it need not be detailed here.

I would refer you to the magnificent volume by Prof. William W. Lockwood of Princeton called "The Economic Development of Japan, 1868-1938, which in some 600 pages details this story.

From the depths of defeat, destruction and despair, Japan has, in one short decade, staged an amazing recovery. With one exception, all major economic indices had, by 1956, exceeded prewar peaks. The exception was trade, more especially exports. Manufacturing and mining output, which fell to 30 percent of the prewar level in 1946 had by 1951 exceeded it and by 1956 was twice as high.

The increase in electric power generation has been even greater with output now 3 times the prewar level. Even in the fields of agriculture, forestry and fishery, where the growth of output is usually slow, all except sericulture, surpassed the prewar level in 1950 and by 1956 were 30 percent above prewar levels.

Real national income which was reduced to less than 60 percent of the prewar figure in 1946 roughly recovered this level by 1950 and had by 1956 surpassed it by 50 percent. Real income per capita rose 40 percent between 1950 and 1955 and by the end of 1955 was 14 percent above prewar.

The average annual rate of growth for mining and manufacturing production during the 10 postwar years has been 22 percent as against about 9 percent in prewar days. The rate of economic growth in terms of real national income has averaged more than 11 percent a year as compared to 3-5 percent prewar. From the outbreak of the Korean war to 1955, real national income rose 50 percent, nonagricultural production by 101 percent, and employment by 14 percent.

Since 1950 Japan has had a more rapid industrial expansion than any other major manufacturing country, even greater than the remarkable recovery in West Germany's industrial output.

Less of the expanded Japanese output was funneled into exports, however, than in the case of West Germany. Between 1950 and 1956 real exports (deflated to 1953 United States dollars) increased by 11 percent for the United Kingdom, 34 percent for the United States, 93 percent for Japan, and 157 percent for West Germany.

The failure of Japanese exports to expand as rapidly as West Germany's may be attributed to three factors: (a) The vast inflation which gripped Japan during most of the postwar decade; (b) The consequent fact that it was more profitable to sell at home than abroad; and (c) production costs in Japan in many lines, particularly heavy goods and chemicals, which were higher than competitors abroad.

All of these factors tended to price Japanese exports out of world markets from time to time. Exports were the one major economic series which failed to recover prewar levels by the end of 1955, when they stood at 75.4 percent of the prewar figure.

The remainder of this section of my statement goes on to discuss the factors that were responsible for Japanese recovery but I won't discuss those here.

Page 16, People and Food. The population of Japan reached 90,017,000 on July 1, 1956, making Japan third among nations in population density. Only the Netherlands and Belgium are more thickly populated. Figures compiled in 1780 and 1846 indicate that the Japanese population remained comparatively stable at about 26 million for more than a century preceding the Meiji restoration in 1868.

The natural increase in population which multiplied the Japanese population by more than 3 times and brought it to the 90-million mark is therefore a development of the past century. In Japan, as in the case of Europe, the increase in population accompanied the growth of modern industry.

Japan's growth has made the problem of overpopulation even more acute than in the past.

In 1935 each hectare (a hectare is a unit of area in the metric system equal to 2.45 acres) or 2½ acres of arable land, had to feed 14 persons. Today the same land area must feed 18 persons. Only 1 acre in each 6 is cultivable. For each square mile of farmland, Japan has more than 12 times as many people to feed as the United States has.

Now some 10 following pages of the paper point out that to live, to bring in the food that this enormous population needs to consume, to secure the industrial raw materials which are necessary for the industrial growth of Japan, Japan is greatly dependent upon overseas markets. Japan is lacking in almost all the basic raw materials and resources a modern industrial nation would expect to have and consequently this problem of earning enough exchange by exports to bring in an essential and necessary and basic volume of imports is the crux of Japan's problem and the paper then proceeds to discuss the trade problem which is the basic economic problem of Japan.

I want to touch on two aspects of that problem and, if you wish on a third, if there is time.

First is trade with the United States. I am on page 26 of my statement now.

In commercial trade with the United States, Japan has incurred large deficits in the postwar period. In contrast, in the prewar period, Japan was able to balance its trade with the United States, principally by sales of raw silk and shipping services.

Over the 1930-34 period, Japan's raw silk exports to the United States averaged 515,000 bales annually. Currently United States silk imports are but a fraction of the prewar figure. In much of the prewar period, a triangular type of trade developed whereby Japan bought raw cotton in the United States and sold finished textiles to other areas (chiefly Asian countries) which in turn sold various raw materials to the United States. Thus, although Japan showed a deficit in its trade with the United States, its exports to the rest of the world yielded the dollars, through conversion, with which to pay the United States. But the currency convertibility upon which such multilateral trade rested in the prewar period has now largely vanished.

Furthermore, the new independent countries of Asia, by exchange control, reserve their dollar earnings for themselves. The large Indonesian balances (\$210 million) owed Japan, for example, are not only not convertible, they seem to be largely uncollectible.

The large deficits in trade with the United States in the postwar period could not have been incurred, had it not been for abnormal United States dollar outlays for aid, special procurement and so forth. Having been warned that United States special procurement outlays were to be tapered gradually, the Japanese have been attempting to narrow the gap in their trade with the United States, both by shifting to other import sources and at the same time increasing and diversifying exports to the United States.

In 1955 this policy met with considerable success, though in good part due to two nontrade factors: the large increase in rice production in Japan and the sale of United States foodstuffs under surplus-disposal terms for yen rather than for dollars.

Compared to a dollar trade gap of \$514 million in 1951 and of \$469 million in 1954, the 1955 figure was narrowed to \$103 million. Japanese exports to the United States rose 81 percent in 1955 over 1954.

Japanese imports in 1955 from the United States were 21 percent lower than in 1954. Although the export expansion seemed large percentagewise, total Japanese exports to the United States amounted to only 3.8 percent of United States imports, a much smaller share than Japan's prewar proportion.

Indeed percentagewise Japan is not an important factor, at present, in United States foreign trade, taking but 4.7 percent of United States exports and providing 3.8 percent of total United States imports.

On the other hand the United States is a dominant factor in Japanese foreign trade, supplying 31 percent of Japanese imports and taking 22 percent of Japan's exports (in 1955).

Yet percentages like averages, often conceal more than they reveal. Japan is the best single customer for United States cotton, wheat, rice, and soybeans, and in the absence of convertibility and in the face of diminishing receipts of United States special funds, cannot be expected to maintain its large purchases from us, unless allowed to sell to us.

There was in 1955 a clear shift to sterling area and other sources of supply and this trend can be expected to continue slowly if we do not close our markets to Japanese products, more rapidly if domestic protectionist interests make their demands prevail in Congress.

In 1955 Japan bought \$120 million of raw cotton from the United States. It sold the United States \$30 million of cotton textiles. Japan took 647,000 bales of raw cotton, 26 percent of the total exported. United States imports of cotton textiles from Japan in 1955 amounted to 1.5 percent of total United States cotton textile production.

Now may I comment on the trade of Japan and southeast Asia, which, in a way, is directed to Senator Flanders, since it is a point which he raised in his memorandum.

In 1934-36 the countries of south and southeast Asia took 19 percent of Japan's total exports. In 1954 they absorbed 32 percent and in 1955, 28 percent. The area provided 17 percent of Japan's total imports in 1934-36, while in 1954 it supplied 19 percent and in 1955, 21 percent.

These figures indicate that although some gain in trade with the area has been achieved, the frequently voiced hope that the area would prove the main factor in improving Japan's trade position has hardly been realized. Neither as an absorber of exports nor as a provider of imports, has the area measured up to optimistic expectations. There are a number of reasons for this. In the first place, the purchasing power of the area is low; per capita incomes, while rising in recent years, are meager, even by Japanese standards. In due course development programs presently underway will increase purchasing power but this is likely to be a long, slow process, with inflation and population increases absorbing some of the gains.

Secondly the Japanese have had to face stiff competition in export sales to the area, especially from West Germany and Great Britain. Particularly in capital goods and equipment they have been undersold by the Germans, in fertilizer and rayon by the Italians, and in some categories of cotton textiles, by India.

The reparations problem is a third factor which has hindered trade development to a degree.

A fourth and very important restrictive factor is the multiplicity of trade and exchange controls, quotas, lack of convertibility, newly imposed tariffs designed to protect infant industries, etc., which face the Japanese in south and southeast Asia.

Since Japan is not a member of any trading bloc or currency area, but is very much on its own in international trade, these restrictions are a greater barrier than might otherwise be the case.

Indonesia is a case in point. Exports to Indonesia fell from \$123 million in 1954 to \$68 million in 1955 (although imports rose slightly, from 62 to 67 million dollars). Indonesia's inability to pay either in goods or in foreign exchange caused Japan to reduce its exports.

Factors tending to stimulate Japan's trade with south and southeast Asian countries are: National development programs which tend to increase demand for imported capital goods and equipment, and raise output of goods available for export.

For example, in the case of India, Japan's exports rose from \$37 million in 1954 to \$66 million in 1955 (imports from \$32 million to \$46 million).

Other factors include United States dollar aid, such as ICA expenditures in Vietnam, which are used to buy supplies and equipment in

Japan; and Japanese investment in south and southeast Asia. The latter is developing at a slow pace but there are encouraging examples.

I cite a few in my statement.

In developing greater trade and investment ties with south and southeast Asia, the Japanese must pursue a wary course. There is still a good deal of suspicion and ill will and bitterness toward the Japanese in much of the area. If they appear to be pushing too much or going ahead too fast, fear of domination will develop and further barriers will rise.

If on the other hand they fail to be resourceful, energetic and quick to seize or develop a prospectively good economic opportunity, the Chinese or Germans or Indians or British can be expected to move rapidly and the Japanese national interest will suffer.

There is a complementarity between the resources of the southern regions, as the Japanese perceived even before World War II, and Japanese industrial capacity, but if the Japanese are too obvious in exploiting it for their own ends, they will develop a hostile reaction. There is growing evidence that they realize that their posture must be one of mutual benefit and mutual assistance.

There follows a section on Japan and the Communist bloc in its economic relations, but I find I have utilized my time.

Representative BOLLING. Thank you.

(Dr. Cohen's prepared statement follows:)

TESTIMONY OF JEROME B. COHEN, PROFESSOR OF ECONOMICS, BERNARD M. BARUCH SCHOOL OF BUSINESS AND PUBLIC ADMINISTRATION, COLLEGE OF THE CITY OF NEW YORK

#### JAPAN'S ECONOMIC PROBLEMS AND OUTLOOK

Mr. Chairman and members of the committee, in one sense I am here on the wrong day. Your outline puts Japan under the heading of "Underdeveloped Countries." It is far from that. Over the past century it has undergone an amazing transition in both agriculture and industry so that today it is the leading industrial nation in Asia and it has, in agriculture, achieved those gains in productivity, which the underdeveloped countries of Asia seek, at present, to attain. Japanese rice yields per acre are among the highest in the world. I would suggest that in your printed volume you interpose Japan between the industrially developed countries of the West and the less developed ones of Asia.

It may be well to begin by considering Japan in its present Asian setting.

#### *Asia, Japan and the West*

Free Asia may be defined as the vast arc of countries stretching from Afghanistan around to South Korea, including Pakistan, India, Nepal, Ceylon, Burma, Thailand, Malaya, Cambodia, Laos, Vietnam (South), Indonesia, Philippines, Formosa, and Japan. These 16 countries (including, also, Hong Kong and Singapore) contain 785 million people, or 30 percent of the total world population, and 45 percent of the population of the free world.

If the concept of Asia is broadened to include Communist China, there are then approximately 1,368 million people in Asia, 53 percent of the population of the entire world. Of the world's 7 most populous countries, 5 are wholly in Asia—China (583 million), India (377 million), Japan (90 million), Indonesia (81 million), and Pakistan (80 million).

Asia's population is increasing, at a rate of perhaps as much as a million a month, so that the absolute additions each year are very high. Asia is not, however, as many people think, ahead in the population race. It is gradually losing especially to the Western Hemisphere. In 1850 the population of the world outside Asia was only half of Asia's. Today it is almost equal.<sup>1</sup>

<sup>1</sup> See *The Development of Asia*, background material prepared by the staff of the International Bank for Reconstruction and Development for the Monetary Conference of the American Bankers Association and Columbia University, at Arden House, March 17-19, 1954.

In the light of the overriding power struggle of our times, it is interesting to note that the population of free Asia (785 million), largely neutralist and in the main, uncommitted, is almost as large as that of the Soviet bloc (899 million).<sup>2</sup> If free Asia were to succumb to Communist ideology 65 percent of the world population, or almost two-thirds, would be overwhelmingly hostile to the West.

The combined income of the peoples of free Asia is only about \$60 billion, just a 20th of the world total—30 percent of total world population, only 5 percent total income. The gross national product of the entire world is estimated at \$990 billion. Of this, the United States accounts for over \$400 billion, producing more than 40 percent of the world's goods and services with only 6 percent of the world's population. Free Asia, with five times as many people as the United States, produces only one-sixth of United States output. Japan, with 3.4 percent of world population, produces two-tenths of 1 percent of total output of goods and services.

#### *The economic importance of free Asia*

That this region should lag so greatly in output is paradoxical for it is rich in resources. Rice, of course, is its chief food product, with output exceeding 100 million metric tons. This is 87 percent of rice output in the free world and over 60 percent of total world rice production. Communist China is the only other major rice producer, accounting for about 28 percent of the world output. Japan is dependent upon south and southeast Asia for two-thirds of its rice imports.

Rubber leads the list of nonfood agricultural products of the area. It dominates the exports of Indonesia and Malaya and accounts for a major part of the foreign earnings of Ceylon, Cambodia, Vietnam, Thailand, and British Borneo. About 94 percent of the world's natural rubber is produced in south and southeast Asia. It is estimated that world rubber output exceeds 1.8 million tons while production of synthetic rubber is about 750,000 tons. Japan obtains all of its rubber from south and southeast Asia.

Except for cotton, free Asia encompasses the world's main sources of agricultural and animal fibers. The area contributes 92 percent of the free world's supply of abaca (Philippines), 95 percent of its jute (India and Pakistan), 54 percent of its wool (if Australia and New Zealand are added to the area), and 60 percent of its kapok (Indonesia). It is the major source of the world's raw silk (Japan and China) and also accounts for 15 percent of the free world's cotton output (India and Pakistan). Japan imports most of its wool, flax, hemp, and jute from the area.

The region's output of mineral fuels and electric power in comparison with world output is very small (1.7 percent of crude oil, 3 percent of coal output, and 6 percent electric power generation). The Asian region's coal reserves are roughly estimated at 150 billion tons. Free world reserves are about 3,700 billion tons, of which 2,500 billion are in the United States. Japan is totally deficient in high-grade coking coal, essential for steelmaking. Ordinary Japanese coal reserves are estimated at 18 billion tons, adequate but not abundant.

Petroleum production comes mainly from the East Indian Archipelago. Proved oil reserves in Indonesia and North Borneo are estimated at 2.5 million barrels, somewhat less than 2 percent of the world's known reserves. Japan's crude oil output supplies less than 10 percent of her domestic requirements and known reserves are very scanty.

Free Asia has 6 percent of the world's total iron ore output but resources are unevenly distributed in the region. India has 80 to 90 percent of the region's reserves. As a result of vast new discoveries, the total high-grade iron ore reserve of India is now estimated at 20 billion tons, compared to 6 billion for the United States. Japan obtains three-fourths of its total iron ore imports from the area. Her own reserves are very scanty and of low grade. It is estimated that Japan must import 2.2 million tons of iron ore annually to maintain industry at a level needed for 90 million people.

The region is well endowed in tungsten, manganese, and titanium, moderately in chromite and molybdenum, and poorly in other ferroalloy metals. The region is a prominent world producer (20 percent of the free world total) and exporter of tungsten ores, the main sources being Korea, Thailand (and Australia). The area supplies 41 percent of free world output of manganese. India is the world's leading producer of manganese ore and also the region's largest producer of ilmenite (titanium ore), supplying 28 percent of free world total. The Philip-

<sup>2</sup> Including Communist China's 583 million but excluding Yugoslavia's 17 million.



pires is one of the largest producers of chromite in the world, providing 13 percent of free world total. In the case of Japan, among the minerals necessary for ferroalloys, only chromite can be supplied in the desirable minimum amounts.

In nonferrous metals the area has 72 percent of free world tin reserves. Malaya has been the world's largest producer of tin ore, while Indonesia is next in importance, followed by Thailand and Burma. Japan imports all its tin ingot from the area. In contrast to tin, on the other hand, the region produces little copper, lead, and zinc. If Australia is included, output is 7, 19, and 15 percent, respectively, of free world totals. Japan has adequate supplies of zinc, substantial but inadequate deposits of copper, and is deficient in lead. No one deposits for the making of aluminum are available in Japan. She is insufficiently supplied with nickel, antimony, cobalt, phosphate, nitrate, magnesite, platinum, potash, and salt.<sup>3</sup>

The region is the world's most important producer of graphite and mica. India has, for many years, been the world's largest producer of black mica. In recent years radioactive minerals have been discovered in the region. The biggest known deposits of thorium are along the Malabar Coast, Travancore, India. Monazite reserves in India have been estimated at well over 2 million tons. Uranium-bearing ores have also been discovered in India while important uranium resources have been located in Australia. As yet no radioactive minerals appear to have been discovered in Japan.

As a result of the region's abundance of resources (except Japan), about 35 percent of United States imports of critical and strategic materials come from free Asia. The area supplies half of our imports of chromite, 99 percent of coconut oil, 66 percent of manila cordage fiber, 100 percent of graphite, 50 percent of kyanite, over 30 percent of manganese ore, 88 percent of mica, 37 percent of palm oil, 96 percent of natural rubber, 58 percent of sapphires and rubies, 95 percent of shellac, 13 percent of talc, 58 percent of tin, 10 percent of vanadium ore or concentratives, and 98 percent of pepper. In addition, the area supplies 95 percent of our burlap, 38 percent of chinchona bark, 20 percent of goat and kid skins, and 73 percent of tea.

#### *The extent of industrialization*

If experts had been assembled a hundred years ago and asked to forecast which country in Asia would be the most industrialized a century later, the country they would have been least likely to have chosen was Japan. The Japan of the 1850's was a barren, backward country, largely shut off from the rest of the world for more than 2 centuries. Lacking in resources, the 35 million people eked a scanty and precarious living from the seemingly unhospital soil. So great was the pressure of population on the land at that time that infanticide was widely practiced by parents too poor to feed another mouth. Governed by an idle, unproductive, and unimaginative horde of local lords and retainers, the country was torn with dissension and lacked political stability or constructive central government. Yet a century later in this country an economic miracle had come to pass.

A vast economic transformation had made Japan the leading industrial country in Asia. In manufacturing capacity, only Japan and India have significant plant, in all of free Asia. The region produces only 5 percent of the world's crude steel, 10 percent of cement output, and has 20 percent of world cotton spinning capacity. Japan produces 9.6 million tons of crude steel, 43 percent of the world total; India, 1.7 million tons. Japan produces 10.6 million metric tons of cement annually, 5.8 percent of the world total. India produces 4.5 million tons. Japan produces 42 million metric tons of coal, 3 percent of the world total; India, 37 million tons. In cotton textile output, however, India exceeds Japan. India has 11.4 million cotton spinning spindles, Japan has 7.8<sup>4</sup> million, which is 6.6 percent of world capacity.

Japanese output is a major share of the total industrial output of the whole ECAFE region. Japan produces 49 percent of the total coal output of ECAFE area, 22 percent of the iron ore, 61 percent of the cement, 69 percent of the electric power generated, 66 percent of the steel produced, 35 percent of the output of cotton yarn, and 34 percent of the production of cotton fabrics.<sup>5</sup> By what means

<sup>3</sup> See Japan's Natural Resources, by Edward A. Ackerman, University of Chicago Press, Chicago, 1953, p. 303.

<sup>4</sup> Before World War II, Japan had 11.5 million spindles; India (including Pakistan) had 9.5 million.

<sup>5</sup> Computed from Economic Survey of Asia and the Far East, 1955: Economic Commission for Asia and the Far East, Bangkok, 1956; and the Economic Statistics of Japan, 1955, Bank of Japan, Tokyo, 1956.

and processes Japan transformed herself into the leading industrial country of Asia is a complicated story told so well elsewhere that it need not be detailed here.<sup>6</sup>

Yet, despite the extensive industrial development in Japan, compared to western countries, the nations of Asia, including Japan and India, are far indeed from obtaining the levels of industrial development reached elsewhere. Only 26 percent of Japan's net domestic product comes from manufacturing and mining, as compared with 49 percent for West Germany, 42 percent for the United Kingdom, and 32 percent for the United States. On the other hand, in Japan 21 percent of net domestic product is derived from agriculture, forestry, and fishing, as against 11 percent for West Germany, 5 percent for the United Kingdom, and 6 percent for the United States.

When output is measured on a per capita basis in order to permit comparisons of countries regardless of size or population, we find that India produces 0.005 and Japan 0.108 metric tons of crude steel per capita, as compared to 0.396 for the United Kingdom, 0.427 for West Germany, and 0.643 for the United States. In short, while Japan's per capita steel output is 21 times India's, it is only approximately a sixth of that of the United States and one-fourth that of either Great Britain or West Germany. In coal production, Japan, with 0.0398 metric ton per capita, has almost 4 times the level of India (0.0085 metric ton per capita), but only about one-sixth that of the United States (0.227 metric ton per capita) and of West Germany (0.218 metric ton per capita), and but one-ninth that of Great Britain (0.368 metric ton per capita). Even in electric-power generation, where Japanese development is well advanced, while Japanese output is 33 times India's (0.0596 kilowatt-hour per capita as compared to 0.0018 kilowatt-hour), it is less than one-half that of the United Kingdom and West Germany (0.131 kilowatt-hour for the United Kingdom and 0.126 kilowatt-hour per capita for West Germany) and only about one-fifth of that of the United States (0.276 kilowatt-hour per capita).

#### *The web of trade*

In the 5 years, 1951-55, free Asia has absorbed about 11 percent of total world imports and has been responsible for approximately 10 percent of total world exports.

Of Asia's \$9 billion of imports, Western Europe supplied some 30 percent, the United States 20 percent, and the Asian countries themselves 32 percent (of which Japan accounted for 6 percent). Of the \$3 billion of Asian exports, 28 percent went to Western Europe, 18 percent to the United States, and 36 percent to the ECAFE countries themselves (with Japan absorbing 5.5 percent).

Over the last half decade, free Asian countries supplied about 6 percent of Western Europe's imports and took approximately 7.9 percent of Western Europe's exports. Of United States total imports, these Asian countries supplied 13 percent and took 12 percent of total United States exports.

Trade of these Asian countries with the Soviet bloc was small. In 1954 only 1.8 percent of imports from Europe came from Iron Curtain countries, while 2.4 percent of exports to Europe went to Eastern Europe. Trade with Communist China was also negligible. Thus, free Asia is linked to and dependent upon the non-Communist world for trade and payments viability. In turn, the loss of the \$5 billion market which the United States, Western Europe, and Japan have in free Asia would be a serious blow. This would be especially true for Japan, which sends over 40 percent of its exports to Asian countries and obtains over one-third of her imports from them.<sup>7</sup> Free Asia is very important to the United States and Western Europe. It is even more important to Japan.

#### *Japan's amazing recovery*

Shorn of her pre-World War II possessions, Japan is now a small country. The 142,300 square miles of the 4 main islands and the small ones nearly give Japan a land area about the size of the State of California, and yet of this area only 15 percent is arable. Into this relatively tiny fringe of land off the Asian mainland are crowded 90 million hard-working, energetic, and industrious people, gravely handicapped in their struggle for subsistence by a frightening poverty of natural resources.

Indeed, Japan is an economic paradox. Once again the world's leading textile exporter, the country must import all of its raw cotton. Although the leading

<sup>6</sup> See the Economic Development of Japan, 1868-1938, by William W. Lockwood, Princeton University Press, Princeton, 1954.

<sup>7</sup> A Statistical Survey on Trade Between Japan and Asian Countries, Ministry of Foreign Affairs, Tokyo, 1955, p. 8.

steel producer in Asia, Japan lacks coking coal and has little iron ore. Its large aluminum industry is dependent upon imported bauxite. Japan's fertilizer industry is based upon imports of phosphate rock and potassic salt. Of the 33 metallic minerals used in industry, Japan has only 6. All the rest must be imported as must 95 percent of Japan's petroleum, 78 percent of the salt, and 20 percent of the food it consumes.

As Mr. Joseph Dodge, former financial adviser to General MacArthur and foreign economic policy adviser to President Eisenhower, put it succinctly: "The fundamental problem of the Japanese nation can be expressed in the simple terms of too many people, too little land, and too few natural resources. These combine to press heavily on every circumstance of national life."<sup>8</sup>

By aggression, Japan's militarists had hoped to secure permanent economic well-being through the creation of a Greater East Asia coprosperity sphere which would insure markets for manufactures, an endless supply of essential and cheap raw materials, colonial posts for ambitious and hotheaded young men who might otherwise cause trouble at home, and space for migration to decrease the population pressure at home. Ending as it did in disaster, it not only failed to alleviate such problems, but in fact added to their intensity.

Japan, in losing its empire, lost 52 percent of its area, and with it the dream of integrated economic development. Its access to food and industrial raw materials—to oil and salt and iron ore and rice—became more, rather than less, restricted. Its administrators, colonists, soldiers, and adventurers came pouring back into the 4 home islands—over 5 million were repatriated in 2 years—and the Japanese population, 72 million at the time of surrender, has now grown to 90 million.

Japan's capacity to balance its payments by maximizing its exports of goods and services was shattered by the wartime destruction of its industry and shipping. Approximately 40 percent of the built-up area of the 66 cities attacked by air was destroyed, as was 30 percent of Japan's industrial capacity, 80 percent of its shipping, and 30 percent of its thermal power. Two-thirds of the prewar cotton with capacity of 12 million spindles was scrapped by the Japanese war administrators, and then bombing caused further loss of some 20 percent in spinning capacity and 14 percent in weaving.

From the depths of defeat, destruction, and despair, Japan has, in one short decade, staged an amazing recovery. With one exception, all major economic indexes had, by 1956, exceeded prewar peaks. The exception was trade, more especially exports. Manufacturing and mining output, which fell to 30 percent of the prewar level in 1946, had by 1951 exceeded it and by 1956 was twice as high. The increase in electric power generation has been even greater with output now three times the prewar level. Even in the fields of agriculture, forestry, and fishery, where the growth of output is usually slow, all except sericulture, surpassed the prewar level in 1950 and by 1956 was 30 percent above prewar levels. Real national income which was reduced to less than 60 percent of the prewar figure in 1946 roughly recovered this level by 1950 and had by 1956 surpassed it by 50 percent.<sup>9</sup> Real income per capita rose 40 percent between 1950 and 1955 and by the end of 1955 was 14 percent above prewar.

The average annual rate of growth for mining and manufacturing production during the 10 postwar years has been 22 percent as against about 9 percent in prewar days. The rate of economic growth in terms of real national income has averaged more than 11 percent a year as compared to 3 to 5 percent prewar. From the outbreak of the Korean war to 1956, real national income rose 50 percent, nonagricultural production by 101 percent, and employment by 14 percent.<sup>10</sup>

Since 1950 Japan has had a more rapid industrial expansion than any other major manufacturing country, even greater than the remarkable recovery in West Germany's industrial output. Less of the expanded Japanese output was funneled into exports, however, than in the case of West Germany. Between 1950 and 1956 real exports (deflated to 1953 United States dollars) increased by 11 percent for the United Kingdom, 34 percent for the United States, 93 percent for Japan, and 157 percent for West Germany. The failure of Japanese exports to expand as rapidly as West Germany's may be attributed to three factors:

<sup>8</sup> Japan—Its Problems, Progress, and Possibilities, address by Mr. Joseph Dodge before the 48th annual banquet of the American Institute of Banking, New York, February 2, 1952, p. 5.

<sup>9</sup> General Survey of the Japanese Economy, Ministry of Finance, Japanese Government, Tokyo, September 1956, p. 2.

<sup>10</sup> See Survey of Economic Conditions in Japan, monthly circular, Mitsubishi Economic Research Institute, Tokyo, May 1956, p. 12.

(a) The vast inflation which gripped Japan during most of the postwar decade; (b) The consequent fact that it was more profitable to sell at home than abroad; and (c) Production costs in Japan in many lines, particularly heavy goods and chemicals, which were higher than competitors abroad. All of these factors tended to price Japanese exports out of world markets from time to time. Exports were the one major economic series which failed to recover prewar levels by the end of 1955, when they stood at 75.4 percent of the prewar figure.<sup>11</sup>

Naturally several intriguing questions suggest themselves. How did this rapid recovery come about? Since no single simple answer is likely, what were the factors responsible, in part, for what Thomas E. Dewey<sup>12</sup> described as "one of the economic miracles in the history of the world." Whether miraculous or manmade, why was the recovery more effective in Japan's domestic than in her foreign commerce? Why, that is, did exports lag behind and fail to regain prewar levels? Is the recovery firm and lasting? Has normalcy been regained or is Japan in fact, in the midst of a "fragile boom"? Are difficulties overcome major or minor, compared with those yet to be faced? Is the subtle aura of admiration for mutual accomplishment, emanating from both Tokyo and Washington premature or justified?

It is possible to isolate certain factors and claim with some degree of logic, that these were things which were especially helpful in promoting Japanese recovery.

First, the \$5½ billion of United States funds poured into Japan during the postwar decade. Since the Japanese national budget provided for an annual expenditure ranging from \$1.8 billion in 1950 to \$2.8 billion in 1956, this was pump-priming on a major scale. During the first half of the decade it took the form of \$2 billion of direct aid (GARIOA and EROA). Over the last half of the decade—the period following the outbreak of the Korean war in mid-1950—it consisted of expenditures of \$3.5 billion for special procurement, the purchase of supplies, equipment, services and amusements for United States and U. N. troops in Korea, Japan and the Ryukyus. This injection of dollar plasma rehabilitated industry, balanced Japan's payments for the decade, gave consuming power, built a foreign exchange reserve. It also raised prices, a process in which the Japanese really need little help.

Secondly, it was a decade of expanding world recovery and prosperity characterized by a high and rapidly growing level of world trade. What trade expansion Japan enjoyed did not have to come at anyone's expense. As the pie grew steadily larger, each could have a bigger piece. Between 1938 and 1948 world exports (volume) rose only 1.4 percent. Between 1948 and 1956, world trade increased 61 percent. Between 1937 and 1947 world industrial production rose 21 percent. From 1947 to 1956, world production increased 70 percent. That Japan, under United States sponsorship, should share in and benefit from, a decade of marked economic expansion, was not unexpected.

This element of United States sponsorship constitutes the third factor in Japan's recovery. While in the early days of the occupation, United States policy held that it was up to the Japanese themselves to repair the economic damage they had suffered as a result of the war they had started,<sup>13</sup> this was soon perceived to involve unrealistic assumptions. There followed a wide reversal in the occupation role in Japanese economic affairs—at one point carried to the extreme of using Allied troops to enforce collection of both Japanese rice and taxes—and a wide turnabout in the United States view of the way Japan was to be treated. The immediate postsurrender attitude, that the magnitude of the crime at Pearl Harbor was so great that severe penalties should be imposed, gave way to the theory that Japan, defeated and weak, had to be restored to economic health so that she might cease to be a drain on the resources of the United States taxpayer.

A very large number of measures were undertaken by the occupation, ranging from direct aid to currency reform, tax revision and establishment of a counter-

<sup>11</sup> See Nihon Keizai Menpo—1st quarter, no. 90, Toyo Keizai Shimpo-Sha, Tokyo, 1956, 271 pp.

<sup>12</sup> Former Governor of the State of New York and twice candidate for the Presidency of the United States. He made this statement in a speech before the Japanese Chamber of Commerce of New York at a luncheon meeting for Mr. Hisato Ichimada, Japanese Finance Minister, on October 2, 1956.

<sup>13</sup> The original United States Presidential policy statement on Japan made abundantly clear that the responsibility for economic reconstruction was to be left primarily in the hands of the Japanese people and their Government. The statement, made public on September 22, 1945, disclosed in part: "The policies of Japan have brought down upon the people great economic destruction and confronted them with the prospect of economic difficulty and suffering. The plight of Japan is the direct outcome of its own behavior and the Allies will not undertake the burden of repairing the damage." Pt. IV, sec. 3.

part fund, the proceeds of which were to be used for rehabilitation of Japanese industry. After the signing of the peace treaty in 1952, the United States Government sponsored Japan's reentry into world-trade relationship, concluding reciprocal trade agreements with her, securing her admission to the General Agreement on Trade and Tariffs, using its own tariff concession to other nations to secure favorable treatment for Japan. United States firms concluded a wide series of technical-assistance contracts with Japanese companies enabling them to obtain the latest know-how, patents, copyrights, and machinery and equipment, as well as training of their technicians. The United States International Cooperation Administration established a productivity center in Japan to help Japanese industries to become more efficient and competitive. The United States Export-Import Bank granted a long series of revolving credits to Japan to enable it to buy United States raw cotton on favorable terms and under United States surplus commodity disposal agreements with Japan, Japanese textile interests were enabled to purchase United States cotton at prices below those charged United States textile manufacturers. With United States support and urging, the World Bank granted Japan a series of loans to rehabilitate, modernize, and expand electric power and steel-producing facilities. To what extent these and a host of related measures, too numerous to detail, aided Japanese recovery, will be long debated both in the United States and in Japan but it seems reasonably clear that the positive and helpful United States attitude, in contrast, for example, to the negative, truculent and restrictive activities of the Soviet Union, eased Japan's way over the difficult postwar decade.

The postwar world trend toward liberalization of trade policies, slow and limited though it may have been, was a fourth factor which was of some benefit to Japan. In 1938 Japan was responsible for 5.37 percent of total world exports. In attempting to build back to this figure over the last decade—the effort being only half successful since Japan's exports in 1955 were but 2.44 percent of the world total—she was at least hampered less than she might otherwise have been, by the activities of the IMF, the ITO, GATT, the IBRD, the EPU and the painfully slow efforts to restore currency convertibility. While some nations continued to discriminate against Japanese products right down to the end of the decade, the general international atmosphere of disapproval and discouragement of such restrictions, undoubtedly lessened and weakened the extent of the discrimination, which in the absence of this international attitude, might have been much more severe.

The industrial boom, stimulated by the outbreak of the Korean war, was a fifth factor aiding Japanese recovery. By increasing Japanese industrial output to much higher levels than had been realized in the previous postwar years, it netted substantial profits for industry, which when plowed back raised the rate of capital formation in Japan to a new postwar high, permitted widespread replacement of obsolete and inefficient equipment. By raising employment and wage income to new high levels it led to a domestic consumption boom, which brought Japanese output to new peaks. Capital formation in Japan from 1950 on was substantially higher than in prewar years.

Paradoxically, it seems likely that the alternation of several periods of inflationary expansion followed by periods of sound money containment both helped to achieve higher levels of output and employment for Japan. The inflationary excesses of the 1945–March 1949 period, while they perhaps created more problems than they solved, did help to lubricate the Japanese economic machine and start it functioning once again. That the containment policy pursued by Mr. Dodge in 1949 and 1950 (until the outbreak of the Korean war) came just in time and was needed to prevent inflationary excesses from dissipating any gains which the monetary and fiscal acceleration had stimulated and therefore consolidated Japan's economic position and provided a more solid and sound base from which to move forward again, also seems likely. That the industrial expansion engendered by the Korean war, leading into the domestic consumption boom of 1953, carried output and employment to new high levels, was as clear as the inflationary excesses it created. Consequently the classic sound money policy instituted in the fall of 1953 by the Yoshida Government and continued largely into 1956 under the guidance of Hisato Ichimada, at the beginning of the period Governor of the Bank of Japan, later Finance Minister, was a much needed corrective, which by greatly improving Japan's monetary, fiscal and price structure, enabled her to right her international economic position and press on to new gains in this area. This monetary policy in the postwar decade may be regarded as a sixth factor contributing to Japan's economic recovery.

Finally, and perhaps most basic to this recovery, however, was the attitude and know-how of the Japanese people. Hardworking, industrious, firm in their determination to overcome poverty and devastation, they were fortunately possessed of the knowledge of industrial processes and the techniques of foreign trade. Japan is not an underdeveloped country. The Japanese people know well how to produce goods and penetrate foreign markets. They did not need to learn these basic concepts from the ground up as was true in much of the rest of Asia in the postwar decade. All they needed was a chance to apply their ingenuity and resourcefulness and when this came to them at the end of the occupation, along with fortuitous developments (to them) such as the Korean war boom and a favorable international atmosphere of expanding trade and declining restrictions, they simply put their knowledge to work. The encouraging economic results attest to the view held by careful observers of the Japanese scene, that in the context of a peaceful world, with expanding trade and rising standards of living, the Japanese will make their way.

Reviewing their accomplishments at the end of a difficult decade, a note of caution ran through many of the more skilled of Japanese analyses. While the feeling was widespread that the recovery from the immediate postwar chaos and confusion had been achieved and that Japan had successfully overcome her short-run temporary problems, there was the added view that she would now need to face her longer run, far more deep seated and basic dilemmas, before indulging in unrestrained rejoicing.

#### *People and food*

The population of Japan reached 90,017,000 on July 1, 1956, making Japan third among nations in population density. Only the Netherlands and Belgium are more thickly populated. Figures compiled in 1780 and 1846 indicate that the Japanese population remained comparatively stable at about 26 million for more than a century preceding the Meiji Restoration in 1868. The natural increase in population which multiplied the Japanese population by more than three times and brought it to this 90 million mark is therefore a development of the past century. In Japan, as in the case of Europe, the increase in population accompanied the growth of modern industry.

Japan's population in 1872 when the first national census was taken totaled 34,800,000. By 1912 it had reached 50 million; by 1937, 70 million. Since the end of World War II the population of Japan has increased by 18 million. The magnitude of this postwar increase can be fully appreciated if one stops to realize that this figure well exceeds the population of Canada, and is twice the population of Australia. Population experts predict that the country will pass the 100 million mark some time before 1970.

It is not the rate of increase in the population, which is now lower than the United States rate, but the increase in absolute numbers—close to a million a year—adding to the present 90 million in relation to a very small arable land area, which makes the long-run Japanese problem serious and difficult.<sup>14</sup>

The Japanese birth rate has declined considerably in the postwar period, and is now less than two-thirds the prewar rate. Yet the death rate has dropped even more drastically and is now less than half the prewar level. The decline in the birth rate was due in part to the enactment of the eugenics protection law (July 13, 1948) under which (a) the sale of contraceptives, banned by law up to that time, became legal, and (b) induced abortion was permitted if deemed necessary in the judgment of a designated physician and if the agreement of the expectant mother and her spouse was obtained.<sup>15</sup> The latter was probably more effective than the former in contributing to the decline in the birth rate. The number of induced abortions rose from 246,104 in 1949 to 1,140,000 in 1954. Thus the rate of abortions to births jumped from 9 percent in 1949 to a startling 64 percent in 1954.<sup>16</sup>

Japan's death rate is now down to that of Western countries. Although part of the decline may be attributable to the fact that a large number of invalids and persons of weak health died during and immediately following the war, the

<sup>14</sup> For a detailed treatment of Japan's population problem, see *Nippon Jinko Zuzetsu* (Graphical Exposition of Japan's Population), by Ayanori Okasaki, 170 pp., Toyokeizai Shinpo-Sha, Tokyo, 1955.

<sup>15</sup> The law was revised in 1952. Under the 1948 act it was necessary to apply to the eugenics protection examination committee for approval in order to perform an induced abortion. This requirement was eliminated in the 1952 act.

<sup>16</sup> See *Japan's Population Problems*, by Ayanori Okasaki, Ministry of Foreign Affairs, Tokyo, 1956, p. 7. It should be noted that the figures on abortions are only those reported to the Ministry of Welfare in accordance with the law and do not include the large number of cases of unreported illegal abortion.

importation, and subsequent manufacture in Japan, of large supplies of new wonder drugs and, particularly, the remarkable improvement in Japan's postwar public-health facilities, are the main factors responsible for the sharp drop in the death rate.

Japan's birth rate is now lower than and her death rate comparable to those of such relatively unoccupied and sparsely populated countries such as New Zealand and South Africa. In view of the marked decline which has already occurred, the birth rate cannot be expected to go much lower and Japan will do well to hold to the present level over the next decade. Thus relief from the pressure of population on the land, through a further considerable decline in the rate of population growth, is not likely.

Japan's growth has made the problem of overpopulation even more acute than in the past. In 1935 each hectare,<sup>17</sup> or 2½ acres of arable land, had to feed 14 persons. Today the same land area must feed 18 persons. Only 1 acre in each 6 is cultivable. For each square mile of farmland, Japan has more than 12 times as many people to feed as the United States has.

In the century from 1860 to 1960, Japan's population will have tripled, but its area under cultivation will have increased only a third. The area of cultivated land during the 1881-90 decade averaged 4.6 million hectares, or 12 percent of the total land area. Cultivated land was enlarged steadily until 1921 when the area reached 6.04 million hectares. The area remained relatively constant until World War II when some farmland was taken over for military purposes. Land available for crops in 1955 was estimated at 5.1 million hectares, or 14 percent of the total land area. If meadows and pastures be added to cultivated land the total rises to 17.4 percent of total land area. In striking contrast 68.5 percent of the land area of the Netherlands falls in these 2 categories, 79 percent in Great Britain, 68 percent in Italy, and 58 percent in the United States. The mountainous nature of Japan's terrain renders most of it unfit for cultivation.

As a result, Japan has but 0.06 cultivated hectares per capita, the lowest figure for any Asian, African, or Latin American country. India has 0.40, China 0.16, Indonesia 0.14, six and a half, almost 3, and 2 times as much, respectively, as Japan. The Asian comparisons may be stated in slightly different terms. Japan had a population density of 4,519 persons per cultivated square mile to 1,657 for China, 953 for the Philippines, 1,826 for the United Kingdom, 527 for France, and 221 for the United States.

The large gains in agricultural productivity which the other underdeveloped countries of Asia seek have already been attained in Japan. Japanese rice yields per acre, using extensive irrigation and fertilizer, are already among the highest in the world.<sup>18</sup> Despite the fact that in 1955 Japanese rice output reached a new all-time peak, more than 20 percent of food consumed had to be imported. In 1954, Japan spent \$624 million, or 30 percent of total imports, for foodstuffs. In 1955, it spent \$524 million or 28 percent of total imports. Japan's dependence on imports of staple foods rose from 9.6 percent in 1934-36 to 22.5 percent in 1955.

In addition to the food deficiency, most of the industrial raw materials needed to sustain manufacturing output must be imported. In 1955 textile raw materials cost Japan \$492 million; petroleum \$214 million, and minerals, metals and coal \$192 million, or a total of \$898 million—49 percent of total imports. Japan must bring in all the bauxite, raw cotton, raw wool, rubber and phosphate rock it requires, as well as the bulk of iron ore, zinc, salt and a third of the needed coking coal. Japan's domestic production provides less than 10 percent of its petroleum requirements.

In the postwar period this dependence has been heightened, rather than lessened.<sup>19</sup> For one, industrial output, utilizing imported raw materials, is now double prewar levels. Secondly, the loss of colonial areas from which Japan obtained many of these resources prewar, now makes their importation a matter of foreign exchange, rather than yen, expenditure. Thirdly, even the few resources which Japan did possess in some quantity are now approaching a condition of uneconomic recovery. In coal mining, for example, seams are now generally thin compared to those in other mining countries. In most Japanese fields they are broken and discontinuous and some of the important mines must contend with large amounts of ground water. Some galleries even extend under the sea, where water disposal, proper ventilation, and transportation are all

<sup>17</sup> A hectare is a unit of area in the metric system equal to 2.45 acres. The Japanese unit of land measure, the cho, equals 1 hectare. One cho is subdivided into 10 tan. Therefore, 1 tan equals 0.245 acre.

<sup>18</sup> Japan's Agriculture, by Seichi Tobata, Japanese Ministry of Foreign Affairs, Tokyo.

<sup>19</sup> See Economic Survey of Japan (1955-56), Economic Planning Board, Japanese Government, Tokyo, September 1956.

more difficult than in other countries. Because of such conditions mining costs in Japan are relatively high and Japanese mining and manufacturing correspondingly handicapped.<sup>20</sup>

Thus in food, in textile fibers, in metals and minerals, in coking coal, and in liquid fuels, Japan must look abroad for the satisfaction of its basic minimum requirements. Therefore the problem of assuring adequate essential supplies for its economy, and, indeed, of economic viability itself, becomes essentially a foreign-trade problem. Japan must sell enough abroad to pay for essential imports. It must generate a volume of exports large enough to cover necessary foreign-exchange expenditures.

#### *The role of foreign trade in Japan's economy*

This Japan has been unable to do in the postwar decade thus far, although the results for 1955 are hopeful. Its balance of payments and its economy have been sustained by \$2 billion of United States aid in the first half of the postwar decade and by more than \$3 billion of United States (and U. N.) special procurement and troop expenditures during the latter half. In 1954, for example, Japan's overall balance of payments showed a surplus of \$100 million, but special procurement receipts that year (included in the balance of payments) amounted to \$596 million. In the absence of these abnormal receipts Japan would have run a substantial deficit. In 1955 the balance of payments surplus was \$494 million, but this resulted, in part, from an expenditure of \$557 million for special procurement by the United States. In the absence of such United States outlays, Japan would have had a small deficit in its international payments.

In the prewar period, Japan's trade amounted to approximately 5 percent of total world trade. This was cut to a fraction of 1 percent in the immediate postwar years, but it has since been climbing. For 1955, Japan's share of world imports amounted to 2.8 percent, its share of world exports to 2.4 percent. Thus Japan is about at the halfway mark in its effort to restore its position in international trade. The fact that the ratio of exports to national income, which was 18 percent prewar, is now about 9 percent tends to confirm this. On a volume basis, Japanese exports in 1955 were but 50 percent of 1937 levels, while imports had reached 76 percent of prewar. When it is remembered that over the same period Japan's population increased from 70 million to 89.2 million, the lag in Japanese exports becomes even more apparent.

Clearly, the key to further growth in the Japanese economy, to industrial expansion and increased employment and higher levels of income, is export expansion. Unemployment is at present a serious problem in Japan. Mr. J. Marc Gardner, of the J. Henry Schroder Banking Corp., in a report summarizing his recent trip to Japan, declared: "However, as many persons are only partially employed it has been estimated that hidden unemployment and underemployment in Japan may total as high as 8 million persons."<sup>21</sup> Yet a domestic production and consumption boom alone, unaccompanied by export expansion such as occurred in 1953 would not only not help Japan's basic economic position, but would actually be harmful. For the increased domestic output would necessitate a larger volume of imports. Increased domestic demand would raise prices in Japan. Producers would find it easier and more profitable to sell at home. Japanese exports would be priced out of world markets and producers would be making little effort to sell abroad precisely at a time when greater foreign exchange earnings were needed to pay for increased imports. Thus the domestic inflation would be accompanied by a worsening of Japan's balance of payments position and the loss of foreign exchange would soon force authorities to curtail imports thus bringing the domestic boom and expansion to a halt. Lasting increases in Japanese industrial output and employment can only be achieved by export expansion.

#### *Costs, prices, and markets—Japan's competitive position*

Traditionally, Japan has built its export drives on textiles. In the production of such goods it had, and still has, the comparative advantage of a low cost and efficient operation. Exports of textiles still predominate in the commodity pattern of Japan's sales abroad. In 1955 textiles and textile products accounted for 37 percent of total Japanese exports. For 1954 the comparable figure was 42 percent. Japan has regained its position as the world's principal cotton

<sup>20</sup> See Japan's Natural Resources, by Edward A. Ackerman, University of Chicago Press, Chicago, 1953, p. 179.

<sup>21</sup> Some Observations of Our Vice President, Mr. J. Marc Gardner, on His Recent Visit to Japan, J. Henry Schroder Banking Corp., New York, January 27, 1956, p. 3.



textile exporter. In 1955 it shipped 1,139 million square yards.<sup>22</sup> India was second with 750 million square yards, Britain third, the United States fourth. In reentering world trade in rayon and other synthetic fibers Japan has had great success. A rise of 55 percent over 1954 occurred in shipments of spun rayon fabrics.

Yet the very importance of textiles in Japan's export pattern presents a future problem and threat. The usual first step in the industrialization of any underdeveloped country is the establishment of a textile industry and the imposition of protective tariffs to protect the "infant" industry. As they develop, countries tend to become quickly self-sufficient in textiles. Despite Japan's No. 1 status in the world cotton textile market, world trade in cotton textiles was 11 percent less in 1955 than in 1954, although world production was 1½ percent higher. Japanese cotton textile exports were one of its few major exports commodities which showed a decline in 1955, 9 percent below the postwar record exports of 1954. This decline, which occurred despite a sharp increase in shipments to the United States, was due primarily to restrictions on exports to Indonesia, which in the past has taken as much as a third of Japan's total cotton fabric exports. The restrictions were imposed to prevent an increase in the unpaid trade balance which Indonesia owes Japan.

For the first time the value of iron and steel exports exceeded that of cotton textiles. While total textile exports (\$722 million) still exceed exports of metals, metal products and machinery (\$657 million), the latter have been rising, while the former have been declining as a percentage of total exports. Metals and products rose from 14 percent of total exports in 1936 to 27 percent of total exports in 1954 to 33 percent in 1955, while textiles and products fell from 53 percent in 1936 to 42 percent in 1954, to 37 percent in 1955.<sup>23</sup>

This changing export pattern reflects, in part, structural changes in Japanese industry. Before World War II, the textile industry was by far the largest sector of manufacturing industry, accounting for about 29 percent (in 1936) of the value of factory production and for 38 percent of total factory employment. Today, the textile trades employ fewer workers than they did 25 years ago, although factory employment as a whole has more than doubled.<sup>24</sup> These trades are now smaller, absolutely as well as relatively, than they were before the war.

This changing structural pattern creates a problem for the Japanese in international trade because, in contrast to their advantageous cost position in textiles, in iron and steel, metal products, and machinery, they are higher-cost producers than their major competitors. The Japanese Economic Planning Board estimates that Japan still needs twice as many man-hours to turn out a ton of pig iron, or a ton of steel as Britain. Thus, in spite of the relatively lower wages of the Japanese factory hands, the labor cost per ton, is substantially greater, both for pig iron and for steel, than the British cost. The explanation of the 55 percent increase in Japanese exports of iron and steel in 1955 seems to lie in the fact that, although their prices continued to be above those of other suppliers, Japanese producers could offer earlier delivery dates or other special trade arrangements. Over the longer run, however, to cope with British, West German, and United States exports, Japanese prices will have to become competitive, as the advantage of more immediate delivery is lost.<sup>25</sup>

#### *Japanese foreign trade—an overview*

Under the impetus of the continued business boom in the United States and Western Europe, Japanese foreign trade expanded encouragingly during 1955. Perhaps the outstanding feature of Japan's developing export trade is the growing diversification both as to products and markets. Except for the United States, no one country now absorbs more than 4 percent of total Japanese exports. Only 15 countries last year bought more than 2 percent of the total. This is an advantageous development for Japan because it means that Japan is flooding no one country with excessive quantities of goods and the impact of Japanese trade expansion is minimized insofar as foreign resentment and retaliation is concerned.

<sup>22</sup> But it is far from regaining its prewar export volume of 2,800 million square yards. See *Foreign Trade of Japan*, Quarterly Fuji Bank Bulletin, vol. VI, No. 3, December 1955, p. 10.

<sup>23</sup> See *Foreign Trade of Japan, 1956*, Ministry of International Trade and Industry, Japanese Government, Tokyo, 1956.

<sup>24</sup> See *Industrial Production and Productivity in Japan*, by G. C. Allen in the *Westminster Bank Review*, London, August 1955.

<sup>25</sup> See *The Structure of Japan's Foreign Trade Before and After the War*, the Bank of Tokyo, semiannual report, Tokyo, March 1956, pp. 5-23.

During 1955 the trade gap with the United States was greatly narrowed. The previous year's trade deficit with Western Europe was converted into a surplus. Exports to Canada, Australia, and New Zealand were doubled in 1955, and exports to Africa increased by some 50 percent. While sales to Latin America were slightly lower in 1955 than in 1954, Argentina and Brazil, which accounted for about 60 percent of the Latin American total, were the leading purchasers of iron and steel products, exports of which rose 62 percent in 1955 as compared to 1954.<sup>26</sup>

Japanese Ministry of Finance Customs statistics indicate that Japanese exports rose from \$1.2 billion in 1953 to \$2.0 billion in 1955, an increase of 66 percent, while over the same period imports were stabilized at \$2.4 billion.<sup>27</sup>

For the fiscal year beginning April 1, 1955, and ending March 31, 1956, Japanese exports according to the Ministry of Finance, rose to a new postwar high of \$2,137,442,000, an increase of 24.4 percent over fiscal year 1954. Export trade during the first 3 months of 1956 (last quarter of fiscal year 1955) was 34 percent above the level of the corresponding period in the previous year. As a result the foreign exchange accounts showed a surplus of \$535 million for the whole of fiscal 1955 (ending March 31, 1956) as against a surplus of \$191 million for fiscal year 1954.<sup>28</sup>

#### *Trade with the United States*

In commercial trade with the United States, Japan has incurred large deficits in the postwar period. In contrast, in the prewar period, Japan was able to balance its trade with the United States, principally by sales of raw silk and shipping services. Over the 1930-34 period, Japan's raw silk exports to the United States averaged 515,000 bales annually. Currently United States silk imports are but a fraction of the prewar figure. In much of the prewar period, a triangular type of trade developed whereby Japan bought raw cotton in the United States and sold finished textiles to other areas (chiefly Asian countries) which in turn sold various raw materials to the United States. Thus, although Japan showed a deficit in its trade with the United States, its exports to the rest of the world yielded the dollars, through conversion, with which to pay the United States.<sup>29</sup> But the currency convertibility upon which such multilateral trade rested in the prewar period has now largely vanished. Furthermore, the now independent countries of Asia, by exchange control, reserve their dollar earnings for themselves. The large Indonesian balances (\$210 million) owed Japan, for example, are not only not convertible, they seem to be largely uncollectible.

The large deficits in trade with the United States in the postwar period could not have been incurred, had it not been for abnormal United States dollar outlays for aid, special procurement, and so forth. Having been warned that United States special procurement outlays were to be tapered gradually, the Japanese have been attempting to narrow the gap in their trade with the United States, both by shifting to other import sources and at the same time increasing and diversifying exports to the United States. In 1955 this policy met with considerable success, though in good part due to two nontrade factors: the large increase in rice production in Japan<sup>30</sup> and the sale of United States foodstuffs under surplus disposal terms for yen rather than for dollars.

<sup>26</sup> See Our Exports and Imports, Monthly Review of the Mitsui Bank, Ltd., vol. 1, No. 4, Tokyo, April 1956.

<sup>27</sup> Weekly Review of Economic Affairs in Japan, Bank of Tokyo, No. 423, Tokyo, May 5, 1956, pp. 151-153.

<sup>28</sup> News Survey, the Bank of Japan, No. 122, Tokyo, May 4, 1956.

<sup>29</sup> Japan's Foreign Trade, by Ryokichi Minobe, Japanese Ministry of Foreign Affairs, Tokyo, 1956.

<sup>30</sup> The rice crop was 30 percent greater than in 1954. In 1955 Japan produced an unprecedented bumper crop of 79 million koku (1 koku is about 5.12 bushels) compared to an ordinary crop of some 66,700,000 koku. The rice crop for 1956 is estimated at about 73,000,000 koku.

Compared to a dollar trade gap of \$514 million in 1951 and of \$469 million in 1954, the 1955 figure was narrowed to \$103 million.<sup>31</sup> Japanese exports to the United States rose 81 percent in 1955 over 1954. Japanese imports in 1955 from the United States were 21 percent lower than in 1954. Although the export expansion seemed large percentage-wise, total Japanese exports to the United States amounted to only 3.8 percent of United States imports, a much smaller share than Japan's prewar proportion. Indeed percentage-wise Japan is not an important factor, at present, in United States foreign trade, taking but 4.7 percent of United States exports and providing 3.8 percent of total United States imports. On the other hand, the United States is a dominant factor in Japanese foreign trade, supplying 31 percent of Japanese imports and taking 22 percent of Japan's exports (in 1955).

Yet percentages, like averages, often conceal more than they reveal. Japan is the best single customer for United States cotton, wheat, rice, and soybeans, and, in the absence of convertibility and in the face of diminishing receipts of United States special funds, cannot be expected to maintain its large purchases from us, unless allowed to sell us. There was in 1955 a clear shift to sterling-area and other sources of supply and this trend can be expected to continue slowly if we do not close our markets to Japanese products, more rapidly if domestic protectionist interests make their demands prevail in Congress. In 1955 Japan bought \$120 million of raw cotton from the United States. It sold the United States \$30 million of cotton textiles. Japan took 647,000 bales of raw cotton, 26 percent of the total exported.<sup>32</sup> United States imports of cotton textiles from Japan in 1955 amounted to 1.5 percent of total United States cotton textile production.<sup>33</sup>

#### *Japan and southeast Asia*

In 1934-36 the countries of south and southeast Asia<sup>34</sup> took 19 percent of Japan's total exports. In 1954 they absorbed 32 percent and in 1955, 28 percent. The area provided 17 percent of Japan's total imports in 1934-36, while in 1954 it supplied 19 percent and in 1955, 21 percent.<sup>35</sup>

These figures indicate that although some gain in trade with the area has been achieved, the frequently voiced hope that the area would prove the main factor in improving Japan's trade position has hardly been realized. Neither as an absorber of exports, nor as a provider of imports, has the area measured up to optimistic expectations. There are a number of reasons for this. In the first place, the purchasing power of the area is low; per capita incomes, while rising in recent years, are meager, even by Japanese standards. In due course, development programs presently underway will increase purchasing

<sup>31</sup> These data are based on Japanese foreign exchange statistics of the Bank of Japan. Actual Japanese imports from the United States were somewhat higher than the \$572 million (1955) reported in Bank of Japan Foreign Exchange Statistics Monthly because of cotton imports on Export-Import Bank credits and food imports paid for in yen. The discrepancy may be seen in the following:

#### JAPAN-UNITED STATES TRADE

[In millions of dollars]

	1955		1954	
	Japanese exports to United States	Japanese imports from United States	Japanese exports to United States	Japanese imports from United States
Bank of Japan Foreign Exchange Statistics Monthly.....	469	572	258	727
U. S. Department of Commerce.....	416	642	276	847

<sup>32</sup> See Monthly Report of Japanese Cotton Spinning Industry, published by all Japan Cotton Spinners' Association, No. 111, Tokyo, March 1956.

<sup>33</sup> For a more detailed statement, see testimony of Nelson A. Stitt, executive director, Council for Improved United States-Japanese Trade Relations, before the subcommittee on Cotton of the Committee on Agriculture, U. S. House of Representatives, Washington, D. C., February 7, 1956.

<sup>34</sup> Includes Burma, Ceylon, India, Indochina, Indonesia, Malaya and Singapore, Pakistan, Philippines, Thailand, and Sarawak. Excludes Hong Kong and Formosa.

<sup>35</sup> See table 26, p. 49, of Economic Survey of Japan (1955-56), Economic Planning Board, Japanese Government, Tokyo, 1956.

power, but this is likely to be a long, slow process, with inflation and population increases absorbing some of the gains.<sup>36</sup>

Secondly, the Japanese have had to face stiff competition in export sales to the area, especially from West Germany and Great Britain. Particularly in capital goods and equipment they have been undersold by the Germans, in fertilizer by the Italians, and in some categories of textiles, by India.

The reparations problem is a third factor which has hindered trade development to a degree. Although reparations agreements have been concluded with Burma and Thailand, no settlement has as yet been arranged with Indonesia, while the Philippines settlement has just been arranged. In an agreement concluded in November 1954, effective April 1955, Japan agreed to pay Burma \$250 million in goods, services and loans over a 10-year period. Likewise, Thailand is to receive \$41,666,666 in cash, goods, and services over a period of years. The Philippines agreement, approved by the Japanese Diet in June 1956, provides that Japan is to pay to the Philippines in reparations (goods and services) a total sum of \$550 millions during the next 20 years (\$25 million annually during the first 10 years, and \$30 million annually during the remaining period). In addition, the Japanese Government will facilitate the extension of commercial loans amounting to \$250 million for economic development of the Philippines.<sup>37</sup>

A fourth and very important restrictive factor, is the multiplicity of trade and exchange controls, quotas, lack of convertibility, newly imposed tariffs designed to protect infant industries, etc., which face the Japanese in south and southeast Asia. Since Japan is not a member of any trading bloc or currency area, but is very much on its own in international trade, these restrictions are a greater barrier than might otherwise be the case.

Indonesia is a case in point. Exports to Indonesia fell from \$123 million in 1954 to \$68 million in 1955 (although imports rose slightly, from \$62 million to \$67 million). Indonesia's inability to pay either in goods or in foreign exchange caused Japan to reduce its exports.<sup>38</sup>

Factors tending to stimulate Japan's trade with south and southeast Asian countries are: national development programs which tend to increase demand for imported capital goods and equipment, and raise output of goods available for export. For example, in the case of India, Japan's exports rose from \$37 million in 1954 to \$66 million in 1955 (imports from \$32 million to \$46 million).<sup>39</sup> Other factors include United States dollar aid, such as ICA expenditures in Vietnam, which is used to buy supplies and equipment in Japan; and Japanese investment in south and southeast Asia. The latter is developing at a slow pace but there are encouraging examples.<sup>40</sup> Japanese mining companies and Japanese capital are helping to develop iron ore output in Goa, in Malaya and in the Philippines. Japanese fishing companies have invested capital in Indian and Ceylonese fishing enterprises. Asahi Glass has provided 51 percent of the capital for an Indian glass company. The reparations agreements with Burma and the Philippines are likely to lead to Japanese capital investment in those countries. Prospects for increased trade with the Philippines have been enhanced, not only by the conclusion of a reparations agreement, but also by the revision of the Philippines-United States trade agreement which became effective January 1, 1956. Under the revised agreement, United States products now entering the Philippines free of normal customs duties will lose about 90 percent of this preference at an accelerated rate over the next 10 years. As the United States loses some of this market, which has amounted to about \$500 million annually, Japan can be expected to gain correspondingly.

In developing greater trade and investment ties with south and southeast Asia, the Japanese must pursue a wary course. There is still a good deal of suspicion and ill will and bitterness toward the Japanese in most of the area. If they appear to be pushing too much or going ahead too fast, fear of domination will develop and barriers will rise. If, on the other hand, they fail to be resourceful, energetic and quick to seize or develop a prospectively good economic opportunity, the Chinese or Germans or Indians or British can be expected to move rapidly and the Japanese national interest will suffer. There is a com-

<sup>36</sup> See *Postwar Economic Growth in Southeast Asia*, International Bank for Reconstruction and Development, Study No. E. C. 48, Washington, October 10, 1955.

<sup>37</sup> Fortnightly letter, the Bank of Japan, No. 135, Tokyo, May 16, 1956.

<sup>38</sup> See *Japan Trade Monthly*, No. 126, Tokyo, September 1956, p. 46.

<sup>39</sup> *The Trade Between Japan and India, Survey of Economic Conditions in Japan*, Mitsubishi Economic Research Institute, Tokyo, July 1956.

<sup>40</sup> *The Rehabilitation of Japan's Economy and Asia*, by Saburo Okita, Ministry of Foreign Affairs, Tokyo, 1956.

plimentarity between the resources of the southern regions, as the Japanese perceived even before World War II, and Japanese industrial capacity, but if the Japanese are too obvious in exploiting it for their own ends, they will develop a hostile reaction. There is growing evidence that they realize that their posture must be one of mutual benefit and mutual assistance.<sup>41</sup>

#### *Japan and the Communist bloc-economic relations*

Large sectors of public opinion in Japan regard increased trade with the Communist bloc as a necessary and desirable objective; some elements even view it as an economic panacea. What are the facts of the situation? How necessary is Communist bloc trade to Japan? How likely is it to develop?

In the midthirties about 20 percent of Japan's imports came from Korea and Formosa, which were then Japanese colonies, and another 10 percent, approximately, from China; about 25 percent of Japan's exports went to Korea and Formosa and about 20 percent to China (including Kwantung and Manchuria). Now (1955) political and economic changes have reduced imports from China, Korea and Formosa to only about 7 percent of Japan's total and exports to 5 percent.<sup>42</sup>

Before World War II, Mainland China (including Manchuria) was a major market for Japanese products, largely as a result of Japanese domination and control as well as Japanese investment in Manchuria. Today mainland China (including Manchuria) and the entire Soviet bloc, including the U. S. S. R. itself, take only 1.8 percent (1955) of total Japanese exports. In the prewar period Japan sold cheap consumer goods and textiles to China and obtained soybeans, edible oil and oil seeds, coking coal and iron ore (from Hainan Island) in exchange.<sup>43</sup> In 1955, Japan obtained only 3.0 percent of its total imports from iron curtain countries, including Red China and the U. S. S. R.

According to the Bank of Japan (Foreign Exchange Statistics), Japan exported \$28.3 million to Communist China in 1955 and imported \$50.1 million, for a net deficit of \$21.8 million. According to the Ministry of Finance (Customs Division), Japan exported \$28.5 million to Communist China in 1955 but imported \$80.7 million, for a deficit of \$52.2 million. By way of contrast, Japan's exports to Formosa in 1955 totaled \$58.4 million; imports amounted to \$76.3 million.

Naturally, when the Japanese turn to explore avenues of expanding trade with Asia, many of them think nostalgically of the old China trade.<sup>44</sup> The Osaka textile merchants, who have been among the most vociferous of those pressing for expanded trade with mainland China, are quite likely to be disappointed. It is hardly probable that with the state in China controlling foreign trade and committed to the amazing industrialization goals of the first 5-year plan, China will want to, or will have, very much exchange to buy any significant quantity of Japanese consumer goods and textiles.

In view of the huge industrialization effort, in contrast to the minimum agricultural outlays contemplated, it may be that over time China will seek to buy substantial amounts of Japanese capital goods and equipment, but it is difficult to see what can be tendered in payment. The Chinese contemplate that they can raise the index of industrial production (1952=100) to 192 by the end of 1957. They expect to raise crude steel output from 1.2 million to 4.8 million tons, over the same period.<sup>45</sup> Under the circumstances it is improbable that they will have any significant amount of coal or iron ore to spare to send to Japan. Outlays for industrialization absorb 48 percent of 5-year plan expenditures with overwhelming emphasis placed on heavy industry. Agriculture, on the other hand, is relatively neglected in the overall investment pattern, yet it is to be drained of funds in a siphoning-off process to promote industrialization. Peasant resistance, famine, starvation, which may plague Communist China over the next decade, make it questionable that any sizeable quantity of foodstuffs can be squeezed out of the Chinese economy for export to Japan.<sup>46</sup>

<sup>41</sup> See A Statistical Survey of Trade Between Japan and Asian Countries, Ministry of Foreign Affairs, Japan, 1955.

<sup>42</sup> Based on Foreign Exchange Statistics of the Bank of Japan and exclusive of any transshipments through Hong Kong, recorded as trade with Hong Kong.

<sup>43</sup> See Present Status of Japanese Trade With China, Mitsubishi Economic Research Institute, Monthly Circular, Tokyo, October 1955.

<sup>44</sup> See Trading With China, the Oriental Economist, vol. XXIV, No. 550, Tokyo, August 1956; and Trade With Communist China, the Oriental Economist, vol. XXIV, No. 548, Tokyo, June 1956.

<sup>45</sup> See The Prospects for Communist China, by W. W. Rostow et al., Technology Press and John Wiley & Sons, Inc., New York, 1954.

<sup>46</sup> See China's Export Capacity, in Sino-Soviet Economic Relations, by Alexander Eckstein, in Moscow-Peking Axis: Strengths and Strains, Harper & Bros., New York, 1957.

It is possible to qualify this doubt as to China's (or indeed the entire Soviet bloc's) ability to pay for industrial imports. Mr. George Waldstein, a Harvard graduate student, has taken the 17 leading Japanese imports (for 1951 and 1953) and compared them with Soviet bloc exports of the same products to the free world. These 17 key commodity imports accounted for almost 72 percent of total Japanese imports in 1953. It is clear that except for four commodities—coal, soybeans, timber, and oil seeds—the total volume of Communist bloc exports to all Western countries of the items urgently needed by Japan were, in both 1951 and 1953, less than the import requirements of Japan alone.<sup>47</sup>

Extending the analysis to the years 1954 and 1955 reveals that, for both years, hides and skins were exported from the Communist bloc in sufficient volume to cover Japan's import needs. In 1955 pulp requirements could barely have been covered as well. Thus in 1955 in the case of only 6 of the 17 commodities (coal, timber, soybeans, oil seeds, hides and skins, and pulp) was the bloc exporting sufficient quantities to meet Japan's import needs. These 6 commodities accounted for only 12 percent of Japan's total imports in 1955.

In the case of major imports such as cotton, rice, wool, wheat, oil, sugar, scrap iron, iron ore, rubber, and tin, the bloc seems to be incapable of meeting more than a small fraction of Japan's needs. Whether the bloc could furnish all of Japan's coal requirements, or would wish to do so, is not clear in view of the large Japanese imports relative to total bloc exports. Actually, it is unlikely that China will be able to meet even its own needs, let alone those of Japan; as for the rest of the bloc, it might conceivably wish to sell large quantities to Japan, but Poland, the major exporter, is already deeply and profitably committed to sending its coal to Western Europe. Thus it is actually unlikely that Japan could even secure its coal requirements from the bloc.

The 6 commodities—coal, timber, soybeans, hides and skins, pulp, and oil seeds—together in 1955 accounted for \$306 million of Japan's imports. This is close to a maximum amount which Japan could hope to secure from the bloc under optimistic arrangements. Actually, because of existing bloc commitments, a more realistic estimate of imports from the bloc of the 6 commodities, plus some salt, would be about \$250 million or approximately 10 percent of Japan's imports.

This judgment based on economic grounds must be qualified by a political "but." Communist countries often use trade arrangements as political weapons. Communist China must be presently importing substantial quantities of capital goods and heavy equipment from the Soviet Union, sending in exchange agricultural products and industrial raw materials. It is conceivable that in the future, either because of a desire on the part of Communist China to lessen its dependence on the Soviet Union, or in concert with the Soviet Union in an effort to pull Japan away from the West, China may shift a proportion of its capital goods purchases from the U. S. S. R. to Japan and pay with raw materials presently directed to the U. S. S. R. This would be basically a political decision. It cannot occur so long as Japan adheres to the COCOM restrictions, nor is there any present indication of a Chinese or Soviet effort along these lines.

Indicative of the pressure in Japan for more extensive trade with Communist Asia is the recent signing of an unofficial trade agreement between Japanese businessmen and North Vietnam. This is the sixth such agreement signed between the Japanese and Communist countries, including China and North Korea, with none of which Japan has diplomatic relations. While the Japanese Government has on the surface frowned on such pacts, it is unlikely that any trade could be carried on with these countries without the tacit approval of the Government. Because many of the items which Japanese businessmen promised to ship would violate the COCOM embargo, none of the agreements has been fully implemented. But they are useful to the Communists because they rouse the Japanese businessmen and increase the pressure on the Japanese Government and in turn upon the United States, to relax the trade restrictions. The trade agreements are drawn in such a way as to heighten the pressure. Trade items are divided into three categories. In one are placed those things that Japan wants most, such as coking coal and ores, and that she can get, it is claimed, less expensively from the Communist countries than from the West. To obtain items in this most wanted category, however, Japan is required to ship, in exchange, machinery, tools, and equipment, all of which are on the embargo list. Thus the pressure grows in Japan to relax the embargo and hypothetical trade totals are

<sup>47</sup> See *Showdown in the Orient*, by George Waldstein, *Harvard Business Review*, November-December 1954, pp. 113-120.

cited to indicate what Japan is losing in the way of prospective trade, by adhering to Western agreements.

The broad economic conclusion that suggests itself at this writing, however, is that, both in terms of capacity to absorb Japanese exports and more importantly in terms of ability to supply Japan's import needs, the Communist bloc has little to offer Japan. Any Japanese Government which weighed the present position of its trading relationships in the free world against a prospective or contemplated trading role as a member of the Communist bloc, could hardly escape the clear conclusion that, apart from ideological considerations, purely in the national self-interest, from an economic point of view, its future, indeed its economic survival, rests in maintaining and expanding present free world trade relationships. Obviously, Japanese strategy from this point on, however, is likely to be to try and see that they do not have to choose flatly between the Western World and the Communist bloc, but to attempt to maneuver to see if they cannot enjoy trading advantages with both.

Representative BOLLING. The final speaker this morning will also be known to most of those present. Prof. Willard L. Thorp of Amherst College has had a career of important public service. In addition to teaching, he has been an economist in business, and with the National Bureau of Economic Research. His long list of Government assignments includes top posts in the Department of Commerce and 6 years following World War II as Assistant Secretary of State for Economic Affairs. Today in addition to his post at Amherst he is the director of the Merrill Center for Economics. Dr. Thorp is going to speak to us on International Aspects of Economic Development.

#### STATEMENT OF WILLARD L. THORP, DEPARTMENT OF ECONOMICS, AMHERST COLLEGE

Dr. THORP. Mr. Chairman and members of the committee, this title permits me to talk about almost anything, and in view of Senator Flanders' interest, I think I will focus mostly on the relevant trade problems, if I may.

It is a bit unrealistic to talk about countries nowadays as though they were completely separate units. Certainly every country must give primary consideration to its economic life and program within its own boundaries. However, it is very clear that most countries in the world are unable to go very far alone.

Perhaps the United States and the Soviet Union are the two areas which come nearest to being self-sufficient. Other countries, because they lack certain necessary resources, or are so small that they cannot produce things which must be made on a large scale, or haven't yet developed the capacity to produce certain goods which at least theoretically they should be able to produce, find themselves dependent to a considerable degree on imports.

It is natural for us in the United States to emphasize the export side of things, but for most countries in the world the key foreign trade interest is imports. They need to have goods from abroad, either to maintain their workshop or to help in their economic development.

There are a number of different ways in which this trading process in the world can be organized. I suppose that if there has been any central core in American policy in recent years, it has been to encourage steps toward the development of world markets in which there are limited barriers, goods are available, and currencies are convertible. In such a world, goods would tend to be produced in the most

efficient place and sold where purchasers are prepared to offer the most purchasing power.

Obviously this program has had only partial success. We have come fairly close to de facto convertibility of currencies at times, if not de jure. We still have a great many barriers to trade, and yet I think if one looks at the world one would have to recognize that today goods tended to flow in considerable measure according to these broader economic criteria.

Having said this, I must immediately note that, within the total world picture, there are very decided limitations on world markets.

First are the number of situations in which trade is permitted only according to bilateral arrangements. This, for example, is the Soviet pattern.

I remember once arguing with the Russian delegate in the Economic and Social Council at the U. N. He said this was the fairest way because the two countries were each dealing with each other, and therefore it was equality. This never seemed quite clear to me, since countries are of different sizes and different degrees of pressure. But their policy has been, by and large, to arrange trade on a strictly bilateral, virtually a bartering, basis.

But in between the concept of world markets and the narrow bilateral procedure, there have developed certain regional arrangements. I think it is important that these be given special consideration in the record today.

The most effective regional arrangement, from the point of view of an autarky, is that of the Communist countries. The countries which are now in the Communist bloc used to do something like 25 percent of their trade with each other, and they now do 80 percent of their trade within the bloc.

This has been a matter of deliberate policy. In part it was because of their preoccupation with security and the consequent feeling that they must be self-sufficient and not in any way dependent upon any other areas. It was in part because planners don't like to have a situation in which there is an open end depending upon someone outside their orbit. If you can make a plan with other planners, this would appear to be a better way of dealing with the situation. It was clearly the Russia belief that the political integration sought in this region would be strengthened by economic integration.

It is significant that several months ago there was a newspaper story that the Soviet Union had offered to buy all of the Polish coal for the next year. It is true that the Soviet Union is having some difficulties in meeting its own coal requirements from all I can gather, but I suspect that the small amount, the small tonnage, which this transaction would have involved was mostly for the purpose of reducing the amount of freedom which Poland had in its economic relations with other countries.

This autarkic bloc has been able to function with a limited amount of import from outside. It has had to bring in rubber and wool and tin, just as we have to in the United States. This is one extreme, in a sense, of how trading can be organized.

There are some signs that the bloc is now using the trade process to establish greater relationships outside of the Communist grouping. In the last 3 years there have been a good many negotiations with other countries supported in some cases by extensions of credit. In a



few cases, such as Afghanistan and Burma, has become important enough to be dangerous from the point of view of leverage on these countries. In most other situations, including the Indian one, it is very small in terms of India's total foreign trade. Furthermore, one must remember that credits cannot be set against any single year, but are likely to be spread over several years in their actual impact on trade.

But this new trade offensive does mean that technicians and machinery of the Soviet type will have access to other countries. These programs may have great political impact in that those people in the country who have some tendency toward urging closer relationships with the Communist group will have something to point to as distinct from the aid that has been received from the Western countries. It is an interesting conclusion that autarky may strengthen internal solidarity, but it also reduce the use of economic foreign policy to strengthen foreign relationships.

There is a second political and economic grouping within the world which has lasted for a long time. That is the sterling area. This is quite a different sort of thing. So far as trade is concerned, it was integrated somewhat, at least the British Empire part of it, by tariff preferences which were set up about 30 years ago. In recent years it has been tied together mostly by the fact that because there was a central holding of reserves, there was really a convertibility among the members of the sterling area, making possible a sort of a clearing arrangement through London.

The sterling area operation involves no planning, except in terms of total levels of trade up and down such as may be required to protect the reserves of the total area. As such, it provides inducements for its members to trade with each other, but sets up no absolute barriers.

More recently, we have seen a significant regional development in Western Europe. This was encouraged by the United States Government. In the early days of the Marshall plan, there was a procedure called conditional aid, which meant we gave assistance to country A if it would spend it in country B; and then country B, receiving those dollars, in turn would get aid from the United States.

This then moved on into the European Payments Union with American dollar backing, and a procedure for general clearing and credits among the Western European countries developed. They reduced quotas more or less in parallel, and their trade with each other expanded as compared with their trade outside. This procedure would largely lose its value if convertibility became more general.

Recently there has been the suggestion, which seems to be meeting a good deal of support in Europe, of the establishment of what is called a common market. This is not a customs union. This doesn't mean that there would be the same tariff rates around all the countries. But as to their trade with each other, there would be no quotas and there would be no tariff barriers.

The common market is to be achieved over 10 years. If the British have their way, and I suspect they will because this is not out of line with the thinking of many other countries, agricultural products, food and feedstuffs, tobacco and liquid products that are potable, would still be permitted to have tariff protection.

It is worth noting that, while the elimination of quotas is not very important because the remaining quotas are mostly on the agricultural items, the elimination of tariffs would permit a producer in any one of these countries to think of the total area as his market.

It is also worth noting that if this common market develops, it will not affect the agricultural picture. It of course will not add to the supply of raw materials which the area needs to get from outside. Its impact would be largely on the manufacturing and industrial efficiency of the area, providing both the benefits of scale and the stimulus of an increased amount of competition.

This is important. It would mean that the development of productivity in the area would be continued, and it should mean a more efficient use of such resources as they have. However, it is important to realize that, unless they increase their tariffs against outside countries, this does not create any strong tendency to autarky. This leaves them still with substantial dependence on the rest of the world for a great many items.

When we talk about developing some sort of a trading region for Asia and the Far East, we have to remember that this is an area in which there is only one really industrial country, namely, Japan, and a lot of other quite underdeveloped countries.

I think it is true, as Professor Cohen said, that Japan has a great awareness of the possibility of expanding its trade with Asia and the Far East. This is natural. An Asian Empire, the so-called co-prosperity sphere, was the dream of the Japanese Empire. It was the way in which they hoped to meet their great population pressure and limited resources of raw materials.

Asia for the Asian economies is still a very live idea in the thinking of Japanese planners and foreign-policy people. A year ago I was in Japan, and I was amazed to find that most of the people interested in this field, in the government and outside, were more interested in talking with me about the prospects of trade with Asia than they were about the situation in the United States.

This seemed to them still to be an area with which they had high hopes, of developing trade and investment, and yet they couldn't find much that they could do about it. They were hoping that the United States might somehow wave a wand to create an Asian area in which Japan would be the central industrial nation.

There are many difficulties in their way and Dr. Cohen has already outlined them to you: The reparations difficulties; the dim prospect for any substantial trade with China: the barrier to trade with Korea at the present time. Korea used to be an important market, perhaps 15 percent of their trade. At the present time Japanese-Korean trade is quite inactive due, so the Japanese say, to Korean policy.

Japan is developing a number of projects with the rest of Asia, and they may be indicative of more to come. These range all the way from a 7-man Japanese team which went to Cambodia to advise them on how to set up a tourist industry, in which the Japanese are rather skilled, to planning a powerplant for Southern Vietnam, and to having an arrangement with India in which they exchange iron ore for locomotives.

However, there is no real regional development. To be sure, there is the Colombo plan, but this isn't a plan in the sense that the European Payments Union represented an interlocking program. It is

a central place where representatives of various countries get together and discuss their mutual problems. It does some distributing of technical assistance. It has some limited funds. But as yet, one sees very little impact of this on expanding introregional trade in the Asian area. However, given the differing nature of the various economies, it seems inevitable that more exchange will take place among them.

In thinking about economic development, we have tended to think largely in terms of capital and technical assistance and not enough about the much greater magnitudes involved in trade. As to what actually can be done through trade, I think it is important to have in mind that the underdeveloped countries are largely suppliers of new materials, and the people who have studied world-trade tendencies are inclined to conclude that the nonindustrial countries are losing ground. The countries which supply raw materials, at least in recent years, have not been holding their own in total world trade as against the development of exchanges among industrial countries.

This is partly because the industrial areas themselves are becoming suppliers of raw materials and fuels. I don't think we think of ourselves as a raw material supplying country, but we are. The amount of petroleum, coal, cotton, and wheat which we send abroad is a major part of the world supply. The United States, while it may think of itself as an industrial country, is to a very large degree a raw material supplying country.

Then as far as Asia is concerned, the development of substitutes has had a drastic effect on its trade prospects. Silk is no longer very important. We have a very good substitute for rubber. Even tin is giving way in many uses to aluminum.

And there is one other thing that is interesting to have in mind if one is looking for general trends, and that is the decline in textiles, percentagewise, as far as the world is concerned. Textiles have a high percentage of raw materials in them, and more and more textiles are now being produced within the country where they are consumed.

Actually, the world trade pattern as it now stands has only about 10 percent of trade from nonindustrial countries to other nonindustrial countries. After all, they don't have very much to sell to each other except to equalize out the supplies of food.

The industrial countries, on the other hand, carry on four times as much trade with each other.

The question, then, of what could be done through trade seems to me to get back to a problem of the extent to which the need for imports which these countries have can be satisfied; it is doubtful, in my mind, whether or not one can anticipate their ability to pay in terms of exports which they can produce.

We can see the conflict very easily in the United States.

Don Humphrey has estimated that 70 percent of America's imports are things which we have to import. These are tropical, agricultural products, and raw and semiprocessed materials. We allow these things to come in usually without any interferences, without tariffs on them. Only 30 percent of our imports represent things which in any sense can be thought of as competitive.

Presumably, we are already getting what we need in the raw materials field, and yet there is a substantial demand for American

goods. They are needed by the underdeveloped countries for their economic development. In the case of Japan, we are important as a supplier to them of food and raw materials.

It should be possible over time for the world's trade pattern to be altered so that other industrial countries will supply more of the needed industrial products and other countries will supply more of the raw materials now coming from the United States. So far as the United States is concerned, this would mean that we would come into balance by reduced exports of items like rice, wheat, and cotton and even of capital goods. The alternative route is for us to continue to supply export items on the basis of admitting competitive imports or of extending credits or grants. May I suggest that none of these routes represents a complete solution, nor are they incompatible. For the immediate future, our policy should involve both trade and aid.

Representative BOLLING. Dr. Thorp, I think I will have to interrupt you at that point. Senator Cooper has to leave in a few minutes, and I know Senator Flanders has some questions he would like to ask him.

Senator, I know you have a very few minutes left, but if you will rejoin the panel, I will entertain the questions that Senator Flanders has particularly to direct to you.

Excuse me.

Dr. THORP. It is all right. I am about done, anyway.

Senator FLANDERS. Senator Cooper, you do not mind my calling you by that title?

Senator COOPER. No; I am perfectly willing.

Senator FLANDERS. It is a prospective title about which I think there is now no question.

As you know, I have been very much interested in the first and second 5-year plans in India. I do not remember whether I have sent you copies of any of my correspondence with our friend, Dr. Katsu. Have I done so?

Senator COOPER. Not recently.

Senator FLANDERS. I felt that the first 5-year plan was well directed and well carried out. I began to be a little dubious about the second 5-year plan, and still more so about suggestions as to the third 5-year plan that I got from the economic sources here in the Indian Embassy. Of course, those are not set yet, but the main point seemed to me to be that any 5-year plan India or any other country, any forward plans of any sort of our own and current policy should be directed toward the well-being of the citizen except as military requirements intervene. There are only those two proper objectives of governmental policy: the well-being of the citizen and the military defense requirements, whatever they may be.

Well, I was just a bit worried about the second 5-year plan, as to whether it had been traced down through to the food, clothing, shelter, and education of the individual Indian. I am not sure, I was not sure that the connection had been made, and that is the objective, because India is not arming.

Have you had any discussions or any light on that question?

Senator COOPER. Yes; I have. And I have also studied, of course, the percentages of the proposed development as applied to various objects. Also, I have studied the announced objectives of India's so-called socialistic pattern of society, which they distinguish from socialism.

As I indicated in my statement, the amount of money which is being applied to heavy industry in the second 5-year plan is the largest percentage of the total amount to be expended.

During the first 5-year plan, the percentage of the total outlay for agriculture and community development was 13.7 percent.

During the second 5-year plan, it is estimated at 11.8 percent.

Of course, there is a larger expenditure, and the total expenditure is greater.

For irrigation and power, the first 5-year plan provided 31.5 percent; the second 5-year plan, 19 percent.

For transportation-communications, the first 5-year plan was 26.1 and the second 5-year plan, 28.9 percent.

That does bear upon the problem of being able to balance their economy because of the necessity for transportation of goods and food to various parts of the Republic.

Social services, in the first 5-year plan, took 21.9 percent. In the second 5-year plan, 19.7 percent.

This is the point to which you may be referring. Industries and mining, in the first 5-year plan, came to 3.8 percent, and in the second 5-year plan it rose to 18.5 percent. But it is only 18.5 percent of the total, and not all of that is in large industry. A very great part of it is in small industry.

Those are just figures. But then I said something about the objectives of the plan, the major objective of which is to raise the gross national product, to supply the people, to increase the average earnings of the individual from about \$55 a year to \$66 a year, to increase the consumption of the individual by 12 to 20 percent, from about 1,900 calories, currently.

So I think if you would ask the Indian Government or those who are working on this plan, they would emphasize that its purpose is still moving it toward an increase in living standards.

Now, maybe they have reached a place where it is necessary to build a certain amount of heavy industry, to expand steel production, for example, from about 1,200,000 tons to 4½ million tons; to expand cement production to build a tile industry which can supply other industry, if they are to make any progress at all, if they are to go forward at all.

I think another point which has to be kept in mind is that one purpose of this second 5-year plan is to actually give employment to the new labor force which they estimate at about 8 million people. They would claim themselves—as they have stated—that the basic criterion for determining the lines of advance is social gain.

The real problem about the plan, as I see it, is whether or not it may be too ambitious, and whether or not they will be able to carry it out in 5 years.

If they cannot secure the foreign exchange, then whatever they do internally they cannot supply the tools and the capital goods which will make their internal expenditures effective. That would mean either that the plan would be extended for another year or several years, or in fact it might mean the actual stopping of some projects that have already gotten under way.

Senator FLANDERS. I might say one of the things that bothered me was the emphasis on millions of tons of steel, and I was afraid that they had been contaminated by the statistical achievements of

Chinese and Russian communism, which measures their industrial advance in tons of steel instead of in the well-being of the people.

Senator COOPER. I think the committee will have to compare the objectives and the percentages of development in, for example, China, with what is being done in India. I can only say, again, that they are not using forced saving, they are not keeping down the consumption of the people. They are trying to increase the consumption of the people.

They are trying to provide additional cloth for the people for clothes. The two main needs are food and cloth.

They are not using the methods that were used in China and in Russia. The real problem, I think, is whether or not they will have the ability to carry out this plan.

As to their objectives, I don't think that they are what you suspect. I don't say "what you suspect"; what you intimated by your questioning.

Senator FLANDERS. I am only questioning whether they have carried through tons of steel to the individual well-being of the individual citizen. The pertinence of this to our study, as I see it, Mr. Chairman, is that the Indians are going to feel that we need to help them finance this second 5-year plan. That is why it comes within the purview of the work of our committee.

Senator COOPER. I did not talk about that at all, because I did not think that was the problem you wanted.

Senator FLANDERS. You do not need to.

Senator COOPER. I was talking about the problem of the plan itself.

Representative BOLLING. We understand you must leave, and I do not want to delay you.

Thank you very much.

Senator COOPER. I will leave it now to the real economists.

Representative BOLLING. Dr. Thorp, I apologize for the interruption, but the exigencies of the situation required it.

Dr. THORP. I think I would rather not pick up the discussion at this point, because I am sure if there are further points that I want to make, I will have a chance to do so.

Representative BOLLING. You will have one right now, because I will ask the panel if any of the things that other members of the panel have said cause them to desire to make any further comments at this point.

If not, Senator Flanders, will you ask any questions you desire?

Senator FLANDERS. I noted that Dr. Eckstein, on page 5, in connection with his analysis of Communist China, the first paragraph beginning on that page, does raise the question of consumption as being a criterion. That, plus military and war-waging potential, are the two economic end products of a country's activity. I am interested to see that so far as Communist China is concerned, that analysis of the consumption, which seems to bring evidence that the military and war-waging potential plays, as it does in the Soviet Government, a large part of the purpose of the economy.

Now, on page 9—I did not ask a question, did I? I made a statement. That is what Senators, as distinguished from Representatives, are inclined to do.

Representative BOLLING. This is a distinction that does not always hold up.

Senator FLANDERS. On page 9, a little way down in the paragraph which begins on that page:

However, on the basis of all the available evidence, the preponderant bulk of these imports seems to be paid for with Chinese exports.

I am wondering what large-scale exports can be made from China that are not taken out of the skins of the Chinese people.

Dr. ECKSTEIN. Senator, I think the points you pointed up are among the most essential which need to be made. There is no question that the whole policy and the whole program, the whole goal of the Chinese Communists' 5-year plan is very different from that of India, and it is, of course, very true that one of the keys in this program is to extract, to obtain as high a rate of extraction from agriculture in the form of taxation, in the form of manipulating the price relations or the parity position, if you like, of agriculture, in such a way that it is unfavorable to agriculture.

Through these various devices, the rate of extraction from agriculture is, of course, very high, and some of this or a certain proportion of this goes into exports. The bulk of Chinese exports are agricultural exports.

However, much of these are exports that always used to be Chinese exports products, such as soybeans, for instance. Then, too, varying other types of comparatively minor products, such as tea, for instance, play a certain importance in the trade with the Soviet Union.

Relatively small proportion of the large staples, such as rice or wheat, which are the major food staples of the peasantry, go into exports.

But it is doubtless true, at least as far as we know, that the bulk of the saving, the bulk of the capital mobilized in the Chinese economy, is mobilized out of agriculture, and that some of this takes the form of exports in order to import capital goods.

So, in effect, you have a mechanism through which savings out of agriculture, forced savings, are transformed into capital development through the mechanism of exports of agricultural goods for imports of capital.

Senator FLANDERS. Would you consider that China is now a self-sufficient area in food supply?

Dr. ECKSTEIN. While China used to import a certain amount of foodstuffs even before the war, the bulk of her exports were also farm products. The imports were mostly to a few port cities, particularly Shanghai, and were to a large extent a function of very poor internal communications; for instance, it was cheaper to import wheat to Shanghai from the United States than it was to import wheat from the countryside of China itself.

This situation has radically altered now with the administrative and political unification of the country, with absence of civil war and with the transportation system more or less rehabilitated.

So that one could say that China has always been more or less self-sufficient in food. The margin of exports and imports was always very small in relation to total production, and for the food staples this is still the case even today.

Senator FLANDERS. As I get it, then, you feel that with good transportation, China can be self-sufficient in foods and still have a surplus of various agricultural commodities to export?

Dr. ECKSTEIN. Certain things, such as soybeans, tea, a series of so-called native products, certain livestock products.

This isn't a function of the fact that the Chinese peasant is so well off. It is a function of the fact that the Chinese have to export in order to be able to import.

Senator FLANDERS. I was just asking whether it came out of the skins of the Chinese citizens.

Dr. ECKSTEIN. Yes, I think to some extent, or to a large extent, that is true. But even in the absence of a Chinese Communist regime, some of this trade would take place, although perhaps not at the same level.

Senator FLANDERS. Yes.

That covers the points that I wished to ask Dr. Eckstein.

I was particularly interested in the available exports from China, from the standpoint of what would happen if freedom of trade would develop between Japan and China, for instance. If she was willing to let coal and iron ore go in Manchuria, of course, and accept manufactured goods, there would be a lively trade between Manchuria and Japan. Manchuria was a food surplus area before the war.

Dr. ECKSTEIN. Much of these exports, even now, come from Manchuria. Soybeans, for instance, are mostly from Manchuria.

Senator FLANDERS. Now, I would like to ask a question or two of Dr. Cohen.

First let me say that—I might as well say it now—in connection with your use of the word "autarky," I want everyone who has a copy of my memorandum of November 14 to replace "ch" with "k" wherever you find it. There is a vast difference in the definitions of those words. Someone in my office thought "k" was a mistake, but it wasn't, when I handed down the manuscript.

Dr. THORP. I have had the same struggle with a secretary for some time.

Senator FLANDERS. Turning to page 30—I have to turn quite a ways to get to page 30, but I finally arrived at that.

A larger number of pages as full of meat as your 37 pages are, is seldom offered to the committee.

Dr. COHEN. Thank you, sir.

Senator FLANDERS. Thirty-seven pages are a good record.

Under page 30, the bottom paragraph, I wonder why there should not be a lively export between Japan and Indonesia. Why should there not be a lively export of petroleum products and rubber? They have fallen to about one-half.

Dr. COHEN. I would say that basically a broad, overall reason is that the income level of the average Indonesian is so low, let's say about \$40 to \$45 per year per capita, that there is just no mass civilian purchasing power to take the products that Japan sells, other than textiles.

The individual peasants can't even buy a cheap radio. Perhaps the village can, but the individual can't.

Senator FLANDERS. So it is due to the lack of purchasing power in Indonesia, rather than the needs of Japan; is that what you are saying?

Dr. COHEN. Yes, in part.

Senator FLANDERS. You say:



Indonesia's inability to pay, either in goods or foreign exchange, caused Japan to reduce the exports.

That brings me down to No. 9 in my memorandum, which relates to the Greater East Asia Co-Prosperty Sphere, which was, it seemed to me, an economically sound idea. The accomplishing of it by military means was a disaster. And I have to bring Dr. Thorp into this discussion. He seemed to think that there was nothing much we could do about that.

I wonder if that is true. Something, I think, has to be done, because we are not going to allow continuously certain important industries in this country to be undermined by Japanese imports. We are just not going to allow it to be done. So we have to find some substitute and put in some thought and some work, and perhaps some financing into it.

It seems to me, as I said here, that if you could take the whole area of eastern and southern Asia from Pakistan to Japan, you could build up an integrated economy that would solve a number of problems.

I might just mention one of them, and that is that the Japanese are unacceptable as merchants, practically anywhere in the world. On the other hand, the Indians are fairly acceptable. They are not quite as adept as the Chinese; yet the Indian merchants throughout the whole Asian, the Pacific area and the Asian area, do fairly well.

When I suggested here that the free nations in this area largely supplement and complement each other economically, and can move forward in cooperation rather than in competition, it seems to me that one of the resources that India has to bring to that is a commercial ability and a commercial acceptability which might help to move products more freely between the countries involved.

There must be some way found to make Japan economically viable, and to increase India's range of exports and imports, without doing it at the expense of American industry.

That is at least my conviction, and I am wondering whether we are helpless in the matter and whether the whole thing must be left to decay on the vine.

I ask the same question of you two men.

Dr. THORP. I will take it first, and then Dr. Cohen will probably give you a fuller answer.

What I intended to say was that I was bothered by the degree to which the Japanese were, in a sense, hoping that we would be able to resolve this problem for them. I didn't mean to say that there weren't things which we could do, nor to say that this isn't a regional trade development which has real possibilities.

I did mean to suggest that it would take some time to bring it about.

I think we have already taken some steps. For example, we have tried to get trade barriers down in all countries against Japanese goods by supporting the entrance of Japan into GATT. I was our representative in GATT when this proposal first came up, and it took several years of continual argument on our part before any considerable number of the nations were willing to accept their admittance.

But this was to open up all markets to the Japanese. It didn't focus exclusively on the coprosperity sphere, although many of those countries were included, and India was one of the countries that went along with respect to the program.

There have been a number of suggestions for stimulating Asian trade which haven't developed, but which I think are possible, in terms of some sort of triangular arrangement whereby, let us say, the United States might finance a development of iron mines in some Asian country, with the expectation that this would provide iron ore that would eventually go to Japan.

There is also the possibility that we might make funds available to Japan for her to extend credit in terms of developing industries in the Asian area.

I think if we are prepared to use credit facilities, and not tie them exclusively to American goods, such a triangular arrangement is a possibility. One of our difficulties is that the Export-Import Bank must extend credit when it will directly facilitate American trade.

Senator FLANDERS. If you will excuse me a minute, there is a question I wanted to ask Senator Cooper, and you may be able to answer it.

What happened to the financing of Tata, which fell between two schools when I was in India, the one being the Export-Import Bank, to use American equipment which would cost a lot more, and the other was the unwillingness of the Tata Iron Works to work through the World Bank.

What was the situation there?

Dr. THORP. I believe the World Bank has finally worked out an arrangement with them to provide this development. But I think it is also true that the long delay there was in getting assistance from either private or public sources in this country, had something to do with the Indians searching in other directions.

We came along rather late in the procession rather than early in it. It might have been a rather different picture if we had been in it at an earlier point.

Senator FLANDERS. I am afraid I interrupted. You were talking about a triangular arrangement.

Dr. THORP. Yes.

If it were a development of iron mines in an area, if our credit for that could be related to the purchase of the necessary equipment from Japan, then this would start a relationship within the area which might be useful. But at the present time we would require that American equipment be sent, and therefore Japan would only hope to get byproduct benefits from it when the final product was available.

I think there are things of that sort that could be done that would help in the development of the area, and Japan is a natural market for raw materials that are produced there.

I should also hope that we will continue to give support to the Colombo plan.

Senator FLANDERS. What do you think the chances are of getting the Congress to agree to this kind of a solution of the Japanese problem which does not seem immediately to advantage the United States, but is it a long-range advantage?

Dr. THORP. You can set this problem up in terms of advantage to the United States. In other words, somehow we must make Japan viable without being dependent upon us. I should think some Members of the Congress might be rather sympathetic to that objective.

Senator FLANDERS. That is the argument.

Dr. THORP. Yes.

Senator FLANDERS. That is the argument to use.

Will someone—Dr. Cohen, will you tell me what a hectare is? I do not have my conversion table handy.

Dr. COHEN. 2.45 acres.

Dr. ECKSTEIN. Almost  $2\frac{1}{2}$  acres.

Senator FLANDERS. Almost  $2\frac{1}{2}$  acres to a hectare. All right, thank you.

I still do not see, Dr. Cohen, why the trade between Japan and Indonesia should not be lively, since Japan needs rubber and oil. Does that mean that the sums which Japan or any other country pays for rubber and oil do not stay in Indonesia?

Dr. COHEN. I am not an expert on the Indonesian economy. Most of the Indonesian oil which is extracted by foreign companies goes to Western Europe, it doesn't go to Japan. The oil which goes to Japan is largely dollar oil which American companies send to Japan.

You will have to look very thoroughly into the question of international cartels and arrangements in the oil industry to explain why Indonesian oil should go mainly to Western Europe and Arabian oil should come to Japan, but that is the way it is; I believe that is the way it works.

Senator FLANDERS. That is an interesting sidelight.

I just want to say that I had an article in the Atlantic Monthly in September of 1931, 25 years ago, and I didn't use that word "autarky." I used "natural economic empires." I think perhaps that is a better phrase, particularly in view of the misspelling.

And the suggestion is made that the Indonesians need capital goods according to their plan of development, and Japan is able to supply them. It seems too bad that they cannot find a natural exchange between goods that are so much needed in both places.

Dr. COHEN. There is another factor that ought to be mentioned, and Professor Thorp suggests it. There has been no reparations settlement between Indonesia and Japan. Under these circumstances, Japan is reluctant to grant credits. Indonesia needs long-term credits to buy the goods which Japan can supply.

The Japanese are quite worried that any credits that are tied up in Indonesia may be seized by the Indonesians as part and parcel of a reparations settlement, so credit facilities between the two countries are difficult.

Senator FLANDERS. That is a case in point.

Now, I would like to make one more short speech.

Representative BOLLING. Proceed, sir.

Senator FLANDERS. I would like to tell Dr. Thorp the reasons for my doubt about going further with the established trade policy of this and the previous administration without further illumination, and I want to suggest that after I have made the statement of my reasons, that if he would be willing to reply to them, preferably by a brief manuscript, and have them incorporated in the record, it might not do any good to anybody else, but it might do me some good.

Representative BOLLING. I am sure it might do us all some good if Dr. Thorp would do this.

Senator FLANDERS. All right.

This memorandum results from a growing concern with our trade policy, and has developed from what seemed to me to be three changes in world trade which are not taken into account in the policies for freer trade or virtually free trade.

The first change is that for that policy, that theory, to be valid, it has to assume a peaceful world, which no longer exists. That is item No. 1.

Item No. 2 is that it is supposed that the dollar, for instance, with which we buy foreign goods, has no value except as it is returned to us in the purchase of American goods. I would like to inquire whether that still holds good, in view of the fact that dollar balances are so tremendously desirable that every effort is made to hold the dollars and keep them from coming back to us. It seems to me that represents a change in conditions.

And the third change is that American industry has now and is now developing into the sort in which a comparatively free export of American capital and a comparatively free export of American know-how can make use of low-income labor without special training. And, as we know, there is a great movement of American industry into other areas of the world, and it seems to me that poses a problem and raises a question, which I think—yes, that is No. 3 here—as to just what industries would survive under free conditions.

I suggest the products of our expensive agriculture would survive if we were willing to put them into free competition, which at present we are not.

And there are other questions raised, also, which I hope you will touch on, and I raised them at a round table last year in an introductory way.

Supposing a great part of our production here could be more efficiently produced abroad? Is there any effective balance that comes into operation in connection with inflation, deflation, and the rates of convertibility? And, if so, what effect does that correction in the value of international funds and exchange have on our economy and the prosperity of our people?

I think there is an area there which would be useful to have incorporated in our report. So I nominate Willard Thorp or any of the others who wish to dip into that. Why not have this a free-for-all? Anybody can get in. Not "or" but "and."

That is the end of what I had in mind, Mr. Chairman.

Representative BOLLING. Thank you, Senator Flanders. I hope, Dr. Thorp, you will be able to respond.

Dr. THORP. I have never been able to refuse any request from Senator Flanders. I will be glad to try it.

(The information referred to follows:)

MEMORANDUM SUPPLIED BY WILLARD L. THORP TO THE JOINT ECONOMIC COMMITTEE IN RESPONSE TO THREE QUESTIONS BY SENATOR FLANDERS

*1. How should trade policy be altered in the light of the importance of security objectives today?*

Security considerations place emphasis on two aspects of trade policy. The first relates to the mobilization base and the second to our relationship with our allies.

There can be no argument as to the necessity of being prepared for war. This includes not only an adequate defense establishment but an economy able to meet the requirements of war. The first question obviously is that of the kind of war envisaged. If it is an atomic war, then the only thing that counts is immediate offensive and defensive capability. Only if it is to be the kind of war of attrition with which we are unfortunately familiar will economic capacity have any important significance. In that case, the most critical area would seem to be that of foreign supplies. For this purpose, probably the most im-

portant requirement is an adequate stockpile program. To the extent that there are essential and strategic domestic industries which are endangered by foreign competition, and under any rigorous test this would be an extremely short list, we should not rely on the inexact instruments of protection. These give no assurance that we will have the kind, amount, and location of capacity which is essential. Other means, such as Government contracts or Government rather than consumer subsidies, can be used to achieve such a result with certainty, and certainty is what one desires. Actually, most industries which are important for security purposes are the very ones in which we excel.

But modern security involves the strength of the entire free world. Restrictive trade policy will almost inevitably injure one or another of our allies and our relationship with them. If security is to be achieved by a cooperative effort, the same atmosphere must pervade trade relationships. And if we are concerned about the economic strength of our allies, we must remember that they are much more dependent upon foreign trade than we are, and that measures which interfere with their ability to earn foreign exchange can seriously impair their economic capabilities. We have recognized this in our assistance programs by including certain economic requirements in our calculations of contributions to and allocations for mutual security. The considerations which were so clear in the Iceland fish fillet case are present in less sharp outline in all proposals for trade restriction whenever the proposed barriers are to be raised against one of our allies.

The Communist bloc has a central planning agency which arranges trade patterns among its members. The free world has no such centralized direction, and the danger is that each member will view its prospective foreign economic policy actions in domestic terms and not in terms of the total impact upon the free world. Trade barriers tend to be established strictly for domestic considerations, and these are often quite limited in scope. The appropriate policy for maximum security purposes would seem to be one which was based not upon national programs of protection but upon the most efficient use of resources through the ready access to goods and to markets within the free world, and one which strengthens the feeling of cooperation and mutual interest internationally.

*2. Is the theory that increased imports will lead to increased exports disproved by the present accumulation of dollar balances abroad?*

The balance of payments for any country involves its trade in commodities; trade in current invisible items, such as travel, shipping, interest payments, and the like; and capital transfers. Thus, if more funds become available to a foreign country it may use them for any of these purposes.

During the prewar and war years the gold and dollar balances of the European countries were greatly reduced and American reserves increased. Because of the shortage of reserves, currencies have had to be specially protected. One of the hopes for improving the functioning of the world economy is for currencies once again to be convertible. The importance of convertibility is that it permits multilateral trade through a kind of overall clearing of accounts. At first, the postwar shortages were so extreme that all available funds had to be used at once for the import of goods. Once this stringency was passed, the importance of building up reserves was recognized, and efforts have been made in that direction. To that extent, it is true that dollar earnings have not been completely reflected in increased American exports. The additional dollars placed by the United States in the International Monetary Fund are also a kind of reserve available to members to meet temporary balance of payment difficulties.

In a sense, this situation is caused by the fact that existing reserves were exhausted in purchasing American goods during the thirties and forties. It is important that reserve positions be reestablished to permit convertibility again. Although various countries are restricting the demand for American goods in order to protect and build reserves, this is not a policy without end, nor one which can be very large in relation to total trade. It would be economically unwise for them to build up reserves, which are essentially nonproductive, beyond the point where they are adequate.

In the world today, the great worry of most countries is their requirement for payment to the dollar countries. Their supply of dollars is dependent upon American prosperity, our military spending abroad, and economic-assistance programs. In fact, reserves today are thought of in foreign countries as being accumulated for use in payment to the United States in case some one or more of these or other sources of current funds should be reduced. The reserves thus

might actually serve as something like a stabilization fund, in case the American economy should repeat recessive patterns such as those of 1949 or 1954.

3. *What would happen if a great part of our production could be more efficiently produced abroad in terms of balancing forces and their impact on our economy and the prosperity of our people?*

One implication of the assumptions of the question has to do with the impact of the rise in productivity on the other economies. Incomes are the reflection of productivity and therefore one should expect a rapid rise in individual incomes and national incomes. The greatest volume of foreign trade is carried on between the countries where incomes are highest. While it might be expected that this tremendous increase in markets might be captured in large part by these new producers, the result might not be a loss but even an increase in American exports.

A second impact on trade from these assumed conditions arises from the fact that real costs of production are not only dependent upon technology, but will vary according to the availability of the factors of production—resources, labor, capital, etc. Since we do not have mobility of these factors, the efficiency of various economies in producing particular products will depend upon the proportions of the factors required in the products. Thus products requiring large capital investment may be low cost in the United States while labor-intensive products may be low cost in other countries, even assuming that the same technology is used in both places. When the difference in resources is taken into account, it is clear that a basis for trade will exist, even with universal technological equality (though this itself is an extreme assumption).

If the question disregards these considerations and is taken simply to mean that our exports would fall and our imports would rise under these new circumstances, the first result would be a tendency for gold or dollars to go abroad, or for foreign accounts to build up in our banks. The converse would happen in foreign countries. As a result, foreign price levels might rise compared with the American price level, thus tending to discourage imports to the United States and encourage our exports until a new balance is reached. Another equilibrating force would be that increased incomes abroad would encourage foreign buying while the reduction in our exports, by reducing incomes at home, would reduce the demand for imports. Furthermore, the tightening of credit in this country relative to other money markets, might induce a flow of capital to this country and reduce the attractiveness of foreign investments or foreign bank deposits by Americans. In other words, through various balancing factors such as those indicated, there would be a tendency for exports and imports (in total balance of payments terms) to come into a balanced relationship. This balance might well be at a higher level of trade than at present. It probably would require some structural changes and consequent expanded foreign markets for some American industries and increased foreign competition in the case of others.

At least two additional elements in the problem need to be noted. First, the impact of foreign trade on the American economy is so small that the adjusting forces might work rather more at the other end than here. Forces of inflation in the foreign country might actually be the controlling ones. Secondly, with present-day political insistence on the maintenance of employment, no one can forecast the degree to which the basic policy of domestic stabilization will override the balancing of foreign payments by the monetary-income forces.

As to the basic situation forecast, the immediate impact of increased efficiency in other countries would not be so much an invasion of the American market as a more vigorous competition in third markets, and an improvement in the economic position of Western Europe and Japan.

However, at the same time, we should not assume that the United States will be standing still. In fact, the new situation might have real value for us. Our own productivity is not entirely the result of our own inventiveness and skill. If we have a rapidly expanding world, with many people in many countries active in improving processes, our own productivity is certain to benefit.

Representative BOLLING. As the Senator said, if the spirit moves any of the others of you, we would be delighted to receive your comments.

I would like right now to have Dr. Thorp or some of the other members of the panel comment on the 11th question of Senator Flanders: Why not adopt the slogan, "Aid, not trade"?

Dr. THORP. I think that question is basic, the answer starts with the fact that we probably don't need as much in the way of imports as other countries would like to have of American goods. Perhaps one could even say, they need, if one recognizes economic development as a part of the requirements of the world at the present time.

And, given this situation, if we hope to make progress in the free world, the problem is to support the flow of American goods. If one is thinking in terms of the other countries and the goods which they require, the key is whether or not they receive those goods or not. The question of trade or aid is then secondary.

I suppose most people who have argued for trade rather than aid have had two reasons for it. One is a feeling that it is not a healthy kind of relationship for one country to be the world's philanthropist, and other countries to be receiving assistance. And therefore, we want to get away, as far as we can, from the situation in which the United States is continually giving and the other countries were in a position of continually receiving.

The aid process includes psychological difficulties, and difficulties in international relations.

Senator FLANDERS. That is a perfectly proper observation.

Dr. THORP. I think the other reason is perhaps one that is more related to the fundamental approach of an economist, namely, that normal economic life involves being paid for what you provide, and that we ought to be able to be ingenious enough to figure out ways in which we can get something as a return for these things which we are giving; some things we clearly need because we cannot produce them. Other things we might benefit from by the principles of comparative advantage. It should be possible for us to get something in return for these goods which we send abroad.

In other words, one is sort of a psychological argument, and the other is the desire that there would be a payment, in the form of expanded trade.

I think it is amazing that our trade has expanded in the last decade to the degree to which it has with such a very small amount of difficulty. This difficulty is certainly intense at particular spots, but I suspect if one took the total billions of goods that have come in and tried to figure out how much of that actually was threatening American industry or particular industries, we would find that it is a rather limited total.

The questions are whether there is some way of modifying such disturbances as are created; whether our economy isn't, by and large, an economy that makes progress by being disturbed and by competition; whether we may not actually be carrying on inefficient operations, expensive operations, with protection as a form of subsidy. Perhaps we ought to find other ways of doing it if we are going to subsidize them, rather than put the burden on the consumer.

But I think these are the two general areas that I would suggest: One, the psychological one; and the other, the feeling that as an economy we should try to have resources coming in as an offset to whatever resources go out.

Representative BOLLING. Dr. Eckstein?

Dr. ECKSTEIN. I was just going to say something, but please proceed.

Representative BOLLING. Proceed.

Dr. ECKSTEIN. I very much agree with what Dr. Thorp has just said. I would like to underline 1 or 2 things which seem to me particularly important on the psychological and political side, that is, in terms of aid and what effects aid may have had in the underdeveloped countries.

And it seems to me it is important to make a distinction there between grants-in-aid and loans. I think, again, there is a very important psychological difference between the two. And if one compares this with what the Soviets are currently doing in these underdeveloped areas, it is particularly important, as I am sure Dr. Aubrey will agree.

You have a situation where our aid programs are particularly of a character where we send ICA or ECA missions to countries, the countries have to present their programs to the missions, they have to justify these programs.

There is a great deal of back-and-forth about what are economically rational projects, and so on and so forth, which in some respects may seem to be a very good procedure to make sure that these funds are properly used, but politically and psychologically may be very disadvantageous because it creates tremendous frictions and frustrations. While if you give a loan, which has to be justified in terms of strictly rational economic criteria, it is a give-and-take proposition; you don't have the same kind of factors involved, it seems to me, that you have in the case of grants-in-aid, and this, of course, is even more true if you have trade and as part and parcel of trade you render some technical assistance.

So I would very strongly plead against future grants-in-aid funds for underdeveloped areas.

Representative BOLLING. I would like to throw in this question. I do not understand how, under this concept of loan, such things as roads, that are so necessary in the initial developmental stage in building up an industrial economy, could be taken care of. I do not think there is an economic way to make a loan on a road.

There are many other things that fall in this category. You know what I mean.

Dr. THORP. I don't completely agree on that. I think what you do then is make a loan to the government. This is a loan against the total economy which it uses for roads. On the theory which you suggest, a State government shouldn't borrow for a road, it is not productive, but it does against its general credit. Likewise, I would think that a foreign government could borrow on its general credit, so to speak.

Representative BOLLING. Let's take India, for example, trying very hard to squeeze out the \$10 billion of Government funds over its next 5-year plan. Do you think that you could devise a loan which would be economically sound? I would be very pleased if you could.

Dr. THORP. I think the problem that is created by loans is the obvious one. You would have to set up a program of aid and future trade.

This is where you would come out.

Senator FLANDERS. May I say that that slogan "Aid, not trade," was put in there to be provocative.

Representative BOLLING. It succeeded.

Dr. Aubrey, you wanted to make a comment?



Dr. AUBREY. I wanted to make a brief remark with regard to Senator Flanders' profound question, which is very provocative, indeed. It is more an observation rather than attempting to answer it.

It is a queer situation, in a way, that the Russians have taken away what for a time was a western slogan, "Trade, not aid." And they are the ones that are now stressing their preference for trade because it made for more equal relations.

As a matter of fact, they almost present trade as if it were aid when they buy stuff which certain producing countries cannot sell otherwise.

One of the aspects of turning the thing around would be, then, this: Would there be a possibility—I am not saying it would be desirable or a necessary outcome—of a division of labor in the international scene in the way that the Russians would be doing more trade than aid, the way they are attempting to do—it also happens to be cheaper—and that we would be doing more aid than trade, and that the underdeveloped countries would find something perhaps attractive in such a division of labor?

I should not like to be misunderstood. I am simply asking a subsidiary question to one that merits a great deal of attention. I am not trying to point to this as the likely or the desirable outcome.

Representative BOLLING. Did you have a comment?

Dr. COHEN. Yes.

Representative BOLLING. Proceed.

Dr. COHEN. If I may.

It seems to me that we are taking this 11th point too seriously, and I don't think Senator Flanders meant it to be taken too seriously.

At first, until he grinned, I was a bit sad to feel that he had succumbed to the Madison Avenue technique which the present administration has used.

Representative BOLLING. Those of us who know Senator Flanders know this was meant to be humorous.

Dr. COHEN. The original slogan was "Trade, not aid." This was one extreme, which the present administration did not live up to, because they continued with aid for 4 years.

This slogan, "Aid, not trade," is the other extreme, which is equally untenable and unfeasible. Obviously, a country as large and powerful and as important in world trade as we are, must use both factors. The question is: What mix? What combination is best? This is the basic issue.

I don't think we ought really seriously to treat either extreme alternative as a real possibility, because in fact when you get down to it, neither of them are.

Representative BOLLING. That is particularly true in view of the point that ex-Senator Cooper made, that in certain cases neither is at all effective. He made the point that if you made a grant or a loan, and the capital goods or the raw material that was desired was not obtainable under the terms, then this was a situation where the aid or trade was totally ineffective.

That raises another question in my mind. I know in wartime, steps are taken to see that resources go where they are considered to be most urgently needed for the national interest. And Senator Cooper's followup remark, that this must be done in a voluntary and cooperative way, certainly that must be tried first.

But suppose this were to fail. Suppose we considered it a crucial matter of national policy that in what appears to be some sort of an economic and other competition between India and China, in Asia, suppose we came to the conclusion that it was a crucial question, as I think it is, that one rather than the other, or that at least both succeed; would it not be a rational policy for us to go beyond the voluntary and the cooperative if the voluntary and cooperative did not succeed in getting for these underdeveloped nations the resources that they must have?

Dr. THORP. I think it would be worth just remembering that the war powers continued long enough so the early years of the Marshall plan were made effective by United States Government control over exports.

I can recall, for example, meeting with the people in the industry producing electrical equipment and talking with them about how much of this should go abroad. There was a tremendous need for it in the United States, and as far as they were concerned, they preferred the American market.

This was where their customers were closest, and it required Government action to get the necessary exports.

As a matter of fact, this same thing happened with the textile industry in terms of textile exports in the immediate postwar period. They were very uncertain about whether they were going to have any considerable foreign markets, and it required action by the Government to meet demands from abroad; so that this has happened in peacetime, although with the benefit of carryover war authority.

I would think it would be particularly important to have in mind if anything of the sort that is implied in some of Senator Flanders's questions should happen, that is, if we decided to plan imports, then we would have to plan exports to keep our international account straight, if for no other reason.

But this problem of the Indian steel is a tough one. There is no doubt about it. They tried to buy it in the United States, and they couldn't get on the order books. The order books were full. So now the steel is being bought in the Soviet Union.

This is an authority which the Government doesn't have at the present time, as I understand it. And it conceivably could be necessary, although perhaps normally the United States has sufficient capacity so that it can meet demands without running into difficulties.

Representative BOLLING. If we were to adopt the approach suggested by Senator Flanders' questions, we would in effect, because of our power in the world, be creating a planned, highly organized, doing much to create a planned, highly organized world economy.

How long would our own mixed, basic economy of the market place inside the United States last under these conditions?

Dr. THORP. We are rather rugged individualists, in general, but certainly this would require that the Government take responsibility for bringing in and distributing and reselling these items, if one were really to do it effectively. This would create much the same kind of allocation of materials that we had to do during the war.

This would be limited to the raw materials which we import, and wouldn't necessarily affect the whole economy, but it would mean a slice of our economy which moved over into very clear-cut Government planning, I would think.

Representative BOLLING. The impact of those imports, unless I misunderstand, is at least indirectly very widespread. And it seems to me that if to make certain kinds of steel we had to import certain kinds of this or that, that then the tendency would be for this to roll up; that if you had an involvement in the original product, that then you might have a concern about the end product, and so on.

This does not necessarily follow, but it is not at all inconceivable that it would.

Dr. THORP. I would assume that in this kind of picture, the Government would overbuy for a period of time and build up a stockpile in this country. This would seem to me the business way to handle it.

Then again you run into all the worries on the part of businessmen when they feel that the Government has a stockpile, and the release of that stockpile might disturb the commodity prices.

Senator FLANDERS. Mr. Chairman, I am being led by this discussion along paths which I do not choose to follow, nor am I sure that it is necessary for me to follow them, but I doubt that we work that discussion out today.

Representative BOLLING. I am delighted to hear it.

Dr. Eckstein, I have one question.

Dr. ECKSTEIN. Yes, sir.

Representative BOLLING. You spoke of the relationship of the Chinese economy to the Soviet economy. I am curious to know if there are any or many signs of the Chinese Government using economic policy as an instrument of foreign policy, aside from this major relationship.

Dr. ECKSTEIN. Well, there are 2 or 3 instances of that. Two instances are the case of North Korea and North Vietnam, which are, of course, members of the bloc, but for which China carries the major responsibility as compared to the Soviet Union. That is both politically and economically. This expresses itself in the form that it is the Chinese that carry the major burden of aiding North Vietnam and North Korea, rather than the Soviets, although the Soviets are also making a contribution.

Another very important problem there is Japan, as Dr. Cohen I am sure would testify. I think the Chinese would like to use foreign trade and foreign economic policy as a weapon or as a tool in their relations with Japan. That is, it seems to me that the drive for greater Sino-Japanese trade not only has an economic tradition and is not only economically based and motivated, but that it has certain political motivations, both on the Chinese side and, to some extent, also as far as certain political elements in Japan are concerned.

I wouldn't like to be misunderstood. I wouldn't suggest that an increased level of trade between China and Japan would not have a very definite economic rationale. I am saying that over and above the economic rationale there are strong political undercurrents which are present here that the Chinese wish to use and, to some extent, are using as a political weapon in Japan.

Representative BOLLING. Are they in part stopped from using it more by their own stage of development?

Dr. ECKSTEIN. It seems to me that sort of operates both ways, in a sense. That is, if you consider coal and iron ore, for instance, which are the commodities that Senator Flanders mentioned before, and that

used to be among the major export commodities from China to Japan, well, coal production in China seems to be expanding fairly rapidly.

If it continues to expand at this rate or at the projected rate, then the Chinese should have enough left over, over and above their own industrialization needs, to meet export commitments to Japan at higher levels than in the recent past.

It seems to me this is much less true in the case of iron ore. However, this can, of course, be altered if, for instance, Japan and China should enter into an agreement whereby Japan would send mining equipment and help to modernize many of the Chinese mining methods, which would increase the productivity of mining in China, in return for, let us say, some increased exports of iron and coal from China.

I don't know what Dr. Cohen's views on this are.

Dr. COHEN. They are on pages 32 to 37 of the paper, and I don't want to delay the proceedings with them now, Mr. Chairman.

Dr. THORP. I would like to emphasize one thing in this, though: The political implication of not trading in this case.

In Japan, the state of mind is, as created by the Chinese, that there would be a great volume of trade if it were free, and it is the United States which is standing in the way; and, therefore, the dilemma has the usual two horns—the problems if there were trade, that Dr. Eckstein mentioned, but also the problem, as long as there isn't trade, of that fact being used as the basis for an anti-American attitude.

Representative BOLLING. Thank you.

We thank you all for your time. It has been a great help.

With that, the subcommittee will adjourn until tomorrow at 10 o'clock in this same room, and the subject will be The Challenge of World Economic Competition and Growth.

(Whereupon, at 12:50 p. m., the subcommittee recessed, to reconvene at 10 a. m., Thursday, December 13, 1956.)

# WORLD ECONOMIC GROWTH AND COMPETITION

---

THURSDAY, DECEMBER 13, 1956

CONGRESS OF THE UNITED STATES,  
SUBCOMMITTEE ON FOREIGN ECONOMIC POLICY OF THE  
JOINT ECONOMIC COMMITTEE,  
*Washington, D. C.*

The subcommittee met, pursuant to adjournment, at 10:10 a. m., in room 1301, New House Office Building, Washington, D. C., Hon. Richard Bolling presiding.

Present: Senator Ralph E. Flanders.

Also present: Charles S. Sheldon II, staff economist; Grover W. Ensley, executive director; and James W. Knowles, staff economist.

Representative BOLLING. The subcommittee will be in order. This is the third and final day in the current series of hearings on world economic growth and competition for the Subcommittee on Foreign Economic Policy. Last Monday we reviewed economic growth trends in the industrial nations. Wednesday our attention focused on the underdeveloped areas, and particularly on those trade problems of the Far East related to economic progress. The 10 witnesses who appeared have developed for us in orderly fashion key points of the analysis and facts of economic growth.

Sufficient material has been presented already that combined with today's presentations, some weeks of study and review of this information will be required on the part of the subcommittee. I believe I am correct in stating that the results of this effort probably will be incorporated in the report of the full committee early next year when the President's Economic Report undergoes its annual assessment. Certain supplemental materials for the record have been requested during the course of these hearings, and I will order that these and a limited number of other pertinent materials be made a part of the record.

On this third day of the hearings, we are fortunate in having another high-caliber group of men to help us explore some of the implications for the United States of the world economic growth we have under study. We are concerned as to how both the relative growth of rival economies, and their absolute levels of attainment will affect us and the policies we should pursue in the broad realm of our economic strategy both at home and abroad.

The United States is interested in promoting peace with justice, and economic progress with sustainable increases in well-being for individual people both in our own country and abroad. But we are also conscious of the pressures of some international rivalries, and know that the realities and dangers in some parts of the world will demand special economic responses from us that would not otherwise obtain.

Before proceeding to the first witness, Senator Flanders, do you have a comment you would like to make?

Senator FLANDERS. My comments are getting shorter and shorter and shorter each morning. I may have occasion in questioning, Mr. Chairman, to refer to certain questions that I have been posing which do not always bear directly on the subjects of these panels, but I am going to ask to have these questions put in front of each member of the panel so that if I happen to raise any questions, they will have them before them.

Representative BOLLING. I think that is being done, Senator.

Thank you, Senator.

Our first witness this morning is Prof. Henry L. Roberts, director of the Russian Institute of Columbia University. Dr. Roberts has earned advanced degrees on both sides of the Atlantic, and has served our Government both in war and peace as a specialist on European and Communist affairs. After first heading the program on East Central Europe at Columbia, he has now become head of the notable Russian Institute. We look to him this morning to bring us perspectives on the Soviet use of economic growth for military and political purposes.

Dr. Roberts, you may proceed as you wish.

#### **STATEMENT OF HENRY L. ROBERTS, DIRECTOR, RUSSIAN INSTITUTE, COLUMBIA UNIVERSITY**

Dr. ROBERTS. Thank you.

After having accepted the invitation to participate in these hearings, I must confess I developed serious doubts as to whether I had much to contribute, more so after I saw the names of the very excellent and informed people who are contributing. I am neither an economist nor a military expert; I am a historian trying to think in the future, and in my few remarks this morning, I shall doubtless raise more problems than answers, but that is perhaps a useful task especially as I am the first on the panel.

I assume that there is no need for me to dilate on the general question of Soviet aims and purposes. I am willing to accept Stalin's statement that the fundamental problem of Leninism is the problem of power, to which I should add, power organized in the service of an ideology, communism.

The Soviet Union is still, and explicitly Leninist. Hence, I would simply propose as a starting point that the U. S. S. R. will attempt to utilize and organize all available components of power—economic, military, political, and psychological—in the pursuit of its purposes, the preservation of the present Communist base, and the further expansion abroad.

I would personally be reluctant to accept any other premise as a working assumption.

Hence I take it that my task is to look at the problem of the particular ways in which the growth of the Soviet economy may be effectively translated into power factors, whether military or political, that can promote the general Communist objectives. I gather that you have already discussed on Monday the general question of Soviet economic growth, in absolute and percentage terms, and in comparison with the United States. Therefore, I shall only state my own understanding of the situation without any attempt to elaborate.

First, that Soviet economic growth has been rapid, more rapid than that of the United States, that the rate may slacken in the future, but could well remain above our own.

Second, that in absolute terms, American production remains much greater, perhaps in the order of 3 to 1, and that this difference is such that for the next several years, the absolute difference between American and Soviet production will increase rather than diminish despite my expectation of an unfavorable rate differential.

In the long run, of course, if present projections of the rate of the growth continued, this advantage would disappear.

In other words, as a first general statement, I should say that the Soviet Union, in terms of its own past and present, should be in an increasingly favorable position to take advantage of its economy growth for military and political purposes. Though when this is said in terms of comparison with the United States, the picture is at once more complicated. I think that in this particular topic with which I am dealing, comparison is of the essence.

This, of course, is too general, and we have to turn to the use to which this growth may be put. One obvious use and one that has raised much interest is the possibility of achieving political gains abroad through increasing activity in foreign trade, technical assistance, capital export, and the like, to win friends or to ensnare them. Inasmuch as, however, Mr. Heymann is slated to discuss trade and technical assistance, I shall not pursue this topic myself.

A second and possibly related way is via what we call economic warfare, that is, using the economic capabilities abroad for directly disruptive purposes rather than for apparent construction: dumping, dislocating markets, using gold stocks, and the like.

I am not persuaded that this is a particularly significant possibility, at least under present circumstances. In the first place, it would run counter to the effects hoped for in the first use, and I doubt if it would be particularly effective. Perhaps I underestimate this possibility, but it would seem to me to be of rather marginal importance at this time.

Rather than to develop these and possibly other themes of economic activities abroad, to take advantage of economic growth for political and military purposes, I should rather stress the more direct translation of this growing economic potential into military and political capabilities. With respect to military power, I think the first thing to say is that because of the tremendous impact of recent technology on military affairs in the area of armaments, strategy, bases, and logistics, it is next to impossible, certainly for a layman, to gain a clear picture of the relation of economic to military strength.

I think that the most I can do is list some considerations. First, under the conditions of thermonuclear conflict, economic potential may not correspond, through its conversion, to military potential, since, it might be totally destroyed.

Moreover, there is the question as to the requirements in economic potential when both sides enjoy what has been called atomic plenty and the means of delivery.

However, these considerations do not dispose of the competitive economic and technological race before any such war, nor of a war fought by other means, nor of a situation in which a war does not occur, but weapons still serve an important political and strengthening role as a deterrent, as a means of blackmail, as bluff.

Hence, I would conclude that it is not correct to assume that thermo-nuclear power makes economic growth irrelevant with respect to military capabilities.

Second, while it is extremely difficult to anticipate the nature of war in the future, if there is to be such, our very uncertainty suggests that the growth of the economic base is of the greatest importance in preparing a state for a variety of military needs and contingencies, and in this respect the continual growth of the Soviet economy clearly, if only in this general sense, contributes to its military potential.

Moreover, when we look at those sectors of Soviet economic growth which appear most relevant to military potential, the more formidable does the Soviet position appear. In comparing Soviet and American production, we find on the whole that the more immediate relevant the economic measurement is to actual military capabilities the less favorable is the ratio to the United States.

That is, as we proceed in our comparison from gross national product to industry, to war supporting industries, to military end items, the relative picture is increasingly favorable, I believe, to the Soviet Union.

Fourth, given the relatively great capacity of the Soviet Union to determine its sectors of most intensive growth, we should anticipate an improvement in their situation, that is, greater flexibility in meeting the manifold requirements of an uncertain and changing military-technological situation.

Fifth, against this, however, is the growing cost of military equipment and armaments as the art of war becomes increasingly technical and technological. Here, given the fact that the creation of armed strength is on a competitive basis, this rapid growth of costs of equipment could work to the disadvantage of the Soviet Union because of its smaller, absolute production and hence, limit its flexibility.

That is, a crash program, for example, to develop a certain weapon or range of weapons could be a greater strain on the Soviet Union than on the United States despite its greater relative leeway in allocating effort and resources.

With respect to political power, this is, of course, a rather intangible field. One can make a general statement that Soviet economic growth obviously serves to back up and strengthen its various political instruments in the areas of political warfare, propaganda programs, and the like. In my judgment, however, the greatest value here is simply the fact of economic growth, its political and psychological impact upon the rest of the world, this image of a relatively poor country pulling itself up by its bootstraps to being the second industrial power in the world, bidding to overtake us.

This itself is an enormous political instrumentality in bolstering communism claims, in making the Soviet Union appear to be, for all its nasty features, an effective and vigorous going concern.

As one last point, I should like to raise a question I touched on previously, the meaning in power-political terms of a situation in which the Soviet Union is growing more rapidly percentagewise than the United States, but because of our headstart and greater absolute production, our absolute advantage continues, for a time at least, to increase and improve.



That is, to put it arithmetically, while  $A$  divided by  $B$  is diminishing  $A$  minus  $B$  is increasing. The question arises, Who is gaining in this situation?

You have doubtless found people taking both sides of this particular question. In general, I would conclude that it depends on the question whether there is a specific use to which this growth may be applied.

If it is just a matter of general relative situations, building up of general potentiality, then it seems to me the Soviet Union clearly gains through acquiring greater leeway, flexibility, and margin for its policies, whatever they may be.

If, however, it is a matter of a specific objective which is to be reached, for example, as I have suggested, a crash program to develop a new weapon or weapons systems, particular competition in a certain field, say, of technical assistance, then it seems to me our growing absolute advantage could well work to our benefit as against the Soviet Union.

Representative BOLLING. Thank you very much, Dr. Roberts.

Our next witness this morning is Mr. Hans Heymann, Jr., the representative of the economics division of the Rand Corp., that unique organization which combines many disciplines for assault on the most knotty problems of concern to the defense of the United States.

Of necessity, however, Mr. Heymann today speaks only for himself. His own record of research and publication, including coauthorship with Prof. Abram Bergson of a major study on Soviet national income and product, makes him a good choice to analyze for us a vital problem. His subject is, Soviet Economic Growth as a Base for Trade and Technical Assistance.

Mr. Heymann, you may proceed as you wish.

Mr. HEYMANN. Thank you very much, Mr. Chairman.

#### STATEMENT OF HANS HEYMANN, JR., REPRESENTATIVE, ECONOMICS DIVISION, THE RAND CORP.

Mr. HEYMANN. I welcome the opportunity to testify before this committee on the relationship between the growth of the Soviet economy and its participation in foreign trade and technical assistance, because I believe that this is an important subject, and one about which there appears to be currently some misapprehension. Is there a necessary connection between the growth of the Soviet economy, and the extent and nature of its involvement in foreign trade?

In the course of the last 2 or 3 years, the Soviet bloc has appeared quite dramatically as a supplier of capital goods and technical know-how to the underdeveloped areas, in exchange for some agricultural and raw material surpluses of those areas.

This development has given rise to some interesting speculation as to the meaning of the new policy for the future of Soviet foreign trade. The Soviet economy, it is argued, is approaching maturity. For more than 25 years the Soviet Union has consistently devoted its best resources to the development of the capital-goods industries, while neglecting its agricultural sector; as a result, the Soviet economy has experienced a shift in its cost structure, so that now it enjoys a comparative advantage in the production of capital goods and suffers

a comparative disadvantage in agricultural and raw-material commodities.

Because of this, the argument continues, the Soviet Union now finds it economic to export capital goods and to import raw materials and food products; the new economic reality is causing the Soviet Union to abandon its traditional insistence on autarky, to depend more and more on foreign sources of supply for a significant part of its agricultural and raw-material needs, and to emerge rapidly as a major supplier of capital goods in the world market.

So runs the argument. If true, it would be a momentous development indeed, calling for a drastic reassessment of the Soviet Union as a formidable economic competitor with the West. But is it true? Is there any indication that the Soviet economy is in fact dismantling its autarkic barricades and embracing radically new attitudes and patterns of trade?

I believe that even a cursory look at the size, direction, and composition of recent Soviet trade activities is sufficient to dispel this notion, and to suggest that the Soviet trade and aid potential is, at least quantitatively, still quite limited.

In looking at recent Soviet economic activities abroad, we tend perhaps to be overly impressed with one aspect of these activities, namely, its new venture into the realm of foreign aid, and we tend to lose our sense of perspective as to the dimensions of this venture and its place in the overall volume of Soviet trade. The aid efforts of the Communist bloc are certainly novel and spectacular, but the magnitudes involved are still relatively modest.

I have here attached to my statement a tabulation of all of the agreements concluded to date, and I believe this tabulation is up to date. I respectfully submit it for the record.

Representative BOLLING. Thereby accepted in the record.  
(The document referred to was inserted as follows:)

*Foreign aid and credits of the U. S. S. R. to underdeveloped countries<sup>1</sup>*

Country and project	Date of agreement	Amount	Interest rate	Duration of credit	Brief description of project
1. Afghanistan:		<i>Mil. dol.</i>	<i>Percent</i>	<i>Years</i>	
(a) Grain elevators, flour milling and baking plants.	Jan. 27, 1954	3.5	3	5	Credit to cover Soviet equipment and services of technicians.
(b) Oil storage tanks.....	July 1954	1.0	-----	-----	Do.
(c) Asphalt plant and paving project.	Oct. 5, 1954	2.1	-----	-----	Do.
(d) Economic development loan.	Jan. 28, 1956	100.0	2	30	Credit to finance several economic projects.
(e) Arms credit.....	-----	-----	-----	8	Reported in PM (Daud) address made on Aug. 25, 1956.
2. India:					
(a) Steel mill project.....	Feb. 2, 1955 <sup>2</sup>	115.0	2.5	12	Credit to pay for Soviet blueprint, equipment, and technicians used in the construction of the steel plant (1 million tons).
(b) Industrial diamond mining project.	June 19, 1955	-----	-----	-----	Soviet machinery to be supplied on credit to owners.
(c) Plant for files and rasps	Oct. 24, 1955	-----	-----	-----	Contract with private firm for Soviet equipment.
(d) Commodity credit.....	Nov. 15, 1956	126	2.5	12	To cover purchase of Soviet heavy industrial machinery.

*Foreign aid and credits of the U. S. S. R. to underdeveloped countries*<sup>1</sup>—Con.

Country and project	Date of agreement	Amount	Interest rate	Duration of credit	Brief description of project
		<i>Mil. dol.</i>	<i>Percent</i>	<i>Years</i>	
3. Finland:					
(a) Gold (or free exchange).	Feb. 7, 1954	10	2.5	10	
(b) Gold (or free exchange loans).	Jan. 25, 1955	10	2.5	10	
4. Yugoslavia:					
(a) Industrial development (fertilizer production).	Jan. 13, 1956	110	2	10	Soviet equipment on credit for 2 plants, 1 power station.
(b) Raw materials credit...	Feb. 2, 1956	54	2	10	Credit to cover Soviet shipments of raw materials during 1950-58.
(c) Gold (or free exchange) loan.	-----do-----	30	2	10	For use during 1956-58 to be repaid in 10 years, beginning Jan. 1, 1959.
(d) Atomic energy reactor...	Jan. 28, 1956	-----	-----	-----	-----
(e) Industrial development. <sup>2</sup>	Aug. 3, 1956	40	2	(4)	For coal, shipbuilding, oil and gas, reclamation, agriculture.
(f) Aluminum combine <sup>3</sup> (50,000 to 100,000 tons).	-----do-----	175	2	(4)	Project to include aluminum plants, hydroelectric power stations, bauxite mines.
5. Burma:					
(a) Technological Institute.	Dec. 6, 1955	-----	-----	-----	Soviet assistance in construction to be paid in rice.
(b) Hospital, theater, sports stadium.	Apr. 1, 1956	-----	-----	-----	Do.
(c) Industrial development.	Dec. 6, 1955	-----	-----	-----	Announced in general terms; agreement still to come.
6. Egypt:					
(a) Laboratory nuclear physics.	Feb. 10, 1956	-----	-----	-----	Covers Soviet equipment and exchange of technical personnel.
7. Indonesia.....	Sept. 15, 1956	100	2.5	12	To cover several unspecified industrial projects, Indonesia given 8 years to spend credit on specific projects.

<sup>1</sup> From the files of U. S. Department of Commerce.<sup>2</sup> Indian Government accepted Soviet project study on Mar. 8, 1956.<sup>3</sup> Further utilization January 1956 industrial development credit.<sup>4</sup> Long term.<sup>5</sup> In conjunction with GDR; this credit covers first installment of deliveries to be made in 2 stages.

Mr. HEYMANN. This tabulation shows the credit agreements actually concluded by the bloc now aggregate roughly \$900 million (exclusive of military credits). Most of these agreements were concluded during 1956 and the credits will be drawn on over a period of about 5 years, so that the annual flow of trade resulting from these arrangements is not really going to be large.

Moreover, both this and other Soviet efforts to promote trade with the underdeveloped countries have been launched from an extremely slender base of existing commodity exchange, so that despite these new trade and aid arrangements, hardly any underdeveloped country as yet conducts more than 10 percent of its trade with the bloc.

I do not wish to imply that the Soviet effort in this area may not be highly effective. As I shall point out later, I happen to think that it is. But it certainly does not derive its effectiveness from its size.

Another point to bear in mind is the fact that the Soviet excursion into the underdeveloped areas represents only a small portion, and a quite unrepresentative portion, of overall Soviet trade activities.

The overwhelming bulk of Soviet trade (more than 90 percent) is conducted within its own bloc and, to a lesser extent, with the countries of Western Europe. It is here that we must look for a clue as to whether Soviet trade is in fact undergoing a transformation. What do we find when we look at the commodity composition of this trade?

Within its own bloc, we find the Soviet Union a net importer of capital equipment, absorbing nearly half the capital goods exported by the satellites, while the bulk of Soviet exports is made up of raw materials, fuels, and food. This at least was the case in 1954, the last year for which such estimates are available.

But I can think of no reason why this relationship should have been reversed since then; on the contrary, recent events in Eastern Europe would be more likely to have intensified it. When we look at Soviet trade with the West, we similarly find that its exports continue to be dominated by the same food, fuel, and crude materials that have been the traditional export staples of Russia for decades, and that its imports continue to be predominantly manufactured products.

Soviet imports of machinery and equipment, particularly, have been growing steadily while its exports in this category remain quite small.

I have a small tabulation here from the Department of Commerce which shows the extent to which the Soviet economy is still a net importer of machinery and equipment.

*Soviet trade with the free world*

[In millions of dollars]

	1953	1954	1955
Soviet imports of machinery and equipment.....	106.7	145.1	184.7
Soviet exports of machinery and equipment.....	3.6	11.4	15.9

In other words, when we look at what has actually been happening to the commodity structure of Soviet trade, we find very little, if any, shift away from the traditional pattern. And yet, in terms of current Soviet economic needs, such a shift would seem to be very much in order.

There can be no doubt that the steady growth in the scale of industrial production both in the U. S. S. R. and more recently in the satellites, has increased considerably the bloc's needs for imported raw materials.

The stagnation of agriculture, which is also a blocwide phenomenon, similarly would seem to argue for a greater Soviet reliance on imports in this sector. At the same time, clearly, the Soviet economy now produces machinery and industrial equipment on a vast scale and in great variety.

It may in fact now have a comparative advantage in the production of this type of goods relative to agricultural and crude products. One would expect that the existence of the ever-growing annual pool of industrial goods would have long since led to a significant net flow of industrial exports to the outside world. Why has this not occurred, and why, in my view, is it not likely to occur on a really substantial scale in the near future?

In part, the answer can be found in the critical equipment needs of the domestic Soviet economy, engendered by the ambitious growth rates of the 5-year plan, by the necessity to achieve rapid productivity gains, by the ever-multiplying requirements of a modern defense industry.

In part, the answer lies in the heavy claims on Soviet machinery production of the developing economies of Eastern Europe and China. But most important, it seems to me, is the underlying reluctance of the Soviet leaders to abandon their long-held doctrinal ideal of autarky.

At this stage in its development, the Soviet economy could certainly enjoy more of the benefits of foreign trade, if only it were willing to tolerate even a modest degree of dependence on external supplies of food and raw materials. But such a fundamental revision in the Soviet attitude toward foreign trade has not taken place.

True, there appears to be now some official recognition of the advantages of international specialization, and some efforts on the part of Soviet economists to promote at least an intrabloc division of labor; moreover, the current economic offensive in the underdeveloped countries indicates an important trend toward a more flexible and confident Soviet behavior in international economic affairs. But while the Soviet planners no doubt have considerable latitude for expanding trade within the limits of the principle of autarky, the principle continues to be very much in force and to exercise an important limiting influence on the magnitude and normal growth of Soviet foreign trade.

I have, so far, concentrated only on the magnitude and growth aspects of the Soviet trade offensive, and I have suggested that it is not now large, nor has it so far shown much promise of becoming large. But it would be a grave error if we were to consider only these quantitative aspects of the Soviet effort. We would be foolhardy to draw comfort from its modest dimensions, and ignore the highly effective way in which the Russians have deployed their limited aid resources.

In this respect one cannot help but be impressed with several features of the Soviet program:

1. The shrewdness with which the Soviet planners have selected their economic aid targets and weapons, to achieve maximum political impact at an acceptable cost. Instead of frittering away their resources on numerous countries and projects, they have carefully conserved their main effort for use in 4 or 5 key areas, Afghanistan, India, Yugoslavia, Indonesia, certainly, and possibly Egypt and Burma as well; and, within each of these areas, they have concentrated their support on a few spectacular projects dear to the hearts of the local population. Moreover, Soviet preference runs distinctly toward long-term economic aid arrangements rather than a straightforward expansion of normal trade, since the aid approach does not involve them in a large immediate export commitment, but allows them to string out their shipments over a much longer period of time, thus reducing the immediate burden on their hard-pressed equipment industry.

2. The adroitness of Soviet policies in exploiting some of the weaknesses of existing western aid programs. Recent Soviet loans, for example, uniformly carry an interest rate of 2 to 2.5 percent, about half the rate at which such credits are available from the West.

More important, repayment terms tend to be attractive to the underdeveloped countries since the Soviet Union is willing to take repayment in the form of local export goods. Moreover, in the process, the Soviet Government has shown itself prepared to help the recipient countries dispose of agricultural surpluses, which could not be readily disposed of in the world market.

But above all, the Soviet salesmen have conspicuously abstained from tying their commercial undertaking to demands for political loyalty or military alliance. This "no strings" approach to aid has no doubt struck a strong responsive chord in the uncommitted part of the world.

3. And this brings me to the final aspect of the Soviet program to which I should like to call attention. It is the perceptiveness of the Soviet leaders in knowing how to appeal to the pride and sensibilities of the underdeveloped countries. Recognizing the desire of the newly independent countries for status and respect, the Russians have spared no cost in sending top-ranking Soviet officials to carry out negotiations and conduct technical programs.

To head the Soviet steel mill project in India, the Russians sent no less an authority than a Deputy Minister of Construction of Chemical and Metallurgical Enterprises of the U. S. S. R. Great emphasis has been placed in the Soviet aid program on the provision of technical training of local specialists, on extending opportunities for educating local technicians in Soviet institutes, on establishing research centers and technical schools in the local areas; this effort cannot help but exert a powerful influence on the intelligentsia in each of the target countries.

In the short run, there can be no doubt that the modest but ingeniously designed Soviet effort has reaped large political rewards, quite out of proportion to its size.

Whether this performance can be sustained in the long run, as the program develops and suffers inevitable bureaucratization, remains to be seen.

Representative BOLLING. Thank you, Mr. Heymann.

Our next witness is Prof. Walter W. Rostow who is a product of both our university system and Oxford University. Dr. Rostow served in the United States Army in World War II, has been an official of the Department of State, a professor on both sides of the Atlantic, and a prolific author of books on economic growth, including studies on both the Soviet Union and Red China. He is now teaching at the Massachusetts Institute of Technology in the Center for International Studies. His subject this morning is United States-Communist Struggle in the Underdeveloped Areas.

#### **STATEMENT OF W. W. ROSTOW, CENTER FOR INTERNATIONAL STUDIES, MASSACHUSETTS INSTITUTE OF TECHNOLOGY**

Dr. Rostow. Mr. Chairman, my subject is so broad that I submitted a formal statement (The United States-Communist Struggle in the Underdeveloped Areas). I suspect that statement contains little that will be new to you, and it is not worth reading this morning at length.

If there is any virtue in including in your series of statements one on so broad a subject as mine it is, I suspect, only that the military, political, and economic strands in the problem of our struggle with

communism in the underdeveloped areas be brought together and, especially, that certain of the relationships among those strands be examined. In the light of that view I shall only briefly summarize the main lines of my formal statement and devote the balance of my time this morning to making some off-the-cuff extensions of the fourth part of that statement, which concerns American policy.

The statement begins with an attempt to summarize the nature of the American interest in the evolution of the underdeveloped areas. Three interests are identified: one of them is the direct American military interest, that these areas not pass into the hands of communism or otherwise go hostile to us. Their location, population, resources, and future prospects make them, quite simply, a balance of power area in Eurasia and therefore of direct strategic interest to the Soviet Union whose stable aim is to disengage the United States and the free world from the balance of power that we precariously hold. Therefore the evolution of the underdeveloped areas has a direct military bearing on our status in the world.

Second—and I would rate this as of equivalent importance—should these areas go politically totalitarian or Communist, they would be lost to the part of the world which is loyal to the pursuit of democratic values. Their ideological loss would tend to make the United States an island in a totalitarian sea, with very grave costs for the quality of our domestic life.

The third relationship of the United States to these areas is not very hard to perceive as one reads the papers these days. It hinges simply upon the relationship of these areas to our other allies; namely, the industrialized countries of Western Europe and Japan. Their political destiny and their economic viability hinge on the maintenance of some kind of unity in the free world between its industrialized and underdeveloped parts.

When that unity is shattered—as it has been over the Suez issue and oil—we can see the extreme consequences for Western Europe. The Atlantic Alliance, instead of being a part of the world alliance, is thrown back into a limited orbit; and the free world's hold on the world balance of power is put in jeopardy.

These are, then, the three substantial American interests in the evolution of Asia, the Middle East, and Africa.

The second thing I tried to do in my formal submission was to characterize, in general, the forces at work in these underdeveloped areas. I tried to find a way of talking about these areas in general; because it is evident that India is a very different place from South Korea, which is a very different place from Egypt, and so on.

There is, however, one central clue which has, in the end, a special meaning for American policy. The key characteristic of these areas is that they are in a process of political transition toward status as effective modern states. They are evolving toward modern statehood out of forms of politics and society based on regions, where power lay usually in one form or another of land-based, regional authority. What we are seeing in the world is a massive version of the transition which Western Europe itself had to make in postmedieval history.

If you start with that familiar and very broad generalization, certain things become clear. One thing that becomes clear is the reason why we tend to find in these areas forms of politics that are not very democratic. What is happening in these areas is that those groups

who feel they have a vested interest in making strong modern states form coalitions. The elements in these coalitions are without stable, long political roots, without clear common interests. These coalitions are ad hoc groupings: their one point of agreement being that they want to convert these regional societies into effective modern states.

The common motive is nationalism; but nationalism has many facets. One group which has figured in virtually all the modernization efforts that one can think of, for example, Attaturk's in Turkey, the earlier Japanese effort, Bismarck's creation of the modern German nation—has been the military, whose motive was to see their nation establish a position of dignity on the world scene. There is a continuity from Germany and Japan in the 19th century to Nasser and his colonels, and the military officers we are training in South Korea.

Another group has been made up of commercial men whose national interest was in free trade on a national basis, and who found the regional organization of the country awkward.

These ad hoc national coalitions we can see around the world struggling toward modern nationhood can move in any 1 of 3 directions. They can move to try to redress old national humiliations by having external ventures. We see that acutely in the present stage of Nasser's policy. But we can see it also in the manner in which the Kashmir issue hangs over Pakistan and India, and the issue of West Irian generally hangs in the balance of politics in Indonesia. And to go back to Ataturk, who is a good model of the process, we can recall his trouble with the Greeks. This is a classic form for the expression of the new nationalism.

The second is the use of the nationalist spirit, energy, and resources to consolidate the domestic base. We have seen this in Diem's exercise in South Vietnam, in his cleaning up the sects, a phase of consolidation which has the equivalent in all these nations.

Finally, the nationalist leaders can turn to modernizing their economy, their educational system, and their society in its widest sense.

These are the three basic directions in which nationalism can go; and I believe it is possible to characterize the nations of the underdeveloped areas with respect to the proportion of their energies that go in each of these three directions.

A reason for this somewhat abstract and academic description is that I think it gives some insight into the way the Communists are operating in these areas and into the way we should operate.

Communist policy is based on an attempt to exploit whatever strands and directions nationalism is taking to disrupt the unity of the free world; to draw these nations as far as they can be drawn toward communism in the short run; and to prepare the way for Communist takeover in the long run. Communist policy is extremely flexible in this respect. Where they find a Nasser—or any national which has an acutely felt external objective or grievance—the aim of Moscow is to aline itself if possible with that grievance, and thus to produce conflict in the free world and exploit that conflict when it is brought about. Where Communists find relatively stable states, like India, they try to detach these from the free world by associating themselves with their aspirations for economic growth, with their general sentiments against colonialism and for peace. Where Communists find areas that are susceptible to guerrilla operations they continue—as in Malaya and in Burma—to prevent the consolidation of these new



nations by tactics which draw away their energies on the negative tasks of defense.

Mr. Heymann has described with great accuracy and with fresh and important data one facet of Communist policy: the policy of expanded trade, loans, and technical assistance. I think it is extremely important, however, to realize that Communist policy is playing the whole spectrum of possibilities opened up by the transitional state of the underdeveloped areas, not merely the possibility of attracting the new nations by assisting their economies.

In terms of this quick view of a large matter what is the task for American policy?

First, we must make it as unattractive as possible for either Communists or non-Communists to seek their objectives in these regions by means of force.

An ability to deliver H-bombs is not a sufficient deterrent against limited hostilities generated either by communism or by the acute nationalist aspirations of certain of the underdeveloped areas. And I would add that support for the U. N. without an American force in being and the evident will to use it if necessary will not for long hold the line against the destructive forces which exist or which may be stirred up in the transitional areas. The first prescription that flows from this definition of the transition is, then, a military one: we require in being a force for limited hostilities, a force sufficient to make it mightily unattractive either for Communists to stir up limited war or for certain of the more ardent nationalist leaders to believe it to be safe and profitable to engage their forces beyond their borders.

Put another way I think we must have a spectrum of deterrence which includes not merely deterrence against Soviet delivery of H-bombs but force in being sufficient to make it mightily unattractive for anyone in these areas to envisage the substantial use of force.

Our second job is this: we must make it as attractive as possible for the political leaders of the transitional nations to concentrate their own energies and the powerful nationalist sentiments of their people on the third job I described; that is, on the domestic tasks of modernization.

Here, evidently, we require a pool of loans and technical assistance available not merely for those nations who join us in military alliance, or for those who have already been brought to crisis by Communist tactics, but also for all those nations prepared to move forward peacefully and with reasonable efficiency on the road to modernization.

I would say that our difficulty in the Middle East crisis has been that we had neither a stick nor a carrot capable of controlling and guiding the forces at work in that area; and I would add that I can envisage no solution to the Middle East crisis which does not involve the generation by the United States of both a new stick and a new carrot.

Let me refer now to a third problem which perhaps should rank with the other two. It is a more subtle problem. It concerns those transitional areas which face serious military problems. I am thinking, for the moment, of the problem of South Korea, counterpoised against the great Communist weight across its border; of Southern Vietnam and the SEATO area; of the problem of Taiwan across the water from Communist China; and of certain others among our mili-

tary allies into whose economies and societies we have invested the bulk of our foreign-aid resources in recent years.

I think we should be clear that, in general, the maintenance of these large military establishments are a cost to the modernization of those societies. They may well be a necessary cost; but it is worth looking and relooking at the military calculus very closely to see if we cannot find ways cheaper in their energy and resources to guarantee their security, so that a higher proportion of their energy can be diverted on to the tasks of modernization. And we should be very clear as to whether, in fact, establishments on the scale that they now maintain are necessary, or whether the maintenance of an American pool of mobile force might not permit them to cut down, to a degree, their present military commitments and devote a higher proportion of their resources, energy, and talents to the tasks of modernization. This is a matter of degree, a calculus as between alternative objectives; but it is one we should honestly face, because the maintenance of these very large local military establishments are, in general, a drain on limited energies, talents, and resources needed for other purposes.

And where we must, in the common interest, maintain substantial military establishments in the transitional areas we should be more imaginative than we have been in the past in trying to make those establishments contribute constructively to the modernization of their societies. I have in mind an analogy with the history of our own Corps of Army Engineers which played a distinguished role in the building up of this economy in the 19th century, helping to lay out the railways, clear the rivers, build the canals; and I believe we should try to pass along, as one of the most valuable bits of lore in American history relevant to the development of these societies, the possibility of using in democratic ways a military establishment to help an underdeveloped country onto its feet. In other words, where we must maintain with these peoples major military establishments, we should try to make those military establishments contribute in so far as possible to the total movement toward modernization.

Generally speaking, then, I conclude that we need a usable stick and a readily available carrot if we are to deal constructively with the powerful forces at work in the transitional areas. A stick to convince one and all that the use of force outside of international agreements is likely to be expensive and ineffective, a carrot to help draw the energies and attention of men onto the great acts of construction on which the fulfillment of their ambitions depend.

The central task of American foreign policy in the underdeveloped areas is to create an environment in which the use of military force is ruled out, and within that peaceful area then to help men face and conquer the problems which must be solved if the transition of their societies to modern status is to be achieved without recourse to totalitarian methods.

This is a job I believe required urgently by the American interest; it lies fully within our economic and military capabilities; and it is consistent with our deepest national traditions and values. It is time we got on with it.

(The document referred to is as follows:)

STATEMENT BY W. W. ROSTOW, MASSACHUSETTS INSTITUTE OF TECHNOLOGY

THE UNITED STATES-COMMUNIST STRUGGLE IN THE UNDERDEVELOPED AREAS

The American interest in the evolution of the underdeveloped areas of Asia, the Middle East, and Africa is both direct and indirect.

Directly, the evolution of the underdeveloped areas is likely to determine the outcome of the power struggle between the United States on the one hand, the Soviet Union and Communist China on the other. The location, natural resources, and populations of the underdeveloped areas are such that, should they become effectively attached to the Communist bloc, the United States would become the second power in the world. More immediately, of course, these losses would directly affect our military base structure and would make more expensive and difficult the maintenance of an atomic striking force capable of continuing to deter a Soviet effort to take out American retaliatory power at a blow.

Directly, again, the loss of these regions to communism would radically diminish the area governed by loyalty to what we might broadly call democratic values. The United States would tend to become an isolated democratic island in a totalitarian sea; and under such garrison-state circumstances the maintenance and further development of our traditional way of life would be put in jeopardy, quite aside from the ominous military implications of such isolation.

Indirectly, the evolution of the underdeveloped areas is likely to determine the fate of the Western Europe and Japan and, therefore, the effectiveness of those industrialized regions in the free world alliance we are committed to lead. If the underdeveloped areas fall under Communist domination, or if they move into fixed hostility to the west, the economic and military strength of Western Europe and Japan will be diminished, the British Commonwealth as it is now organized will disintegrate, and the Atlantic world will become, at best, an awkward alliance, incapable of exercising effective influence outside a limited orbit, with the balance of the world's power lost to it.

In short, our military security and our way of life as well as the fate of Western Europe and Japan are at stake in the evolution of the underdeveloped areas.

We evidently have a major national interest, then, in developing a free world coalition which embraces in reasonable harmony and unity the industrialized states of Western Europe and Japan on the one hand, the underdeveloped areas of Asia, the Middle East, and Africa on the other.

If we are to do this we must be clear about the job we face. This brief testimony is designed to outline in very broad terms the nature of the job.

Specifically, I shall try to answer three questions:

First, what forces are at work in the underdeveloped areas of the free world?

Second, how are Moscow and Peking exploiting those forces?

Third, how must the United States work with these forces if our national interest is to be protected?

## II

First, the forces at work in the underdeveloped areas.

The underdeveloped areas could better be designated "transitional"; for the basic fact about them is that they are in a process of change. Where are they going?

Politically, they are caught up at various stages in the process of making effective modern states. At an earlier time they were organized along traditional political lines that gave power not to a national government but to various regional leaders. These regional leaders usually had their roots in large-scale landholding; and the whole society was built around the relatively low productivity, self-sufficient agricultural life that resulted. Colonial administrations, where they existed, were usually superimposed on this traditional, localized political and economic structure.

In most of the underdeveloped areas these traditional societies have been undergoing piecemeal change for a century, or even more. Commerce expanded, at home and abroad; new ideas came from the West; and gradually groups emerged intent on making effective, independent, national states.

The motives of these revolutionary groups have varied. Some, including often the younger military men, wished to create a national state capable of maintaining independence in a world of modern power, to avenge the old humili-

ations of colonial status, to assert their sense of national dignity. Others have contested the power of the traditional regime in order to carry on commerce or industry unencumbered by the regional obstructions of the traditional society. Others—sometimes touched by ideas from the West—have been moved by an ideological or religious desire to see the material and spiritual lot of their people improved; and for this they appreciated that a centralized modern state was required.

What has happened in the postwar decade is that many of these societies, long in slow transition, reached a stage where they could and did successfully assert their independence. The world is full of new nations. Nationhood was usually achieved by a coalition among those groups in the society who shared an ambition to see emerge an independent modern nation. Lacking any stable basis for democratic politics as we know it, these groups tended often to rally around a single leader.

The formal achievement of independence has proved, of course, only a stage in the process of transition. Freedom is one thing; an effective modern state is another. We should recall that, even in our own history, it was one thing to defeat the British in the War of Independence; it was quite another to fashion a Constitution capable of holding together the American States under circumstances that would permit us to defend our independence against foreign powers and to build a truly national economy.

The great political engine at work in these transitional areas is, of course, nationalism. But nationalism can take three forms: It can be channeled off along military lines—into external adventures or in efforts to maintain hard-won independence from foreign powers; it can be used to consolidate effective political power at home; it can be used to modernize and develop the economy and social life of the new nation.

If we look at the transitional areas of the world we can see some—like Nasser's Egypt—where the primary channel for nationalism has recently been external adventure; others—like Indonesia—where the task of internal consolidation of power is incomplete; others—notably India—where the tasks of economic and social modernization are absorbing the bulk of the new nation's energies; still others—like South Korea—where defense against an external power dominates the scene and absorbs the nation's best talents and the bulk of the margin of resources above subsistence.

How does economic growth enter the picture? Economic growth is an essential condition for each of the aspirations of the new nationalist spirit. Effective armies cannot be maintained without modern industry. The old colonial dependence on the export of a few raw commodities cannot be altered without effective economic development. The interests of the commercial and industrial classes require economic expansion. Finally, standards of education, health, and welfare cannot be improved unless the economy expands more rapidly than the population. And as the new nations are formed—freed of their old colonial status—their citizens come to expect that their extreme poverty, previously attributable to the colonial power, will be rapidly alleviated.

In short, the desire for economic growth in the transitional areas arises directly from the deepest hopes and aspirations of their political leaders and their peoples: it is an essential means for the creation of effective modern states capable of achieving and maintaining independent status on the world scene, capable of providing a regularly rising standard of welfare for their citizens.

But it is one thing to want economic growth; it is another to create the conditions for a sustained increase in output per head. In order to achieve sustained economic growth, the leaders must organize the scarce talents and resources available to them around these concrete, often humble tasks of capital construction; the introduction of new techniques in agriculture; the building of efficient and honest government administrations; and all the rest of the familiar agenda. In many cases the new transitional nations have emerged with no clear sense of direction, with their politics and social life still disunited, full of large visions of independence and progress, but without the clarity or the effective will to turn wholeheartedly to the great tasks of modernization at home.

It is this highly charged situation, where ambition is not matched by day-to-day performance, that Moscow and Peking are seeking systematically to exploit.

## III

How, precisely, are the Communists proceeding in the transitional regions?

Their general objective is to exploit the ambitions and frustrations of the leaders and peoples in these areas to disrupt the unity and cohesion of the free world in the short run and to prepare conditions for Communist takeover in the long run. Since the situation differs somewhat in each of the transitional areas, Communist tactics are adjusted to fit the possibilities, case by case.

As we have recently had a rare opportunity to observe in the Middle East, where ambitions for external expansion are strong, Communist policy seeks to inflame the nationalist passion to undertake external adventure. As it is most successful this leads in the short run to wars within the free world, tending to fracture the unity of our coalitions; and in the long run, by drawing energy and resources from the tasks of economic and social development, it leaves the areas concerned increasingly vulnerable to the domestic appeal of communism. From Moscow's point of view the sequence of events set in motion by the Egyptian arms deal could not have been a more successful short-run exercise.

Although the Middle East has been the most obvious example of this Communist technique, it is not the only example. For example, Soviet maneuvers with respect to India, Pakistan, and Afghanistan have been carefully calculated to produce maximum friction in the Indian peninsula.

Where, as in India, communism confronts a reasonably stable government, unlikely to be pushed or enticed into an aggressive war, Moscow has sought to detach that nation from the free world by associating itself with peace and, especially, with the local drive for economic development. In the short run the loans and trade agreements made by Moscow with, say, India, Burma, and Afghanistan are designed to insure a high degree of neutrality in their diplomatic behavior; and in the long run they are designed to encourage the spread of an atmosphere favorable to the development of communism in those areas. As a matter of ideological conviction, Communists believe that democratic efforts to achieve self-sustained economic growth in the transitional areas are bound to fail. They do not believe that their loans and trade are likely to represent the margin between success or failure. And so they make their friendly agreements with the present rulers while working directly and indirectly to subvert their citizens to communism. It was some such perception of Communist purposes by the Indian Government which led to the marked cooling between New Delhi and Moscow after the visit of Bulganin and Khrushchev in 1955.

A third Communist method is that recently applied in Malaya and, to a degree, in the Philippines, Laos, and Burma. By maintaining armed insurrection—even on a minor scale—the energies and resources of the transitional governments are diverted away from the tasks of domestic consolidation and the modernization of their economies. They are rendered, thereby, more vulnerable to Communist political attack.

This method is, of course, simply an early tactical phase of that employed to seize total power in China and in Northern Vietnam.

In all areas, whatever the special technique judged applicable, Moscow and Peking maintain some form of Communist Party and a heavy flow of propaganda designed to persuade men that only through communism can their ambitions for rapid economic progress and effective national independence be fulfilled. In this unrelenting effort Chinese communism has, to an important degree, supplemented and, to a degree, superseded the Soviet Union as the showcase of what communism can accomplish in an underdeveloped area.

## IV

Now, briefly, United States policy. I shall not attempt to characterize what our national policy toward the underdeveloped areas has been, except to say that in a strict sense we have had no policy. The United States has moved in Asia, the Middle East, and Africa in a series of reactions to events. These events have usually been precipitated by the Communist effort to exploit the possibilities inherent in the transitional areas. In short, with minor exceptions, our policy has been to counter Communist initiatives as best we could when they have resulted in acute crises: for example, the civil war in China; the Communist attack on South Korea in 1950; the salvage of Southern Vietnam after the Geneva Conference of 1954; and now the problem, belatedly faced, under extremely difficult circumstances, of making a settlement in the Middle East.

It is evident that a reactive, convulsive policy, focused negatively around opposition to communism, has not fulfilled the American interest in the transitional areas. What we require is a steady, positive policy, which would indeed

prevent the spread of Communist power into the transitional regions, but would do so by alining American influence with the peaceful, constructive forces at work or potentially at work in those regions.

Specifically, there appear to be two major elements required, now missing from American policy.

First, we must make it as unattractive as possible for either Communists or non-Communists to seek their objectives in these regions by means of force. An ability to deliver H-bombs is not a sufficient deterrent against limited hostilities; and support for the U. N., without a United States force in being—and the evident will to use it if necessary—will not for long hold the line against the disruptive forces which may be stirred up in the transitional areas.

Second, we must make it as attractive as possible for the political leaders of the transitional nations to concentrate their own energies and the powerful nationalist sentiments of their peoples, on the domestic tasks of modernization. Here, evidently, we require a pool of loans and technical assistance available not merely for those nations who join us in military alliance or for those who have already been brought to crisis by Communist tactics, but for all those nations prepared to move forward peacefully and with reasonable efficiency in the road to modernization.

In short we need a usable stick and a readily available carrot if we are to deal constructively with the powerful forces at work in the transitional areas: a stick to convince one and all that the use of force is likely to prove expensive and ineffective; a carrot to help draw the energies and attention of men on to the great acts of construction on which the fulfillment of their ambitions depends.

The central task of American foreign policy in the underdeveloped areas is, then, to create an environment in which the use of military force is ruled out and, within that peaceful arena, then to help men face and conquer the problems which must be solved if the transition of their societies to modern status is to be achieved without recourse to totalitarian methods.

This is a job required urgently by the American interest; it lies within our military and economic capabilities, and it is consonant with our deepest national traditions and values. It is time we got on with it.

Representative BOLLING. Thank you, sir.

This morning, the first three witnesses have described some of the problems and possibilities of competition in the military, political, and economic and trade fields, which the United States faces as a result of Communist economic growth. We have asked two very able men to pursue for us the implications of these challenges for our country.

Prof. Milton Katz, of the Harvard University Law School, is going to help us identify possible courses for United States foreign economic policy. To this task, he brings some unique experiences. In addition to his work in the fields of international and administrative law, he has had a wide range of assignments. He was executive officer of the Combined Production and Resources Board before serving overseas with the United States Navy. During the period of the Korean war, he carried the rank of Ambassador, heading the United States representation in the Economic Commission for Europe, and being Chairman of the Defense Financial and Economic Committee under NATO. Professor Katz, we are pleased to have you here this morning.

#### STATEMENT OF MILTON KATZ, HARVARD LAW SCHOOL

Mr. KATZ. Mr. Chairman, I have a written statement which I shall submit. I will make no attempt to read it since I think that will be too long for our purposes this morning.

As I see it, Mr. Chairman, the foreign economic policy of the United States is a part of the foreign policy of the United States.

It derives its objectives from our foreign policy and must serve those objectives. It is also part of the general economic policy of the United States. It must serve the objectives of our general economic policy. Finally, since the economy is the underpinning for our Military Establishment, it must also make sense in terms of our national-security policy.

We seek, therefore, when we face these problems of foreign economic policy, to identify lines of action which make sense in terms of our foreign policy, our general economic policy, and the needs of our Military Establishment. Not only must our foreign economic policy make sense in those terms, but it must be also so considered and so applied as to make sense for each of the main contingencies which face the United States today. As we look ahead of us, it appears that we face three principal contingencies. One is an indefinite prolongation of what is sometimes called the cold war. I have been told recently the time has come to retire that term and find another form of words to use. Let's call it an indefinite prolongation of current tension and unrest. That is one of the prospects we face. The second contingency we might have to meet would be a general war. The third contingency is the possible development of an authentic general peace. It is the central purpose of the United States to achieve the third—general peace—and to prevent the second, that is to say, to prevent general war. I should also assume if any one of us in this room were to be asked to guess which one of the contingencies was most likely to develop, he probably would bet on the first.

However, the prospects are so uncertain and the consequences of the wrong guess, and the wrong judgment on these matters would be so serious that it is not permissible for us to develop a policy on the assumption that any one of these contingencies will be realized.

We have to pursue policies which will prepare us at the same time for all three. In broad terms, then, the tests which our foreign economic policy must meet are these: It must be one which prepares us for all of these contingencies, or any one of them, and it must make sense in terms of both our general foreign policy and our general economic policy.

The actual problems that will confront us from week to week and month to month and year to year as we go on are infinite in number and in variety. The process of government in this sector, as in all sectors, will be a process of reaching decisions from day to day, week to week, month to month, on an unnumbered group of concrete problems.

That raises this question: Is it possible to find certain themes, certain main themes of policy, which will make sense in terms of the contingencies I have mentioned, which will make sense in terms of foreign and economic policy, both, and which will serve as useful and workable guides for the concrete decisions which will have to be made on the concrete facts that will govern in each case? I would like to suggest that there are such themes, two main themes.

One I would call the theme of economic growth—in the United States, in the nations politically allied or associated with it, sometimes referred to as the free world, and in the areas which Mr. Rostow discussed in his statement, and which, for convenience, I shall call the uncommitted areas.

The second theme is the theme of cohesion, economic cohesion. In the time remaining to me, I should like to talk about economic growth

and economic cohesion in terms which, while general, will be sufficiently specific to make clear what I am talking about.

In regard to growth within the United States, we see a fortunate and important harmony between the primary objectives of our general economic policy and the primary needs of our foreign policy. Growth within the United States is an accepted, indeed an almost instinctive, objective of American life and has been throughout our history. It is taken for granted in almost every policy statement by any American business group or labor group or farm group or professional group. It is the theme of successive administrations, Republican or Democratic, and it has been a thread which has run through the entire course of our history.

Growth in all respects, qualitative and quantitative, is, I should say, the main objective of our general economic policy. It happens also to be a key to our foreign policy. Why?

Let me just tick off the obvious elements. In the first place, a large and powerful economy represents not only in an immediate sense the underpinning for our Military Establishment, but in an unpredictable world in which we never can be quite sure what kinds of military power we will need, a vital element in our preparation for the long pull is to have an economy strong enough, big enough, and varied enough to enable us to go in any possible direction.

In the second place, the growth of the United States economy is vital if we are to create available markets for the products of the areas which I have called for convenience the free world and the uncommitted areas. There is a great deal of talk, and rightly so, about the need for tariff reduction and the need for a wise and farsighted United States import policy. I suggest, however, that a sustained and vigorous growth in the American economy may perhaps mean more in creating the possibility of markets for the products of these other societies, than any tariff reduction which seems to be politically likely in the next 5 or 10 years. Conversely, a collapse in the American economy might well do more damage to the market possibilities of these other societies than the tariff.

I think that our friends throughout the so-called free world and throughout the uncommitted areas are well aware of the stake which they have in a steadily growing, vital and stable United States economy. This is an objective which is supported by the common consent of the entire world outside of the Soviet Communist bloc.

Now, there is another respect in which the sustained growth of the American economy is vital from a foreign policy point of view and that is this: To achieve in the uncommitted areas what Mr. Rostow has been talking about, it will be necessary for them to mobilize every resource which they have available to them. Even assuming they are successful in mobilizing their own resources, and even assuming that our friends in Western Europe are successful in mobilizing theirs, the job to be done is too large to be accomplished without the resources of the United States. After all, we do represent close to half of the economic activity of the world outside the Soviet Communist orbit today.

In addition, when we look at these areas throughout the world and particularly the so-called uncommitted areas, we have to remember one widespread and deeply felt emotion which runs through them.



It might be described simply in these terms: What was good enough for grandfather ain't good enough for me.

This has been called the revolution of rising expectations. They are not just going to be satisfied with what they had or papa had or grandpapa had. They want more. They are struck by the possibilities of modern science, modern technology and modern industry. They have gotten it into their heads that the resources of a modern industrialized society are such that it is possible at last to solve the age-old economic anxieties of man. Maybe they are wrong and maybe they are right. The point is that this is the way they think; and some indication of progress in that direction is necessary if any government in those societies is to survive. Such progress in adequate measure does not appear practicable without resources from the United States. When I speak of resources, I have in mind not only facilities and raw materials but also the principal resource of all, which is skilled manpower.

We talk of technical assistance. That is manpower. We talk of technological development. That is eventually the brains of man. There will be a worldwide shortage of these, and they have to be maximized. This again underscores the importance for our foreign economic policy of a vigorous growth, qualitative and quantitative, in the United States economy.

The growth of the economies of the free world is also vital from the point of view both of our own domestic economic purposes and our foreign policy objectives. To speak first about our own domestic economic growth, I simply want to focus on one facet of the problem. That is, the facet of raw materials.

It has been brought out to you, I am sure, by previous witnesses that in the period since 1939 the industrial growth of the world has run about 5 or 6 times more rapidly than the growth in the worldwide supply of raw materials. To state this more specifically in American terms, I should like to refer back to the report of the President's Materials Policy Commission, sometimes called the Paley Commission. You will recall that this report appeared about 1951.

The report brought out that even at that time we were already importing some part of every single metal we used in our industry except, as I recall it, two, magnesium and molybdenum. As we look ahead, we face the prospect of a growing population and a growing rate of productivity. Assuming the persistence of current rates of growth, by 1975 we will need to import about 20 percent of our raw materials and 55 percent of our metals for American industry.

Obviously, if our armament needs expand, that deficiency will be greater. It is therefore vital to the growth of the American economy that there should be a worldwide expansion of raw material supply. We can't have an expansion in raw material supply apart from the general growth of the economies in the countries within which the expansion of raw material supplies may be sought. Thus, for the necessary growth of our own economy, a general growth of the free world economies and those of the uncommitted areas is necessary.

When we pass to considerations of foreign policy, we recognize that we want these areas to be stable and independent. We want it to be possible for them to move in the political directions which will be consistent with our own. That won't be possible unless they have some realistic possibility of economic growth on a sufficient scale to commend itself to the instincts and feelings of their populations.

Now, I would like to consider what are the key sectors in which growth is necessary.

I have already mentioned one, that is raw materials. Another, I think, is equally obvious when you think of the uncommitted areas. That is food.

The 5-year plan of India, for instance, may be regarded primarily as a plan to increase Indian food production at a sufficient scale so as not only to keep pace with the rapid increase in the Indian population but if possible pass it.

The problem of south Asia is largely in economic terms a problem of food production.

Because of the immense food production in this country, and our problem of surpluses, we are in danger of losing sight of the fact that, on a worldwide basis, there is an acute need for an expanded food production, particularly in Asia and Africa.

The third sector I would stress is less obvious than food and raw materials. Yet it is perhaps the most important of all. I have already described it as quality manpower. Here, Mr. Chairman, if you will permit me, I will say some things which may be obvious, but which have to be said. The principal natural resource of any society isn't steel, oil, or coal or uranium. It is people. It is the character and intelligence of men and women. If you were to seek to strike a balance sheet of strength between the United States and its friends on the one hand and the Soviet Union and its friends on the other, you would see that speaking broadly their advantage is numerical and our advantage is qualitative. If they should ever add a qualitative advantage to their numerical advantage, our prospects would be black.

If they equalize qualitatively and retain their numerical advantage, we would be in trouble.

What is our qualitative advantage? You will say it is the organization of our industry and agriculture. What does that rest on?

You will say our technology. What does that rest on? You will say our science. What does that rest on? Our total intellectual heritage and activity.

What does that rest on? That rests fundamentally on the great traditions of the free and self-reliant mind.

What does that rest on?

A belief in the dignity of man and the fact that the function of society is to enable the individual to realize his potential qualities, his potentialities for growth. This is not only morally right, not only a beautiful thing, not only a nice thing to have, not only a thing we would love to have, it is necessary to our survival.

I will try to state this as an engineer might state it; and I hope Senator Flanders, who is one, won't think I am trespassing on his field.

In engineering terms, one might say that the test of the efficiency of a society is whether it is so organized as to make optimum use of its principal resources. If I am right when I say the principal resource is the character and intelligence of men and women, in the long run a free society is the most efficient, because, to the extent that it vindicates its own principles, it gives the maximum range to human talent.

This means that it has to remember where its strength lies. This brings me to something that may be paradoxical. At the core of our

economic problem today, and at the core of our foreign policy today, there is a problem to which I would call your attention. That is the problem of the American educational system. Not so long ago, it was suggested by a leader of our Government that we should be prepared to make available to countries throughout the world teachers of science. I am told by people who have looked into the condition of the teaching of science in American high schools that we face a current shortage of many thousands of individual teachers. The American educational system lies at the core of our qualitative growth. It has to be enlarged, greatly enlarged, greatly strengthened, greatly invigorated. In stating this, I earnestly ask you to believe that I am not just playing with words.

Just as surely as skilled manpower is the key to our winning out, so our educational system—which right now is in very serious trouble in relation to the demands being made upon it—lies at the heart of our current economic and foreign policy programs.

I have referred to economic cohesion as the other aspect of this large problem, the other of the two main themes. I am sure that some of the witnesses must have called the attention of the committee to a paper of Stalin's published shortly before his death at the time of the 19th Congress of the Communist Party in 1952. I am not going to bore the committee by repeating what you are familiar with, but you will recall that Stalin sketches out a plan of action in the economic sphere. He points out that there has been a steady disintegration in the world market. He called it the capitalist market. He pointed out that ever since the Soviet Communist bloc came into being and was enlarged by the addition of China there are now as he put it 2 parallel world markets, the Soviet Communist bloc and the free world market.

He argued that there has always been a tendency to dissension and disintegration in the free world markets. He sketched out a systematic Soviet plan designed to exacerbate those divisive tendencies and add to the disruptive influences. His plan in the economic sector was consistent with the general Soviet strategy, which Mr. Roberts described to us this morning.

It is a strategy of disruption. We have to meet it—in fact we have met it—by a strategy of cohesion. What does that mean—economic cohesion or cooperation? It is more than preaching and more than hoping. We have to identify actual concrete economic interests which the United States has in common with the nations of Europe, and Asia and Africa and South America. We have to build arrangements which give effect to those common interests. We have to identify places where our interests in fact diverge or conflict, not kid ourselves about these, and we have to build arrangements to minimize the effect of such divergences or conflicts in interest.

This brings me to the whole question of ends and means. You will notice that up to this point I haven't said a word about multilateral trade, tariff reductions, economic aid, technical assistance, private investment or any of the other things one is supposed to talk about when one talks about foreign economic policy. I have refrained up to this point deliberately, Mr. Chairman, because I think in this sector there has been some tendency to confuse ends and means. I have heard arguments about economic aid, for instance, in which the proponents talked as if it were somehow good in itself and the opponents attacked it as evil in itself. That is like arguing whether a hammer

is good or a screwdriver is bad or whether one is better than the other. It depends on what we may be trying to do; what our purpose is; what our target is. It also depends upon whom and what we have available to achieve our purpose. This problem of means is fundamental when we seek to translate aims into action. I would point out that the various means available—import policy, tariff policy, multilateral trade, monetary policy, economic aid, technical assistance—in their various forms are all instruments which if wisely used can be effective in bringing about the growth which we need and the cohesion which we need.

In the remaining few minutes I would like to talk about one illustrative aspect of multilateral trade and one illustrative aspect of economic aid and technical assistance.

As to multilateral trade:

I have referred to our shortages of raw materials, and our need for a worldwide expansion of materials. This shortage and this need make it to America's interest to encourage a flow of private investment into those areas so as to maximize the growth of those materials. It is also in America's interest to buy them. We will buy them because we will need them. This is not theoretical. George Humphrey's company, the Hanna Co., has been developing iron ore deposits in Labrador on a vast scale. I understand that Bethlehem Steel has been doing the same in Venezuela. The iron ore and steel companies are also looking for iron ore in Northwest Africa. The copper companies get copper from South America. We get uranium from Belgium. I have only to say the word "oil" and it tells its own story. Here is an opportunity for a flow of dollars. Through investment and buying by us, dollars would move into these areas of raw material supply.

Western Europe needs dollars. It has a capacity to produce things needed in the uncommitted areas. These areas themselves are hungry for growth, for national economic vigor.

Here then is a basis for a constructive pattern of multilateral trade which would pull us all together. But there are other parts of this story.

The same underdeveloped areas which desperately need this capital in many places have states of mind which are such that it is the last thing they seem willing to take. They are moved by a fervent nationalism. They are also sometimes moved by the kind of judgment which comes out of inexperience and confusion. They may adopt policies which run directly counter to their own economic needs.

We may do the same. Protectionist thought or the impact of certain kinds of raw material development on certain places within the United States may be such that we may pursue policies directly counter to our long-range interests. Western Europe might do the same by adhering to outworn methods of management and organization which increase their unit costs.

In short, here are some facts. If we handle them one way, we can turn them into instruments for pulling the whole free world together and making it strong. If we handle them another way, we can play down the alley Stalin described, and turn them into instruments which tend to disrupt the free world.

Now, economic aid and technical assistance: Here, I merely want to serve a warning against using a term such as "technical assistance"

or "economic aid" as a rubric to cover many different things, without remembering that they are different. I had the honor of being the head of the Marshall plan in Europe for a year and a half. The process of economic aid, which the Marshall plan evolved, was to my mind very different from the process of economic aid to a state like India. It was aid to a sophisticated and advanced economy. It was aid to societies where the acute need was for capital equipment and the reconstruction of intricate patterns of trade. It was aid to societies which had very skilled and experienced governments with skilled classes of public officials and management, labor, and professional categories. It was aid to a society which had already made up its own mind about what it needed, and developed a comprehensive plan for 16 or 17 nations; and it was aid to a society between which and the United States the problem of communication is relatively easy—I am not saying it is really easy, but it is comparatively easy.

When you pass to aid to India you have a very different kind of problem. You have a society whose central immediate economic need is food. You have a society whose own economic plans center on agricultural expansion. You have a society with a government which is strong for that part of the world, but less strong and less experienced than the governments of Western Europe. There is a devoted civil service, qualitatively very high but very limited in numbers. When you move out into the general population, you find much less industrial skill, management skill, agricultural skill, skilled labor, professional cadres of skill than in Western Europe. Finally, you have a society which is less clear about whether its objectives are really in harmony with ours than in the case of Western Europe. It is a society with which communication is much more difficult.

When you pass to a place like Indonesia, you come to a third set of problems. There the central economic need again relates to agriculture and food production. For this purpose, and others, technical assistance is needed. That is a word. What does it mean? It means men who can help train other people. It means the need to proceed through a set of human relationships. Among other things, this means that America's capacity to help may be much more limited than our capacity to help Germany or France or Japan or England. If somebody needs refineries or machine tools, we can give them a lot of that. But, suppose that somebody needs the kind of a man who is able and willing to live in the wet tropics for 2 or 3 years, who is not only a skilled agriculturist but who has the kind of personal sensitiveness that enables him to work with people whose whole background, tradition, and outlook are remote from his own; a fellow who can work with the people who don't speak any language that he has ever heard of before; a fellow who can adjust his agricultural techniques to working with primitive tools and with people who have very limited training. Our capacity to furnish that kind of man—and especially that kind of man who has a wife who has the same attributes—is much more limited than our capacity to furnish machine tools and refineries. There is no point in criticizing anybody about this. But we might as well face the facts of life.

Furthermore, the capacity of England, Germany, or Japan to absorb aid in the form of machine tools or refineries is very great. The capacity of a society like Indonesia to absorb the other kind of aid is

limited by the rate at which training is possible. They can't absorb such aid at rates faster than we can find Americans that can help train Indonesians, or at rates faster than the trainees can learn. That limits the aid and limits the dollar expenditures.

In summary, I see it this way: It is necessary that we pursue policies aimed at growth and cohesion, in order to meet any of the contingencies which confront the United States.

Such policies make sense for our own domestic economic needs, the needs of our foreign policy, and the needs of our national-security policy. To carry them out, we have available a variety of tools or instruments—the right kind of trade and import policy, the right kind of monetary policy, the right atmosphere for the flow of American private investment and private skills that go with private investment, the right kind of economic aid, the right kind of technical assistance. It is hard to generalize about these in a useful way, except to say they are all appropriate instruments which we should be ready to use, as may be indicated by what we want to accomplish in any particular place at any particular time.

Thank you, Mr. Chairman.

(The document referred to is as follows:)

#### TESTIMONY OF MILTON KATZ, HARVARD LAW SCHOOL

##### UNITED STATES FOREIGN ECONOMIC POLICY IN MEETING THE WORLD CHALLENGE

The foreign economic policy of the United States is a part of United States foreign policy. It is also a part of general United States economic policy. It must make sense in terms of both. Since the economy also furnishes the underpinning for our Military Establishment, it must make sense in terms of United States national-security policy as well.

The problems of United States foreign-economic policy have to be appraised in reference to three contingencies: An indefinite prolongation of international tension and unrest, a possible eruption of general war, and the possible emergence of authentic peace. Most Americans would probably estimate the first as the most likely to be realized, while it is our objective as a nation to prevent the second and to seek the third. Despite our expectations and purposes, the uncertainties are so profound, and the consequences of miscalculation would be so serious, that we cannot wisely base our policies on a definite assumption that any one of these contingencies would be realized. We must seek possible lines of action which would prepare us for all three.

I believe that two large themes of United States foreign economic policy can be identified which would be valid for all three contingencies; and also make sense in terms of United States foreign policy, general economic policy, and military policy. These themes are economic growth and economic cohesion: economic growth within the United States, the nations allied or politically associated with it, and the uncommitted nations; and economic cohesion among these societies.

##### UNITED STATES ECONOMIC GROWTH

###### *Significance as a common objective of domestic economic policy and foreign economic policy*

Growth is an accepted objective of United States domestic economic policy. It has been a central theme of American life throughout our history; it is explicitly or implicitly assumed in the prevailing attitudes of American businessmen, labor unions, farmers, and professional groups; and it has the express endorsement of a succession of administrations, Republican and Democratic. Paradoxically, the stability and vigorous expansion of the United States domestic economy is also a primary requirement for a successful United States foreign economic policy.

###### *Significance as a factor in protecting the United States against the threat of the Soviet Union*

The growth of the United States economy is necessary to protect us against the contingency of a general war, since the economy would be the source of the

armament and equipment needed for the Military Establishment. If the current international tension and unrest should be indefinitely protracted, a high rate of growth in the United States economy would be necessary to bring time to our side; i. e., to improve our relative position as time goes on.

*Significance as a factor in creating markets for the products of other societies*

The American economy represents almost half the economic activity of the world outside the Soviet Communist orbit. In consequence, even a relatively minor and transient downward movement in the American economy can have multiplied adverse effects in the economies of Western Europe, Latin America, Japan, Australia, South Asia, the Middle East, and Africa. Conversely, a sustained and increasing rate of activity in the American economy can enlarge America's availability as a market for the products of these economies. Our friends throughout the free world and in the uncommitted areas are quite clear as to the stake which they have in a vigorous and growing American economy. This is a central need, supported by the common consent of the world outside the Soviet Communist bloc.

*Significance as a source of human and physical capital needed by other societies*

The nations of the free world and the uncommitted areas will require skilled manpower, facilities, and materials to give their peoples the standard of living which they will demand; to maintain themselves against economic pressure or the threat of economic pressure; and to achieve any sort of capacity to defend themselves against armed attack or the threat of such attack. Whatever their own resources may be or may become, the requirements will greatly exceed their capacity to meet them. Their own resources will have to be supplemented by those of the United States. In a maximum measure, it is to be hoped that these resources may flow through the channels of an expanding international trade and investment. They may also flow through the channels of Government loans, grants, or technical assistance. Whatever the channel, the resources must exist in order to be available. These resources will only be available in adequate measure if the American economy continues to expand.

GROWTH IN THE ECONOMIES OF THE NATIONS OF THE FREE WORLD AND UNCOMMITTED AREAS

*Significance of such growth for the American economy*

It is improbable that the American economy can grow at a satisfactory rate if the economies of the other free societies and uncommitted areas do not also expand. Our experience would suggest that a widespread depression in Europe, Asia, and Latin America would scarcely be conducive to American prosperity. Our historic experience and the commonsense of this appraisal are supported by concrete data. The problems and prospects of raw materials supply furnish a sufficient illustration. As long ago as 1951, the report of the President's Materials Policy Commission gave warning that the requirements of the United States for metals already exceeded our capacity to produce them except in the case of two metals: Magnesium and molybdenum. In substantial degree for some metals, and in some degree for all metals other than magnesium and molybdenum, the needs of American industry must be met through imports. American productivity grows steadily year by year, as does our population. Even if the years ahead of us should be years of peace, the annual domestic deficit in metals and the need for importation will continue to grow. Any acceleration in the rate of armament would intensify the shortfall. It has been estimated that by 1975, if present growth rates are maintained, we shall have to import at least 20 percent of our total raw materials requirements and no less than 55 percent of our requirements of metals. In consequence, the United States has a long-range need for growth in metal supplies, and other raw materials supplies, throughout the free world. The production of raw materials and metals cannot be separated from the economic life of the countries within which this production must be sought. It is unrealistic to expect the necessary expansion in these supplies except as part of a vigorous general growth in those areas.

*Significance for American foreign policy and national security policy*

The fundamental point has already been made that United States foreign economic policy must support United States foreign policy and national security policy. The United States has a vital stake in the stability and independence of such areas as Western Europe, the Middle East, Latin America, Japan, and South Asia. It is scarcely necessary to labor the point that these areas cannot

achieve stability or maintain their independence if their economies should be feeble and undependable. This point is underscored by what has been described as the worldwide revolution of rising expectations. To put it somewhat more simply, there is a widespread conviction among the peoples of Europe, Asia, Africa, and Latin America that what was good enough for grandfather is not good enough for them. Rightly or wrongly, wisely or unwisely, they have become convinced that modern science and technology, and the whole apparatus of modern industrial society, are adequate to enable them to take a long step forward toward meeting their age-old economic anxieties. This is one of the central political facts of our time. This surge of demand—these rising expectations—will mean grave instability and danger unless there is a sufficient prospect of economic growth to give these peoples hope that their expectations will to some degree be met.

#### KEY ELEMENTS OF GROWTH

Up to this point, I have spoken of growth in general, and of its significance in relation to the objectives of United States foreign policy, national security policy, and general economic policy. It seems to me also important to identify certain key sectors within which growth is critical. In broad terms, of course, we must emphasize growth in the capacity of the United States—and of the nations of the free world and uncommitted areas—to produce those goods and services which are essential to a sound standard of living, as a sound standard of living would be understood by responsible and influential elements of opinion in the respective societies; and also growth in our capacity to produce those goods and services which are in fact vital to our defense in the contingency of a general war. Within these very broad terms, I should like to suggest the need for special attention to three factors:

#### *Quality*

This, it seems to me, cannot be overemphasized. In the alinement of forces in the world today between the United States and other free societies on the one hand and the Soviet Communist bloc on the other, the essential advantage of the latter may be said to be in numbers and the central advantage of the former in quality. I am speaking in broad terms, of course, but the qualifications to which so broad a statement is unavoidably subject do not materially impair the point. This incidence of advantage recalls a fact which is often overlooked. The principal natural resource of any society is neither steel nor coal nor oil nor water nor transportation nor uranium. It is the quality of its men and women. That quality is a complex of many factors: The values by which a people lives; the distribution of character and talent within a society and the opportunity available to character and talent; the fund of accumulated knowledge and developed skills; talents of organization and operation; the organization and methods to increase and effectively transmit accumulated knowledge and skills. Our immediate qualitative advantage lies in the organization of our industry and agriculture. That in turn rests upon our technology. That in turn rests upon our science. That in turn rests upon our total intellectual heritage and activity. Our total intellectual strength rests upon the great tradition of the free and self-reliant mind. The tradition of the free and self-reliant mind is itself one major reflection of our belief in the dignity of the individual and the ultimate importance of affording him every opportunity for the fulfillment of his possibilities. In short, when we seek to determine the ultimate source of our qualitative advantage, we come back to considerations which may be deemed essentially spiritual and moral.

The same considerations emphasize the overwhelming importance of our educational system. It may seem odd to talk of moral traditions and an educational system in testimony about foreign economic policy. In fact, there is nothing odd about it. Our principal economic resource is the talents and energy of our people. Our principal capital is our human capital. We must maximize this resource and this capital. To do so, we must understand the strength which we draw from American values, and be guided by them. We must also broaden, invigorate, and steadily improve our entire educational and training system.

#### *Raw materials*

The existing deficiencies in raw materials supply and the need for their expansion have already been brought out. (See above at pp. 4, 5.)



### *Food*

This is the central problem of economic growth in the heavily populated areas of Asia and the Middle East. The immense production of food in the United States, and the problem of surpluses here, have perhaps tended to obscure the worldwide picture. Two facts stand out. In the period since 1939, the worldwide growth in industrial production has far outstripped the worldwide rate of increase in the supply of food (as it has outstripped the worldwide increase in the supply of raw materials). In Asia and the Middle East, the so-called population explosion—the enormous rate of increase in population—has made the problem of food supply continuously critical. It must be one of the primary targets of United States foreign economic policy.

### ECONOMIC COHESION

#### *Significance in relation to United States foreign policy and national security policy*

I take it that the ultimate objective of American foreign policy is a peaceful, just and workable international order, in which free societies may flourish and freemen have a reasonable chance to fulfill their potentialities as human beings. This has been expressed by successive American administrations, Republican and Democratic, as peace with justice and freedom. As an expression of the central objective of American foreign policy, it seems to me to be valid and realistic, in the sense that it expresses in governmental terms the instinctive and persistent attitudes and aspirations of the ordinary American citizen. This objective has to be translated into operating terms. In operating terms, it means that United States foreign policy should continue to seek to build political arrangements which give effect to common interests among the United States, nations allied or associated with it, and the uncommitted areas. These arrangements should also be designed to reduce the consequences of differences in interest that exist, while taking realistic account of them.

This operating foreign policy has an economic aspect. It is this economic aspect which I have described as the policy of economic cohesion. It might also be described as a policy of economic cooperation. In practical terms, this means the identification of actual economic interests which the United States and other free nations have in common and the organization of arrangements to give effect to those common interests. It also means the realistic identification of points at which the economic interests or tendencies of the United States and other free nations or uncommitted areas diverge or conflict, and the organization of arrangements to reduce their effect to a minimum. There is another element of this policy, which should also be kept in mind. Recent events have demonstrated that the Soviet Communist bloc is not monolithic, and should not be so regarded. The policy of economic cohesion within the free world may properly include elements designed to foster the breaking away from the Soviet Communist bloc of nations now within it. If and when such nations should break away, for whatever reasons and through whatever means, our policy should encompass economic measures to reap advantage from such developments.

At this point, it may be pertinent to refer to the reverse economic strategy of the Soviet Union. I assume that previous witnesses have referred to the statement of Joseph Stalin's grand plan of economic strategy against the free world, published shortly before his death, at the time of the 19th Congress of the Communist Party in the Soviet Union in the autumn of 1952. At that time, Stalin's statement was hailed by Pravda as one of the major pronouncements in the historic development of Soviet ideology. Whatever the changes by Stalin's successors may eventually prove to be, I know of no reason to believe that they would dissent from the views which Stalin then expressed. I will not attempt to repeat at any length a description with which the committee is familiar. Briefly, Stalin sketched out in some detail a systematic plan to intensify the forces of disintegration which he considered present in the international economy. He argued that two parallel world markets existed—the free world market and the economy of the Soviet Communist bloc. The growth of the latter, he insisted, meant a shrinkage of the free world market and an exacerbation of all the divisive tendencies within it. He then sketched out a course of Soviet policy designed to foster the divisive tendencies. His strategy of disruption underscores in reverse the wisdom and necessity of an American policy of cohesion.

*The sorting out of ends and means*

In the pursuit of these policies, it is important to distinguish among ends and means, and to work out a suitable relation of means to ends. Particular trade or investment policies or measures of economic aid or technical assistance are most usefully considered as instruments to help achieve ends, and not as ends in themselves. They can be sensibly appraised only in reference to the particular purposes for which it may be proposed to use them, and the alternative means which may be available.

*The means for economic cohesion*

In discussing United States economic growth, I stressed, among other things, its significance for a policy of economic cohesion. I referred to its importance for the creation of a market for the products of other free nations and the uncommitted areas; and also to its importance for the creation of an adequate supply of skilled manpower, facilities, and materials needed by other free societies and the uncommitted areas.

The other principal instruments of economic cohesion are trade policy, especially import policy; private investment; United States Government loans; United States Government grants; technical assistance; and monetary policy. For reasons already expressed, it is difficult to discuss these except in relation to particular objectives and situations. In the remainder of this testimony, I shall try to discuss certain aspects of import policy and private investment, and certain aspects of economic aid and technical assistance, on an illustrative basis, in an effort to indicate some of the possibilities and guidelines.

*Multilateral trade and private investment.*—I have already referred to the long-range need of the United States for growth in metal supplies, and in the supplies of other raw materials, throughout the world outside the Soviet Communist orbit. The expansion of metal production will require capital. The sources of private investment capital in America are abundant. The long-range need for an expansion in metal imports by the United States, and the availability of investment capital in the United States, could be mutually supporting. The need for imports could be made the basis of a stable American market for metals produced abroad, and the prospect of such a market could make the producing enterprises an attractive and practical opportunity for dollar investment.

In Middle America and South America, and in the emerging economies of Asia and Africa, the central need and the constant anxiety of peoples and governments is for internal development. Such development requires capital. Although local sources of capital are in some degree available, the need will be urgent for capital from external sources. An inflow of investment from the United States could help support the growth for which these societies yearn.

The highly industrialized nations of free Europe have a stake in the long-range expansion of metal production not unlike our own. In addition, they will continue to require vital imports from the United States and elsewhere in North and South America, where these must be bought with dollars. They might earn dollars by selling needed manufactures to the rapidly growing economies of Asia and Africa and Latin America, within which dollars might become available through expanded American purchases of metals and expanded American investment.

The prospect thus emerges for an interlocking network of imports, exports, investment, and exchange, flowing from available capacity and toward authentic need, to the benefit of all the participants. This prospect, however, assumes the happy realization of potentialities which in fact may never be realized. The potential can become actual only to the extent that long-range economic need can be translated into political action. Historic attitudes, contemporary passions, and local or transient needs or impressions of need may deny the possibility. In the United States, wise import and investment policy might be frustrated by the mental habit of protectionist thought and the varied impact of general measures upon particular sectors of the economy. In Asia and Africa, political judgment based upon actual need might be swept aside by fierce nationalism, a bitter distrust of any arrangement which seems to smack in any way of outgrown colonial relationships, and the confusion engendered by rapid growth and inexperience. In free Europe, exports might be impeded by the diversion of resources and the raising of unit costs through inflation and outworn habits of organization and operation.

These problems illustrate the immense and intricate reach of the implications of world trade, and illuminate the conflicting possibilities. There are factors and forces which, if they should prevail, would tend to knit the free world together in vigorous growth. There are factors and forces which, if

they should prevail, would tend to tear us apart. The outcome will turn upon the wisdom of our policies and our tenacity and skill in execution.

*Economic aid and technical assistance.*—In the experience of the United States since World War II, several different types of policy and activity can be identified which are sometimes lumped together under the single rubric of economic aid.

The Marshall plan represented one kind of economic aid: to advanced and highly sophisticated industrial societies, badly in need of repairs from war damage, an immense increase in capital equipment, and the reconstruction and further development of an intricate pattern of trade relationships.

Economic aid to a society like India is a very different matter. It is aid to a society in which the most acute immediate need is for the expansion of its food supplies, and within which existing economic plans are centered upon the expansion of agricultural production. It involves an economy less advanced and less powerful than those of Western Europe, and a population less highly trained and skilled than that of Western Europe. It involves a Government possessing considerable elements of strength and skill, with a broadly accepted leadership, and a highly competent if comparatively small group of public administrative officials.

An aid program to a society like Indonesia is again quite different. The emphasis is upon the development of various skills through training, including such skills as the capacity to speak a widely used language and the elementary processes of governmental operation, such as bookkeeping and accounting. There is also an emphasis upon food production comparable to that of India, but in an economy and under a governmental structure much less highly developed than that of India.

These differences have widely pervasive consequences. Perhaps one rather elementary illustration may illuminate the point. If the need of a society is for machine tools or refineries (e. g., Western Europe under the Marshall plan), the need is for a product which the United States has great capacity to supply. On the other hand, to carry out a technical assistance program in a newly emerging agricultural society in the Tropics, the need may be for personnel who not only possess important technical skills, such as agricultural technology, but who are also gifted in teaching, able and willing to accommodate themselves to the conditions of life in the Tropics, able to master the difficulties of an unfamiliar language and culture, and capable of sensitive understanding of peoples whose background and temperament are very different from their own. Although the measure of such a need in financial terms may be very much smaller than the scale of need in Western Europe under the Marshall plan, the actual current capacity of the United States to furnish the type of personnel required may be much more limited than our capacity to furnish machine tools or refinery equipment. There are comparable differences in the capacity of the respective societies to absorb particular kinds or amounts of assistance.

#### SUMMING UP

The economic sector is one of the major fronts on which the contemporary world challenges the United States. The challenge manifests itself in an infinite variety of concrete problems. The continuous process of coping with these problems will be more effective if it is guided by broad policies which take account of the main contingencies confronting the Nation, its central objectives, and its historic tendencies. These policies should group themselves about two main themes: economic growth and economic cohesion. These themes interlock and are mutually supporting. To carry them out, an imaginative and realistic use of all the instruments available will be necessary, with the choice of particular instruments in particular situations governed by the particular facts. The key sectors of growth are quality manpower, food, and raw materials. The key instruments of cohesion are trade policy, especially import policy; private investment; United States Government loans and grants in their many forms; technical assistance; and international monetary policy.

Representative BOLLING. Thank you very much.

Our final witness in this series is Dr. Roy L. Reiersen, vice president of the Bankers Trust Co., of New York. Dr. Reiersen too has degrees earned on both sides of the Atlantic. Dr. Reiersen has been a consulting economist and university lecturer. During World War II, he was in the United States Navy.

His reputation as an analyst of the economy and his previous service to the Joint Economic Committee made him the logical choice for presenting to us the summation of implications for the United States economy of this world challenge which has been developed in these hearings.

Dr. Reiersen, we are pleased that you would come this morning to perform this important task.

**STATEMENT OF ROY L. REIERSON, VICE PRESIDENT, BANKERS TRUST CO.**

Dr. REIERSON. Thank you, Mr. Chairman.

When we speak of the world challenge in the context of the present international economy, we have in mind, foremost, the conditions created by the contest between the economy of the United States and that of the Soviet orbit. I shall have to ignore matters involving military or diplomatic considerations, for although these may have a crucial bearing upon economic problems, they are beyond my knowledge or competence.

However, expansion of the Soviet economy is important not only from the military point of view; it is becoming a growing factor in international political strategy, as evidenced by the rapidly increasing importance of economic measures and influences in the struggle between East and West.

**THE PROBLEM OF GROWTH: U. S. A. VERSUS U. S. S. R.**

Despite the lack of adequate and reliable data, competent observers generally agree that the economy of Soviet Russia is expanding at a significantly faster rate than that of the United States. This is not altogether remarkable, since Russia is in an earlier stage of industrial development, where growth tends to be more rapid since it starts from a lower base. More pertinent is the fact that the Soviet Union seems to be raising its industrial output more rapidly even than did the United States when we were in a comparable stage of development.

This too is not unexpected; scientific and technological advances and their impact upon means of production and transportation presumably permit more rapid growth than was possible in the 19th century. Thus the notion that the American economy must expand as rapidly as that of the U. S. S. R. in order to hold its own over a protracted period would seem to ignore essential differences in the relative stages of industrial development.

A more important problem than that of matching rates of growth in the aggregate is to compare expansion in the various sectors of the Soviet and free economies. The U. S. S. R. appears to be devoting a larger share of its national economic output to investment, especially in heavy industry and equipment.

As of today, the Soviet Union, including its satellites, still lags behind the United States in heavy industry, production of energy, and output of most basic industrial materials. Furthermore in striking a balance we should not ignore the large productive resources of the free nations other than ourselves, many of which have great potentials for economic growth.

Nevertheless, the strong and continuing buildup of Soviet industrial capacity does justify giving some consideration to the effort that

would be required of the United States economy should we attempt to retain or increase our present lead over the Soviet Union.

#### MATCHING SOVIET EXPANSION

With our production advantage, we have good reason to believe that we can surpass the U. S. S. R. in any economic endeavor for which we are willing to marshal our resources.

However, it should be noted that the Soviet economy has been deliberately regimented to foster expansion of heavy industry at the expense of the consumer market, and that according to some experts, consequently, Soviet personal consumption per head is, in real terms, only one-fifth to one-seventh of that in the United States.

Therefore we must recognize that a program of matching the Russian growth rate in heavy industrial capacity would require a concerted national effort on our part, encompassing far-reaching changes in our use of economic resources, in our patterns of saving and investment and in our governmental policies.

In contrast to the Soviet Union, where economic decisions are made by Government fiat, the United States economy has been shaped in substantial measure by the demands of consumers, and the rates of growth in different sectors of the economy reflect the ways in which consumers wish to allocate their incomes.

If the United States were to attempt to match the Soviet rate of growth in heavy industry, consumer preferences and business judgments would have to be subordinated to decisions by national planners, whose task it would be to achieve a larger increase in investment spending and a sharp reduction in consumer buying, in residential and commercial building, and in nonessential public projects as well.

In the first instance, tax policy would probably be utilized to work toward this change. To reduce consumer spending would require increased taxes on consumption, higher rates of income taxation for the great bulk of taxpayers, possibly lower exemptions, and changes in our tax policies in order to stimulate savings. However such measures obviously are politically unpalatable and would probably fall short of what would be needed, so that we would still face large Treasury deficits, a shortage of savings and consequently a substantial increase in bank credit and the money supply. Business activity, too, would probably add to the pressures for credit expansion. In such an economy, moreover, shortages of labor and materials would be a realistic expectation, which would, in turn, contribute to a wage-cost-price spiral that would expand disposable income at the very time that more of our national output was being channeled away from consumer goods and into capital investment.

Thus, a combination of shortages and inflationary pressures would eventually confront us with the distasteful alternatives of either a powerful uptrend in the price level or a comprehensive system of economic controls which to be effective would have to be far more vigorous, restrictive, and comprehensive than any we have yet attempted.

#### THE NEARER CHALLENGE

At this time, fortunately, we do not face an economic emergency in our competition with the Soviet Union. Some experts have concluded that the output of the American economy in real terms may be as much

as 3 times that of the U. S. S. R., despite the latter's 20-percent population advantage. Even if the present differential rates of growth are maintained, many years will pass before the Russian economy can approximate ours in aggregate output, nor shall we soon lose our position as the world's leading industrial nation.

Consequently, I believe we need not today embark upon a comprehensive and far-reaching program to match the rate of industrial growth of the Soviet Union. In fact, I suggest that under present conditions it would be a mistake to channel all our energies and our resources into a single-minded national effort directed toward outpacing the present rate of Russian growth in heavy industrial capacity.

I submit that the real task is to develop a realistic economic policy that will permit us to gain ground in an international struggle likely to last for a long time to come.

This means building an economy which can grow soundly in all major sectors, which avoids large-scale unemployment and other setbacks, and which can flexibly and successfully meet challenges not only in the field of military equipment or heavy industrial production, but also in such fields as scientific knowledge, international investment, international finance, technical assistance, and the entire range of endeavor upon which economic as well as political leadership must be built.

Obviously, the current world situation has some important bearings for United States economic policy. Perhaps the most immediate consequence is that we face the prospect of a sustained high and probably rising level of military spending in the years ahead. Obsolescence has become a pronounced feature of modern industrial society, but nowhere does obsolescence proceed as rapidly as in military equipment. A corollary is that much equipment has become more and more complex and requires ever greater skill in its operation. Thus, the cost of military preparedness is likely to continue upward even in the absence of any dire emergency, and this suggests continuing high demands on the Treasury budget.

Another requirement would seem to be an industrial establishment adequate not only to meet current production demands but also with sufficient reserve capacity to cope with the strains and needs that are likely to come upon us unexpectedly from various parts of the globe; in fact, recurring strains seem to be part and parcel of the world situation, and pose a very real challenge to our economy when they occur. I am not suggesting that national economic policy at all times should favor industrial expansion ahead of other economic or social objectives, but I do suggest that in some basic industries the problem of encouraging and facilitating expansion—presumably by way of rapid amortization for tax purposes—be considered carefully not only in the light of our economic needs alone, but also in the light of future international economic opportunities, pressures and perils.

Furthermore we need to give continuing attention to the problem of assuring a sustainable high level of capital investment, particularly in the industrial sector of the economy.

Another important task is the furtherance of education. The urgency of this goal is so well known that it surely requires no detailed comment, nor need one dwell on the implications of a failure to meet Soviet competition in supplying our friends and our customers abroad with the technicians they require in connection with invest-

ment and development projects. If we are unable to provide our modern society with the teachers, scientists, and engineers needed to sustain progress, we shall have failed to meet the most critical challenge of all.

Closely related to education is the need to foster dynamic scientific advancement. Rapid obsolescence of industrial facilities can be both an asset and a liability. If we can maintain our position as the world's pioneer in technology, we may hope not only to improve our standing in the international economic arena but also, perhaps, to have less cause for concern over industrial expansion abroad.

An important although frequently ignored point, finally, is the advantage we now enjoy through the key position of the United States dollar in international trade and finance. Maintenance of a sound and stable dollar and a sound and stable financial system which merits the confidence of the rest of the world is a tremendous asset in the challenge we face. Here again as elsewhere, however, this challenge has some important implications for United States credit policy and economic policy in general.

#### IMPLICATIONS FOR ECONOMIC POLICY

These requirements are not spectacular; meeting them should not be an insuperable task in our expanding economy. The underlying prerequisite, however, is that the domestic economic policy of the United States be designed to meet three general and interrelated objectives: (1) To encourage stable economic growth; (2) to minimize cyclical instability in employment and business activity; and (3) to curb fluctuations in the general price level. These three objectives are interdependent in that cyclical instability and large price movements slow down the rate of secular growth of the economy while excessively rapid expansion may make it more difficult to avert cyclical corrections in activity and prices.

Unfortunately, our economy today seems to be falling short of meeting some of the requirements for sound and stable progress. Inflationary pressures have been dominating the scene for the past 18 months. Wage rates are being marked up rapidly, costs are rising, and price increases are the order of the day. Savings have failed to keep pace with investment demands; and the Treasury budget is in precarious balance even though output and incomes are at record levels. Public-works programs are rising despite shortages of both materials and funds.

If we are not to jeopardize our prospects for sound and stable economic progress, we shall have to face up to some difficult questions. One problem is the rapid annual increase in labor costs which bears so large a share of responsibility for the rising trend of prices. Another is posed by the Treasury budget; if we are to meet continuing large and rising requirements for defense and at the same time avoid the inflationary repercussions of budget deficits, we must exercise restraint in our demands for increased Government outlays for purposes that are socially desirable but are not of pressing importance and at the same time we must resist the pressures for premature tax reductions.

Yet another problem is how to increase the flow of savings in order to meet the large needs for investment funds. In this connection,

it is disturbing that many proposals are being advocated which seek to deal with this problem by contributing further to inflationary pressures; in particular, it has been suggested that the shortage of savings could be met by relaxing credit restraint and facilitating the additional expansion of bank credit, or by having the Treasury step in to provide substantial amounts of funds for a variety of purposes and to a variety of borrowers. In the present economic climate, such measures would increase the chances of a cyclical correction and reduce our prospects for maintaining steady growth.

#### INTERNATIONAL ECONOMIC POLICY

In the field of international economic policy, the problems we face are even more involved than those at home, since we are here confronted with diverse economic, social, political, and cultural systems with widely differing national aims and aspirations. This is a subject about which I shall speak with brevity, diffidence and much uncertainty. To facilitate the development of the free world's natural and industrial resources, we need to share with others our scientific and technological knowledge. In addition there are continuing sizable demands for economic and financial aid, and there are many requirements and opportunities for direct investment abroad, and here we are confronted with some difficult decisions.

Government loans and grants have in many instances proven an effective tool for strengthening the economic condition of the free world as a whole.

However, our foreign-aid program should be formulated with reference to the entire budget situation, including our domestic requirements for defense and other essential purposes. An even more significant contribution to the economic strength of the free world can be made by the foreign investment of United States capital, but here again, we must realize that the expansion of our own economy has led to a growing need for investment funds at home; some recasting of foreign development plans may be needed to bring them into closer correspondence with resources that can be provided by the countries directly concerned.

In sum, our resources—material and financial—are not unlimited, and some hard choices of priority will have to be made to achieve a sensible and realistic allocation. We may reassure ourselves with the knowledge that these facts of economic life probably apply equally to the Communist world.

A dynamic and expanding American economy will be of incalculable benefit to the entire free world. We shall have to rely to an increasing extent upon foreign supplies of many basic raw materials; this will make dollars available for the purchase of the capital equipment upon which economic expansion abroad is dependent. In fact, the dollars provided by our imports will far exceed, obviously, any amounts that we seem likely to make available through loans and grants. Thus, efforts to whittle down the barriers to international trade are of continuing importance.

These efforts rest on sound economic principles but here again in formulating our trade policy we cannot ignore considerations of national defense since foreign sources of supply may be interrupted with more or less serious consequences to the American economy.



Where this leaves us with reference to the specifics of a trade policy I am not prepared and probably not qualified to say.

Finally, our role in the world economy underscores the necessity of maintaining our economy sound and activity high; efforts to minimize the fluctuations of the business cycle are crucial not only to ourselves but also to the rest of the free world.

Perhaps we should devote more of our energies to studying the problems of prosperity, which are no less real or serious than the problems of depression to which we have devoted our attention through so much of the past. Assuredly, unless we succeed in coping with the problems created by rapid expansion, we shall increase the risk of economic adversity. And this is a risk which today, more than ever before, we cannot afford to take.

My purpose has been more to raise questions that require further study rather than to suggest specific solutions to the many problems that confront us on every side. The Joint Economic Committee and its highly competent staff have, over the years, contributed much to broader understanding and enlightenment on many economic issues. If what I have said this morning has any meaning, it portends, for the committee and for its staff, yet greater activity and an even more important contribution in the future.

Representative BOLLING. Thank you, sir.

Senator Flanders, do you have some questions?

Senator FLANDERS. Dr. Roberts, you gave verbally, and I shall be able to read it in the record what seemed to me a very good expression of the Soviet purpose. I wonder if you would feel that the American purpose could be expressed concisely in words somewhat like these that our purpose is to extend the world area of prosperous freedom?

Dr. ROBERTS. Yes, sir.

Senator FLANDERS. It isn't to beat the Soviet in tons of steel. It isn't to do anything except something for the advantage of the people of the world. That is the way I would like to see our purpose expressed.

Now, Mr. Heymann, on page 2 of your document the ninth line, you spelled autarky correctly for your meaning. If you have read through my questions, you will note that it is spelled with a "ch" which has a very different meaning, and I want to assure you that my original handwritten manuscript used a "k" but somebody thought perhaps I didn't mean it. So you can mentally spell it with a "k."

Now on page 7, I am particularly impressed with the way in which you lead up to the suggestion of a "no strings" approach to aid. I think it is a very good statement of a very necessary change in policy on our part.

I was interested in your statistics with regard to Afghanistan. In fact, your statistics as a whole are a very valuable contribution to this discussion. I have been told by friends who have been stationed in Afghanistan that the contributions made by the Soviet Government are not merely for the place and situation rather extensive, but that they are spectacular and that that spectacularity has been a part of their more or less successful dealings with the Government of Afghanistan.

I am going to say a word more about grain elevators before I get through, but that I understand was quite an architectural achievement.

Mr. HEYMANN. May I interject that the Soviet export of grain elevators to Afghanistan is a good example of the political motiva-

tion of this trade. The Soviet Union's greatest problem in the current agricultural year was what to do with the bumper crop of grain that was harvested. They have no surplus position of grain elevators in the Soviet Union. It is not only a spectacular example of the size and nature of foreign aid projects but also a good illustration I think of the general point I was trying to make that this new foreign aid effort is certainly not motivated by any economic pressure to export machinery and equipment surpluses.

Senator FLANDERS. Yes.

Dr. Rostow, on page 5, the second full paragraph:

In short, the desire for economic growth in the transitional areas arises directly from the deepest hopes and aspirations of their political leaders and their peoples. It is an essential means for the creation of effective modern states capable of achieving and maintaining independent status on the world scene, capable of providing a regularly rising standard of welfare for their citizens.

As a matter of fact, as we look around through the development of the various of these new and the older countries coming out of stagnation, can you not translate this paragraph into a sort of an instinctive aiming for autarky?

Dr. Rostow. I think, sir, that the initial approach to economic development of countries newly freed, newly feeling their oats, as it were, in terms of independence, was autarkic. I had the occasion to have to sit through a good many early postwar U. N. meetings and listen to the speeches of peoples from underdeveloped areas; and they had the notion, somehow, that the maintenance of their old ties of trade with the world, through raw materials and foodstuffs, was associated with colonial dependence and humiliation; and their first instincts were toward autarky.

But one of the wholesome things that happens in the world, as you know better than I, sir, as with individuals, is that responsibility and the fact of responsibility sometimes produces quite radical changes in thought. And one of the wholesome changes that has come in the thought of the economists of the transitional nations is an awareness that very few of them have the capability both to grow and to maintain autarky. The kind of box in which the Argentine got itself—that is, of cutting down its exports of foodstuffs and building steel mills, leading to a very severe foreign exchange crisis—has had a salutary effect on a good many countries. I should say that the level of 5-year planning in countries like India and Pakistan is remarkably sensible with respect to the foreign exchange problem. The old mythology—that trade in foodstuffs and raw materials destroys independence—remains to a degree; but on the whole I would say the trend in thought and policy is wholesome.

Senator FLANDERS. I am glad to hear from you on that.

On page 7—I chanced to be in India last December when Krushchev and Bulganin were there, and it was astonishing to see the way in which the Indian crowd were brought together by the Government so as to give them a good show.

I also enjoyed the privilege of seeing them off, which was likewise a good show. People came thereby every means of transportation from feet, bicycles, to camels, and the crowd was enormous.

But I think you are right in saying that there has been a perceptible coolness developing and as a matter of fact during that period every day in interviews Nehru had occasion to counteract some of the remarks of one or the other.

But while millions heard them, only tens of thousands read, so that the net result would naturally have been disastrous.

Now, on page 8, yesterday I suggested along the lines of my series of questions that the southern and eastern Asian nations running from Pakistan to Japan could develop a community of interest and that in a way they fitted into each other, not perfectly of course, and that Japan's future lay along that line, and it seemed to me to have big opportunities for India as well.

Just as one item, the Indian merchant is more acceptable in the Pacific area than the Japanese merchant and it might well be that a union of effort throughout that whole area with the food surplus and the food deficit countries might work out in such a way that Japan would not depend on underselling in our markets to maintain its economy and in the discussion yesterday some difficulties were brought out.

But I would hope that India might look on Japanese industrial development as the pattern rather than Chinese industrial development. And I offer that to the Indian Government for what it is worth.

Now, on page 9, may I ask whether in the fourth line of the second full paragraph I read correctly when I read "And support for the U. N. without a United States force in being." Don't you mean without a U. N. force in being?

Dr. Rostow. No, sir. I meant United States. What I had in mind there is that the U. N. is, I think, a remarkably valuable political instrument of coalition for the free world. But, if I may speak as a former U. N. Secretariat member, I am acutely aware that we should never be taken in by the magic of that coalition, independent of American policy and American force. When we can create with skillful American diplomacy a true coalition in the U. N., it is a remarkable and a powerful force. The U. N. can be the most important diplomatic instrument at our disposal to move toward unity and peace in the world. But we should not forget that its underlying strength lies not merely in the ability to get a unanimous vote, but in the fact that American force, American purpose and American diplomacy is its its cornerstone.

I think sometimes we tend to be taken in by the magic of the U. N. without realizing the extent to which what the United States does or fails to do is a determining element in its true meaning and efficacy.

Senator FLANDERS. I think I get your meaning now. You would be saying that we should not depend on the U. N. and let the United States force in being decline certainly not while the U. N. also had no force in being. Doesn't that double the bad judgment?

Dr. Rostow. I agree, sir. What I had in mind was something quite concrete. I am, of course, fascinated with the unique and revolutionary experiment with the emergency force in the Middle East.

But the viability of those troops under General Burns, it seems to me, hinges on two facts about the United States.

First, if the Soviet Union should move a force into that area we would take direct responsibility to counter it. Second, if Nasser or any other local force—British, French or Middle Eastern—should move against it, that force would find itself ultimately up against the counterforce of the United States. To put things into the U. N. is simply one method for making our leadership and our force effec-

tive in the world. Under certain circumstances it is certainly the best method; but it does not remove from us the responsibility—

Senator FLANDERS. May I ask whether you would have been favorable to our sending military assistance to Vietnam at the time when the Chinese came down and made it possible for the Vietminh forces to take over a large part of the country? Would you have been favorable to using United States forces at that time and place?

Maybe that is an unfair question but I think the answer is—your point of view involves a case of that sort.

Dr. Rostow. There are no unfair questions for professors as opposed to politicians. My own view of that question—for what it may be worth—is that if we had moved fast enough and early enough—by that I mean if we had moved directly after the Korean war—we might have salvaged northern Vietnam but not simply by a show of American force.

We were caught in a position where American money was being used to back French colonialism; and I can conceive of no military operation in that area, no realistic one—and as the Hungarian situation shows perhaps no military operation—that would have held that area for the free world if we had not, as a prior condition, created an independent Vietnam state.

Senator FLANDERS. I think you have answered your question so far as my question is concerned.

Dr. Rostow. I think we could have saved Indochina not by moving at the time of Dienbienphu, but immediately after the Korean war, and if we had preceded any such American movement with a cleaning out of French colonialism and all it stood for.

Senator FLANDERS. Mr. Katz, I am glad to see you again. I have seen you before. On your manuscript my first note is on the first page, the second paragraph, "An indefinite prolongation of international tension and unrest." I just want to suggest that an element in that is the atomic stalemate.

Mr. KATZ. Very much so.

Senator FLANDERS. On page 2, I was reminded there to say that my list of questions is not statements or pronouncements. The only pronouncement is that I shall have to have the questions answered in a satisfactory way before I know how to vote, so don't look at them as definite expressions of opinion. But they are important in that I do not yet know how I am going to vote and I think there are a great many other Senators, possibly even some Representatives in the same category. So the answering of questions becomes for me at least personally an important matter.

Now, on page 3—this is in general the significance of active trade between the countries. May I just interpose a remark here? I would raise the question as to whether it is not best for the world for American capital and American technical ability to develop in other low standard countries industries with which we will not be able to compete.

I am just making that as a suggestion. I am not sure but what that is the case provided we can change our domestic policies in such a way as to safeguard our own standard of living and our own institutions. And as I indicated in the questions, I do not see what the limits are for that procedure and what industries would be safe, would

be sure of maintaining their position in world competition in view of our ability to export capital and technical assistance.

I might also say that I gave yesterday Willard Thorp the task for writing for inclusion in the record his concept of how the balance of trade and the balance of payments would be attained under conditions of a fostered competition on our part which became very extensive. I may also say now I am making speeches instead of asking questions.

Representative BOLLING. This is a very brief one.

Mr. KATZ. A very good speech.

Senator FLANDERS. I will come back to questions in a moment.

These questions were brought into focus by the fact that for the first time we face the competition of this sort in a major industry, to wit, the textile industry. I have been told that I should be willing to sacrifice the small industries that are up my way, like for instance the plywood industry and other industries—I don't enjoy doing that and I protest against it. But when it comes to a major industry you have to stop and think and so it was in view of that that I drew up this set of questions.

Now on page 7 you emphasized the overwhelming importance of our educational system. I am going to make another very brief speech. Our education system is a shambles. It is in the hands of the professors and developers of a pseudoscience of education. It started with a Vermonter. It started with Dr. Dewey. He transmitted the laying on of hand to Dr. Kilpatrick who took it to Teachers College in New York. Teachers College in New York has spread it over the whole Nation. It is entrenched. It is so entrenched that local endeavors to get it out are sabotaged. Now I just can give you some of the examples of this as I have seen it up in my own State.

I have for instance four grandchildren in high school. I don't know about the fourth but I do know that three of them in high school are writing rather good theses and essays and are not corrected in spelling. They communicate, that's all that is necessary, the hell with spelling. They are able to communicate.

Furthermore the leading citizens of the town in which I live, Springfield, Vt., were hypnotized into a statement of educational policies which includes this: That examinations shall be student based and not subject based. In other words it is of no great importance whether a child really understands the mathematics so long as he is working hard at it. If so, he gets a good grade. But as to whether or not he has achieved a satisfactory degree of proficiency in mathematics is not of any particular interest to the school on the basis of that situation.

It has gone beyond Teachers College. It is further development which is shown in a book recently published by Dr. Brumbaugh who is the head of the college of educational instruction in New York University. He carries the thing to its next step. There is no truth to be instilled. Everything is arrived at with the students and scholars by consultation and discussion and decision, and our children on the basis of that book and the already developing features of the present practice are being trained, without our desire, without our intention, for communal living, not communism but for living as the ants live in anthills. And it is a terrific situation. If one one-hundredth of the

activity we have been putting into fighting Communist infiltration was applied to fighting this communal development we would be accomplishing something that this country very badly needs.

Mr. KATZ. Hear, hear.

Senator FLANDERS. I am going to ask questions now.

Page 8, the primary importance of food, Mr. Katz, you have stated there very profoundly and that is particularly true for India. I have been somewhat fearful that they were beginning to think too much in terms of tons of steel and were not in their second, and particularly the prospective third, 5-year plan, focusing it down on the well-being of the individual.

They have birth-control clinics in the jungle now, but how good they are I wasn't able to learn.

Now on page 15:

The need may be for personnel not only to possess technical skills, agricultural technology, gifted in teaching, able and willing to accommodate themselves to the conditions of life in the tropics, able to master the difficulties of unfamiliar language and culture.

That is a very important set of requirements. The place, where so far as my knowledge goes, that that has been best carried out is by the Australians in the mandate in New Guinea where they have been doing a perfectly wonderful job along those lines.

We go at the thing too superficially by far, and there has to be a degree of depreciation, as well as new schools, which we have not yet put into the thing.

I am glad that you brought those points out.

Mr. KATZ. Senator Flanders, might I interject a comment? Would you permit me to do so on two of the questions?

Senator FLANDERS. I was supposed to ask you a question, so you are entitled to answer. Yes.

Mr. KATZ. I will try to answer two questions implicit in the admirable statement you made. First, when you asked what kind of industries we can safely foster which will not potentially create too great competition, I would like to make two points on that only, Senator. The first I have not previously made, and that is this: I suggest to you the great danger of putting that question and examining it against a static background. For example, take a textile mill in India. If you assume that the American economy stays where it is and does not move, and that the Indian economy stays where it is and does not move, then a cotton-cloth mill in India might possibly be a threat to the cotton-cloth mills in North Carolina or Massachusetts. If you assume an Indian economy that is vigorously growing and an American economy that is vigorously growing, a cotton-cloth mill in India might never even be noticed by American manufacturers in North Carolina or Massachusetts.

If you have a general growth in India of which this cotton-cloth mill would be just one piece, if you look ahead to a growing, free world economy, then we will not face the kind of problem that we envisage if we unconsciously assume the continuation of present levels of activity. I think this is the first point I would like to stress. The second point I would like to mention is to repeat again what I did mention in my testimony. That is this: Whatever else we may or may not wisely permit ourselves to import, I see no room for reasonable

difference of opinion in the raw-material sector; that, we have to have.

Senator FLANDERS. Yes.

Mr. KATZ. The other point I would like to make would be on your comment about education. I would like here to take an opportunity to make a positive suggestion. In the last analysis an educational system depends upon teachers and students. What we desperately need if we are ever to solve the education problem in the United States, both as it is and as it will be, will be to make the teaching profession very, very attractive to first-rate people.

Senator FLANDERS. May I just interpose a remark there? And make it the ability to transmit a subject to the student the test of the ability of a teacher rather than the degrees he has obtained in a pseudoscience?

Mr. KATZ. I would agree with that.

If you have first-rate men and women in the teaching profession, then any tendencies to pseudoscience will be kept in hand. If we can get and keep enough first-rate people in the teaching profession the elements of rubbish which may now be present in our educational system will gradually be eliminated or minimized. This brings me to the question of how we can get and keep enough first-rate men and women in the teaching profession. I will ask you to permit me to speak a minute or two on this. It means you have to make the profession attractive. In the context of American life, that means a combination of money and social status; and they are interrelated. As to the salary level question, I will only repeat what I was told a businessman once said about the matter which is the best summary I ever heard. The question was: What is the right level of compensation for teachers at all levels of American life? His answer was: "Well, when your boy is trying to decide what he should do with himself and when you say, 'Son, have you thought of teaching?' then our salary levels will be right, and not until then."

Representative BOLLING. I heard, when I was in my district, the president of St. Louis University who is a member of the President's Commission on Education Beyond the High School, state that among their findings they had learned that in the Soviet Union they placed the college teacher second highest in terms of monetary reward. The only person who received higher awards in material rewards in the Soviet Union was the newspaperman, the journalist. I didn't have a chance to verify this. He said that the average college teacher, college professor in the Soviet Union was paid the equivalent of \$25,000 a year. And it seems to me that this emphasis is precisely the point that you have been talking about.

Since I did come out of the teaching profession, it seems to me although I never took any of these courses and consequently was qualified to teach only in colleges and not public schools—it seems to me that it is important, since the record is so full of this, to point out that although I am no expert on Mr. Dewey, that Mr. Dewey was after all an extreme reaction to an extreme, and the dilemma that American education faces today, if I understand it, is probable to digest and create a new synthesis of the point that Mr. Dewey tried to make: that we should pay some attention to the personality and not just to the subject—with the old idea that we should pay attention just to the subject. I would be happy to report to the Senator that perhaps because we are so far out in the middle of the country when I

visited a number of high-school classes in the last month I found that they knew a great deal about subject matter but that there was some attention also being given to their personalities.

Senator FLANDERS. Well, I think, Mr. Chairman, that I have spoken enough. Mr. Reiersen also touched on the subject of education and on the outward purposes of the Soviet Government and I think I will just end by saying that I think we should make clear that the competition which we are engaged in, the world over, is one of the well being of people and not tons of steel.

Representative BOLLING. Dr. Rostow, I have one question. It has already been discussed. In your statement on page 9 in the second full paragraph. It seems to me that the really key phrase you use is in effect in parentheses. It is between dashes: "And the evident will to use the force if necessary."

I am curious to see if your reaction has been the same as mine, that for various reasons the impression has been abroad intermittently, not always, that this country did not have the will to use force if necessary.

Would you agree that that impression was fairly general in the world, not only in the bloc area but also in the underdeveloped areas?

Dr. Rostow. I think it is very much so; and I agree that the question of "evident will" is decisive. We do have obviously in all three of our services forces which could be mobilized for limited hostilities if necessary. I think what has happened, Mr. Chairman, is that the Korean war left on our Nation a tragic set of moods. At a time when it was perhaps the least appropriate attitude to take, the notion spread that, well, this is the last limited engagement we will ever get involved in. If we have another one, it is going to be big. We have seen a withdrawal from the notion that limited force might be necessary. The reason it is tragic is that at just this phase the atomic arms race moved into a more acute stalemate. The real lesson to be drawn from the Korean war was not that the Korean war was a mistake, but, like all the other wars we have been involved in, it was avoidable if we had created the deterrence in advance. I am relatively confident that even limited hostilities can be avoided—perhaps not completely, for this is going to be a turbulent 50 years—but by and large I think that we can deter limited wars by the same means we intend to deter big wars; namely, that, in the end, everyone is convinced that we have the capabilities and the will to use them. Our drawing back after the Korean war has made it very hard, for example, to build SEATO, because the members of the SEATO are not at all persuaded that we would be there beside them in case of limited hostilities. That is why Laos and Cambodia are flirting with Peking.

The impression is quite widespread around the world that the United States has interpreted the meaning of the Korean war in the sense that it wants no more of limited hostilities. That, as we know, is the setting in which you are most likely to find limited hostilities.

Representative BOLLING. Then in effect what you are saying at least by implication is that, disregarding for the moment the argument of whether tactical atomic weapons can take the place of conventional forces that we have to have in being not only the deterrent resources to prevent the so-called big war but also the deterrent forces in being capable of preventing the little ones and if that be the case, that then neither one will eventuate.



Dr. Rostow. That is the way of maximizing the chance that neither will come about. That's a view that goes all the way back to George Washington in our history.

Representative BOLLING. And further than that. Then in effect also you are saying that unless these two situations are met, that a foreign economic policy may postpone but that in the long run it will not succeed in the absence of these types of forces in being and the will to use them.

Dr. Rostow. That is my view, sir; and, as an economist who has had to write about these matters, I have felt very strongly that I should never talk about economic foreign policy without stating again and again that all of our creative objectives cannot be achieved unless American force is used—inside or outside the U. N.—to create a ring of stability; and that requires a spectrum of deterrents which embraces limited as well as all-out war.

Representative BOLLING. Finally, is there any question in your mind but what we have an economy strong enough today to support the forces necessary to achieve this objective physically?

Dr. Rostow. I would, of course, say yes, Mr. Chairman; but I think we should be aware that you don't get anything without some cost. I have no doubt that we can swing what we must swing militarily and in terms of foreign economic policy. But I think the questions raised by Mr. Reiersen are real questions; and they demand that the Nation as well as the Congress and the executive branch make up their minds how important these objectives—which look to be the conditions of our survival—are; because there are costs.

Representative BOLLING. Mr. Katz, on the subject of education again, from what you said and from reading the paragraphs on the same subject in your paper, I get the impression that you would feel that it is not only very important to acknowledge as we are all doing today the extreme importance of the scientists, but also that then with the emphasis that you put on it, we not only need effective education in the scientific and technical fields but we also need a thoroughly effective educational system in the field of general education, liberal arts and so on.

Mr. KATZ. Completely, Mr. Bolling. As a matter of fact, just within the last few weeks I discussed this problem with a distinguished figure in engineering education; and he stressed the need for engineering education to turn out broadly cultivated engineers with a grasp of fundamentals and not mere technicians. You can't separate the two. Our science grows out of our total intellectual framework. Einstein, according to his biography, came to the development of his theories of physics initially from reading Hume and then he worked out the mathematics when he learned he needed that as a tool for his physics.

Representative BOLLING. We have to arrive at a new synthesis—a new system in education which reconciles the old approach of stressing the subject matter and the new approach of stressing personality.

Mr. KATZ. Yes. I am concerned with how we can translate this idea into action, not the development of an argument between the Deweyites and the non-Deweyites about what kind of educational system should we have, for then you will have a lot of argument but no educational system.

In 1940 we needed to develop an Army and Navy which turned out to be 16½ million men. The hard core of that was the commissioned

officers and noncoms. Everything we did in that situation would not have succeeded had we not had this core of officers and noncoms. The core of this job is teachers. If we get twice as many teachers and teachers that are twice as good, you will get the job done. If you get that done, I will be willing to argue about the rest of it. Without that, you won't get anything done.

Representative BOLLING. I agree with that.

Is there any other comment that any member of the panel wants to make?

Mr. HEYMANN. I would like to express my gratification with one aspect of the testimony given today and that is the exceedingly successful way in which Dr. Rostow and Mr. Katz have focused attention of the committee on the basic problems of what are the ends of United States foreign policy and have gotten us out of the rut of constantly looking at what Soviet tactics are and how we might respond to them.

I can afford to say that, Mr. Bolling, because I am responsible this morning for having testified on what the Soviets have been doing and I feel a little guilty that I could not also join into this refrain.

But I feel that this is where the solution to our problem lies: In a further consideration of the real ends of United States policy and how they can be achieved.

Representative BOLLING. On behalf of the committee I will say this has been to me at least one of the most interesting and stimulating sessions I have ever experienced in my whole life. Each member of the panel deserves our gratitude and thanks.

With the end of the discussion this morning, this present series of hearings is being closed. I am sure I reflect the sentiments all five members of the subcommittee will have when they study the record of these proceedings, in saying all of our witnesses have made a distinct and important contribution to our understanding of the problems of world economic growth and competition. The printed record will be widely circulated, and should be but a first step toward more complete exploration of these vital issues.

The Joint Economic Committee is concerned with steady and sustainable growth of the United States economy to promote the economic well-being both of the Nation and of all its citizens. This hearing has already demonstrated that there are few aspects of our economic policies which will not be markedly affected by worldwide developments and which must not take world developments into account.

This simple and important truth was amply illustrated earlier in the year when our study of defense essentiality and trade demonstrated the dangers of setting economic policies without a full regard for their effects on our economic relations with all the world. In a sense, the present study is in part complementary. Events abroad, we have seen, will affect the prospects for our domestic economic requirements, and our policies at home will have to reflect an awareness that our national economic problem is a total one, not a series of isolated and unrelated situations.

Gentlemen, I thank you again.

With that, the hearing is closed.

(Whereupon, at 12:50 p. m., the hearing in the above-entitled matter was closed.)

# APPENDIX

---

## ECONOMIC CONSEQUENCES OF DISARMAMENT

By Dr. Grover W. Ensley, Executive Director, Joint Economic Committee, United States Congress, Before the 15th Stanford Business Conference, Stanford University, July 23, 1956

A principal objective of United States foreign policy is securing the peace and prosperity of the world. As a major step in attaining this objective, the Nation has sought world disarmament whenever the objective bases for disarmament existed.

Disarmament was a major item in President Wilson's 14 points. During the 1920's the United States disarmed to a significant extent and maintained a minimum Military Establishment during the 1930's. Other nations increased armaments despite efforts by Presidents Hoover and Roosevelt to obtain their cooperation through the Disarmament Conference of the League of Nations. Following World War II, President Truman consistently worked for disarmament through the United Nations. The Communists' invasion of South Korea in the summer of 1950 found the United States and the Western World's military preparedness woefully inadequate.

After the armistice in Korea, the United States Senate passed unanimously on July 29, 1953, Senate Resolution 150, which states: "That it continues to be the declared purpose of the United States to obtain within the United Nations, agreements by all nations for enforceable world disarmament."

Over a year ago, President Eisenhower appointed Harold Stassen special assistant on disarmament, with Cabinet rank. Mr. Stassen has been seeking agreement for an exchange of military information between the United States and the U. S. S. R. as a first step toward a comprehensive and effective system of inspection and disarmament. The continuing intense interest of the Congress in disarmament is reflected in its creation a year ago of a Special Senate Subcommittee on Disarmament under the chairmanship of Senator Humphrey.

This record over 4 decades gives clear evidence of the sincere hope of Americans for disarmament and the use of our resources for peaceful purposes. Every effort toward this end should receive the wholehearted support of all citizens. We are not blind to the tremendous problems in international relations which must be overcome to make world disarmament feasible. On the other hand, it is surely not premature to give serious consideration at this time to the consequences of achievement of a truly peaceful world.

One of the most important of these consequences, I believe, will be a significant change in the character of the American economy. Such a change will present problems requiring adjustments both in public policy and in private management of economic affairs. More important, it will present us with opportunities for making tremendous advantages in the material well-being not only of the United States but of all the world.

The American economy today is strongly influenced by the necessity for maintaining a large Defense Establishment. It is difficult to identify any area of public policy in which the formulation of those policies has not been determined, at least in part, by defense requirements. These requirements have affected the extent and character of our economic growth, by virtue of their emphasis on development of certain types of industrial capacity. Competitive relationships and other basic structural elements of American industry have reflected the impact of large-scale defense production.

Defense needs have limited the extent to which all levels of Government have been able to provide the public services demanded by a growing population.

---

<sup>1</sup> The views expressed are those of the speaker and do not necessarily represent the views of the Joint Economic Committee or individual members of that committee.

Technological advance has been extensively based upon and conditioned by the Federal Government's defense program. Our tax and monetary policies have been influenced by the economic requirements of defense. The recent hearings on defense essentiality and foreign economic policy by the Joint Economic Committee's Subcommittee on Foreign Economic Policy, developed the tariff policy issues raised by defense considerations. Clearly, the elimination of defense mobilization or its deemphasis will profoundly affect our economic life.

Some profess to see in this situation the basis for an alleged artificial emphasis in the United States on military preparedness. According to Soviet propaganda, the economy of the United States is dependent on substantial arms spending. In the words of the new Soviet Foreign Minister, Mr. D. T. Shepilov, the economy of the United States "demands constant militarist stimulation." Because of this the Soviets claim all peace efforts on our part are insincere. This propaganda is aimed particularly at the great uncommitted regions of the world.

Statements like this reflect ignorance of a basic characteristic of the American people. This is, as Congressman Mills, chairman of the Joint Economic Committee's Subcommittee on Tax Policy, phrased it, "our perpetual dissatisfaction with present achievements, our alertness in recognizing problems and our welcome acceptance of the challenge they present, and the nearly universal conviction that better ways of living are to be had if we apply the proper effort, imagination, and creativeness in our undertakings—these attitudes are the wellsprings from which our material progress flows." Because of this characteristic we do not shrink from, but rather welcome, the challenges which disarmament poses. Our focus is primarily on the opportunities it will present.

#### THE ECONOMIC COST OF DEFENSE

We can get a broad perspective on the possible economic consequences of disarmament by examining the economic costs of defense.

In the 10 years since World War II, the Federal Government has spent \$310 billion on goods and services for national security. Major national security expenditures are currently taking about 10 percent of gross national product. (See table 1.)

Out of total budget expenditures of about \$66 billion annual rate, some \$41 billion (or 60 percent) is for national security, with about \$12 billion going for procurement of aircraft, ships, tanks, and other military equipment.

Manpower requirements of our present defense effort total between 6 and 7 million persons. About 2,865,000 persons are in the Armed Forces and 1,180,000 civilians are employed by the Department of Defense and related agencies. In addition to these more than 4 million Government employees, many millions in private industry spend all or part of their time on defense orders. The military aircraft, shipbuilding, and electronics industries alone would account for over 1 million full-time defense workers. On the basis of the average annual dollar output per worker, between 2 and 3 million workers were required to produce the \$20 billion of military goods purchased by the Federal Government in 1955. (See table 2.)

The real costs of armaments and defense, however, are better expressed in terms of the additional advances which might have been made in the civilian sector of the economy, had it not been necessary to allocate resources to defense production.

For instance, the cost of 1 destroyer is enough to provide new \$10,000 homes for over 3,000 families. The price of 1 modern heavy bomber would provide hospital facilities for a population of over 125,000 people. The cost of 1 modern jet fighter would finance 4 years of college for over 100 young people. In 1955, about 2 percent of steel shipments, 3 percent of copper, and 9 percent of aluminum shipments went into defense production. Although these percentages are small, they represent the commitment of substantial quantities of resources to production that is not available for consumption and which does not add to our industrial capacity. (See table 3.) Communist aggression, with the persistent threat of its renewal, has cost us—and the rest of the world—the higher real living standards, including leisure, educational, cultural, and recreational opportunities, which would have measured our economic potentials in a peaceful world.

In the broadest sense, therefore, the principal economic consequence of disarmament would be the opportunity for a major reorientation of economic activity toward more complete satisfaction of the virtually infinite variety of human wants. We must, realistically, expect that this reorientation will present significant problems and require major adjustments, both in macro- and micro-economic terms. By careful study of anticipated problems, we will better be able to employ

the varied and highly effective instruments we now possess and to develop new instruments for effecting these adjustments.

#### AGGREGATE ADJUSTMENTS TO REDUCE DEFENSE OUTLAYS

Significant reductions in military spending have occurred twice in the past decade. After World War II defense spending was reduced by \$54.7 billion between 1945 and 1946. Under the impetus of extraordinary domestic consumer demand, outlays for relief, and capital requirements in many war-torn areas of the world, conversion was very rapid. Measured in current dollars, gross national product fell only \$4.4 billion. (See table 1.) In constant prices the decline was more significant, although full employment levels were maintained because of voluntary withdrawals from the labor force.

The second adjustment, occurring at the end of the Korean war in mid-1953, was complicated by a related inventory adjustment. Not only was the level of defense spending reduced from \$51.5 billion in 1953 to \$43.0 billion in 1954, but there was a significant shift in composition of defense expenditures from guns, ammunition, and tanks to larger outlays for research, development, and production of new offensive and defensive weapons. Gross national product dropped \$2.5 billion from 1953 to the recession year 1954, but production reached a new high of \$390.9 billion in the following year. (See table 1.) Monetary and fiscal action was helpful in easing the impact of reduced defense spending.

The successful post-Korea adjustment points up the strength of our overall economy in adjusting to lower levels of defense spending. It appears that gross national product for 1956 will be close to \$410 billion. The largest portion of this product, roughly \$265 billion, is being purchased by consumers. Federal, State, and local governments are buying nearly \$80 billion and business purchases of new capital goods are close to \$65 billion. Net foreign investment will be small. It is clear that in the context of these gross national product components the economy as a whole could successfully adjust to quite substantial cuts in the current \$41 billion level of defense spending.

The sheer magnitude and infinite variety of unsatisfied human wants which have been postponed because of defense demands are convincing evidence that our economy would have little difficulty in finding outlets for resources released by reducing defense outlays should disarmament ever become possible. Not only do these wants exist, but we in America have demonstrated the know-how, ingenuity, and drive to translate wants into satisfactions.

Another significant factor underlying the expansion of the American economy is our rapidly growing population. But of even more economic significance than the growth is the changing age characteristics of the population. The demand forces set in motion by these population trends stagger the imagination. Business opportunities are unlimited if this challenge is translated into expansion programs.

It would, of course, be impossible to inventory or list all of the many private and public wants which might be taken care of in the happy contingency that defense outlays could be reduced. A few should be mentioned, however.

Additional housing is one of the most apparent wants growing out of the expansion of population in this and future decades. It is anticipated that in the years to come new family formation will give rise to demand for about 900,000 new nonfarm houses, while replacements will account for an additional 500,000 units, or a total of 1.4 million new nonfarm dwellings annually.

Public and private urban redevelopment programs might be expanded. Substantial expenditures might be made for slum clearance, improving housing standards through replacement and rehabilitation of substandard dwellings, and for streets, parks, playgrounds, and other community facilities.

The Nation's school construction needs by 1960, according to estimates collected by the White House Conference on Education, vary from 200,000 classrooms to nearly 500,000. The amount which should be spent between now and 1960 for additional schools is estimated to range from \$10 billion to \$15 billion. Such a construction program would, of course, accentuate the present shortage of qualified teachers and intensify the demand for trained people in this profession.

Official State hospital plans prepared under the Hill-Burton Act of 1946 showed on January 1, 1956, an estimated 1,118,000 acceptable hospital beds in non-Federal hospitals. This compared with the 1,968,000-bed standard set by the medical profession. To meet this standard would call for outlays of approximately \$14 billion.

Since 1949, when the Joint Economic Committee published its inventory of need for highway facilities, totaling \$40 billion, it had been evident that a highway improvement program is necessary. It is contemplated that annual Federal, State, and local expenditures for roads and highways will be increased under the 1956 highway bill from the present level of \$4.5 billion to about \$8 billion per year. Additional billions will be needed to meet rising standards for highway transportation.

Federal support for research and development in a variety of areas is estimated to represent approximately 50 percent of total expenditures in this country for research today. Fiscal year 1957 Federal expenditures are estimated at \$2.6 billion. Eighty-four percent of this total is for major national security activities. One-fifth of this amount goes to the Atomic Energy Commission, with only a small fraction allocated for development of peaceful applications of nuclear energy.

Total research expenditures of the Department of Health, Education, and Welfare in fiscal 1957 are budgeted at \$116 million, representing about 5 percent of total Federal research expenditures. Government expenditures for military research exceed its medical research by 16 to 1. One can only speculate as to the benefits accruing to mankind throughout the world if this ratio could be reversed.

During the past decade there has been a clarification of responsibilities, the establishment of machinery, and the development of techniques whereby Government and private industry can with greater confidence tackle aggregate economic adjustment problems in the future. Under the Employment Act of 1946 the Congress declared that it is the responsibility of the Federal Government to "promote maximum employment, production, and purchasing power" with the cooperation of industry, agriculture, labor, and State and local governments. The effects of this legislation have proved a stabilizing force in the economy by providing confidence both for business and consumers that maintaining high levels of economic activity is our common goal.

The changed complexion of the economy resulting from substantial reduction in the defense program might well occasion significant changes in both our tax system and monetary policy. Apart from these revisions, rapid reduction in defense spending would call for prompt compensatory fiscal and monetary action to the extent required by inadequacy of private demand. The success of such compensatory policy over the past 10 years and the confidence that timely action would be taken to maintain employment have done much to minimize fluctuations in economic activity.

The most effective stabilization device to meet a substantial drop in aggregate demand is fiscal policy. If a cut in defense spending were to result in a deficiency in aggregate demand, other Government outlays might be increased, taxes reduced, or both, depending on the value judgments of the country as a whole with respect to public as opposed to private spending. A decision to rely on expansion of private rather than public activity would call for tax reduction in order to increase business and consumer purchasing power. The effectiveness of such action in stimulating increases in private demand has been repeatedly demonstrated in the postwar era. Favorable budgetary conditions such as the \$2 billion surplus in fiscal 1956, would facilitate tax reduction.

Alternatively, reduction in defense outlays would provide the opportunity for expansion of long-deferred public services and facilities, such as schools, hospitals, and highways, demanded by an expanding population. With the prior claim of Federal defense programs removed or reduced, State and local governments would better be able to solve major problems of financing public projects made possible by the material and human resources thereby released.

Expansion of private demand would be facilitated by making money and credit more readily available at lower interest rates. The Federal Reserve System can quickly increase bank reserves, thereby reducing the costs and increasing the availability of credit, by lowering rediscount rates, by reducing reserve requirements of member banks, and by purchases of Government securities through the Board's Open Market Committee.

There is increasingly widespread appreciation of the built-in stabilizers which operate automatically to maintain disposable personal income. On the expenditure side are unemployment compensation, old-age and survivor's insurance, agricultural payments, grants-in-aid to States, and other programs. Our progressive Federal income taxes are important automatic stabilizers on the revenue side.

Increased foreign investment in a period of reduced defense spending would provide an opportunity for economic growth and expansion of our own as well

as the economies of other countries. Political and economic uncertainties created by international tension represent a major deterrent to private investment abroad. Substantial alleviation of these tensions is a basic requirement for a general reduction in armaments and deemphasis of our defense program. Accordingly, we may look forward to a higher level of private foreign investment when reductions in defense spending become feasible.

The Federal Government could contribute to expansion of this investment by such revisions of foreign economic policy as would be made possible and necessary by the changed international conditions. Direct participation by the Government might also be desirable, at least initially. For example, pooling private capital and public funds to provide a worldwide industrial development fund might be a useful approach, particularly in connection with such types of industrialization programs as atomic-energy development. Such industrial advance in the present underdeveloped countries would afford vast new opportunities for increased private foreign investment, with resulting improvements in levels of living. What President Eisenhower said in April 1953 is still true today:

"This Government is ready to ask its people to join with all nations in devoting a substantial percentage of the savings achieved by disarmament to a fund for world aid and reconstruction. The purposes of this great work would be: to help other peoples to develop the underdeveloped areas of the world, to stimulate profitable and fair world trade, to assist all peoples to know the blessings of productive freedom."

We must anticipate that the change in the character of the economy resulting from substantial reduction in our defense program would require revisions in other areas of public policy. The implication of such a reduction for Federal policy with respect to the agricultural and natural resources sectors of our economy, for example, might well be of broad significance. These implications should receive the closest attention at all levels of government and by the executive and legislative branches of the Federal Government in particular.

#### MICROECONOMIC ADJUSTMENTS

As I have suggested, we can be quite confident of the effectiveness of broad Government policies in providing appropriate adjustments to fluctuations in total demand resulting from substantial cuts in defense spending. The more difficult problems, we must anticipate, will arise in connection with the short-run adjustments to be made by specific industries, localities, and sectors of the economy in response to basic changes in the economic setting.

As we all know, the economic impact of our high level of defense spending does not fall evenly on all segments of the economy. Similarly, the consequences of disarmament would vary widely. In some cases, required adjustments would be modest, while in others far-reaching adjustments would be called for. Apprehension about the impact of reduced defense spending on a particular industry, therefore, cannot be dismissed by assurances that, in the aggregate, the economy will continue to maintain a steady rate of growth.

There is a tendency, however, on the part of some members of the business community to express apprehensions about their own business in the broader terms of the entire economy. For example, the president of the General Dynamics Corp. recently said, "Now, I do not wish to imply that the defense industry is responsible for our present prosperity. But, I do wish strongly to emphasize again and again that if \* \* \* there should be any sudden and drastic reduction of defense expenditures, we should have the most serious domestic repercussions." I do not suggest complacency about the possible severity of aggregate adjustments, but I do urge caution with respect to conclusions based upon the outlook for any one company, industry, or locality in the economy.

The type of problem and required adjustments which may well be faced in a particular situation are, perhaps, best illustrated by reference to the aircraft industry. Currently, military orders comprise about 90 percent of total sales in that industry. Drastic reduction in such orders, as part of a general reduction in defense spending, therefore, would pose the question whether nondefense demand would be adequate to maintain substantially full and profitable utilization of the resources now committed to aircraft production. If such demand would be forthcoming, the industry would, in general, be faced with only minor problems in shifting the use of present capacity.

On the other hand, in the apparently more likely case that civilian demand for aircraft output would not be adequate, the industry would be faced with the alternatives of major shifts in resource use, or if present resources are too highly specialized, liquidation of existing capacity.

Such adjustments cannot be lightly regarded. They may well have significant consequences not only for the management, employees, and shareholders of affected companies, but for entire communities.

On the whole, the best assurance that such adjustments will be most readily effected could be afforded by public policy aimed at substantially increasing the mobility of all types of industrial resources—labor as well as nonlabor. This objective involves broad considerations of the effectiveness of antitrust policies and of our business and labor information and employment services. In the latter regard, various agencies of the Federal Government should be prepared to make information about investment, business, and employment opportunities widely available. Serious thought should also be given now to methods for assisting relocation of resources, both industry- and location-wise.

Area redevelopment programs may offer substantial assistance to localities faced with unemployment and unused industrial capacity as a result of reduction in defense spending. At the Federal level, legislation to provide a comprehensive approach to such local adjustment problems, introduced by Senator Douglas and others, is currently being studied by Congress. Such a program would provide for industrial loans, public-facility loans and grants, technical assistance and information for business, and vocational training and retraining subsistence benefits for individuals. In many instances, major advances in the solution of local problems could be made by State and local development commissions. All such programs should, of course, give primary consideration to obtaining the most efficient use of resources. Subsidy programs immobilizing resources which could be more effectively employed elsewhere in the economy, should be avoided.

The cooperation of business, agriculture, and labor would also be helpful in readily effecting adjustments. Changes in the complexion of the economy resulting from deemphasis of defense may well be reflected in unevenly distributed changes in productivity, relative prices, and profits. A nondefense economy, in brief, will probably produce a significantly different product mix from the present. Resistance to change in economic relationships, insistence on the defense-produced status quo will serve only to increase the difficulty in effecting adjustments to attain maximum overall efficiency in the use of resources. Thus, even though broad Government policies might, in such a situation, provide for full employment of these resources, we would not be realizing the Employment Act's objective of obtaining maximum results from economic inputs.

Clearly, a great deal of analytical work remains to be done in appraising the microeconomic impact of future reductions in defense outlays. The executive branch of the Federal Government could well undertake studies of the economic consequences of disarmament in this context.

One of the contributions which the Office of the Special Assistant to the President for Disarmament can make is to organize an active unit within the executive branch to integrate thinking on this subject so that the challenges which disarmament may make on the domestic scene may be viewed without fear or alarm. Such effort is called for now, even in advance of specific disarmament plans, since progress in military technology constantly results in innovations which make possible, desirable, and necessary radical shifts in the type of manpower and material requirements of an adequate defense program. In recent days there has been growing talk in high places, both here and abroad, of significant reductions in military manpower requirements in light of the new weapons. Therefore, study of the implications for resource use of significant changes in the defense program is warranted, quite apart from questions of the practicability of overall defense reduction in the near future.

#### CONCLUSION

No one, I am afraid, is in a position today to tell us when disarmament may become a reality, nor even to characterize the process of reducing defense expenditures. Yet the appeal of attaining a peaceful world and the horror of failure is so compelling that we cannot overlook our responsibilities—as private citizens, members of the business community, public servants—in anticipating and preparing for the adjustments which will be required.

Our experience since World War II provides us assurance that as a nation we are capable of making these adjustments promptly. We are not complacent, but certainly we are not afraid to face a changing world. Rather we recognize that every step toward peaceful solutions of international problems offers us the challenges and opportunities upon which the Nation has thrived and which is the true source of our leadership.



From our brief survey, the following conclusions may be drawn :

First, high levels of defense spending, although essential in today's uneasy world, necessarily involve substantial sacrifices in the satisfaction of human wants.

Second, abundant opportunities for further improving our living standards exist whenever defense expenditures can safely be reduced. Although our citizens as a whole enjoy the world's highest standard of living, an international situation which permits curtailment of defense requirements would make it possible, and would promptly be taken advantage of, to advance that standard.

Third, under the Employment Act of 1946, the Nation has developed and will continue to develop effective skills, machinery and programs for dealing with adjustments and fluctuations in levels of economic activity. Substantial reductions in defense spending may significantly affect the complexion of the American economy and call for basic changes in public policies. Agriculture, labor, business, and consumers should have assurance that prompt Government actions will be taken.

Finally, the impact of disarmament may fall very unevenly upon particular industries, localities, and groups within the economy. We recognize that readjustments and shifts of all kinds go on constantly in a dynamic economy such as ours. We may anticipate that in many respects major reductions in defense spending will magnify significantly such readjustments. It is necessary, therefore, that serious and systematic thought be devoted to the character of the adjustments which would be called for and to the development of techniques, both in the private and public spheres, for assuring that these adjustments will be effectively made.

It may be concluded, therefore, that economic considerations support every feasible effort for disarmament. Certainly the problems and adjustments occasioned by cuts in defense spending do not represent—and must not be regarded as—economic barriers in the way of disarmament or peace.

TABLE 1.—*Gross national product in relation to Government expenditures—actual, 1939–55; estimated, 1956*

[Billions of dollars]

Year	Gross national product	Government expenditure for national product <sup>1</sup>					
		Federal, State, local		Federal			
		Amount	Percent gross national product	Total		Major national security	
				Amount	Percent gross national product	Amount	Percent gross national product
1939.....	\$91.1	\$13.3	14.6	\$5.2	5.7	\$1.3	1.4
1940.....	100.6	14.1	14.0	6.2	6.2	2.2	2.2
1941.....	125.8	24.8	19.7	16.9	13.4	13.8	11.0
1942.....	159.1	59.7	37.5	52.0	32.7	49.6	31.2
1943.....	192.5	88.6	46.0	81.2	42.2	80.4	41.8
1944.....	211.4	96.5	45.6	89.0	42.1	88.6	41.9
1945.....	213.6	82.9	38.8	74.8	35.0	75.9	35.5
1946.....	209.2	30.9	14.8	20.9	10.0	21.2	10.1
1947.....	232.2	28.6	12.3	15.8	6.8	13.3	5.7
1948.....	257.3	36.6	14.2	21.0	8.2	16.0	6.2
1949.....	257.3	43.6	16.9	25.4	9.9	19.3	7.5
1950.....	285.1	42.0	14.7	22.1	7.8	18.5	6.5
1951.....	328.2	62.8	19.1	41.0	12.5	37.3	11.4
1952.....	345.2	77.5	22.5	54.3	15.7	48.8	14.1
1953.....	363.2	84.4	23.2	59.5	16.4	51.5	14.2
1954.....	360.7	76.5	21.2	48.9	13.6	43.0	11.9
1955.....	390.9	76.8	19.6	46.7	11.9	41.2	10.5
1956 (estimated).....	410.0	79.5	19.4	46.7	11.4	41.0	10.0

<sup>1</sup> For the purchase of goods and services.

Source: 1939–55, Department of Commerce 1956 estimates, Joint Economic Committee Staff.

TABLE 2.—*Estimated value of deliveries to the military departments and value of construction, 1953-55*

(Billions of dollars)

Year	Total	Hard goods	Soft goods	Construction
1953.....	\$28.8	\$23.3	\$3.0	\$2.5
1954.....	21.7	17.7	2.3	1.8
1955.....	20.1	16.3	1.8	1.9

NOTE.—Detail may not add to totals because of rounding.  
Source: Department of Defense.

TABLE 3.—*Total and defense shipments of steel, copper, and aluminum mill products and castings, 1953-55*

Item and years	Total shipments	Shipments for defense production	Defense as percent of total
Steel (tons):			
1953.....	81,641,882	7,279,056	8.9
1954.....	64,143,371	1,815,470	2.8
1955.....	85,937,689	1,582,319	1.8
Copper (thousand pounds):			
1953.....	5,048,226	758,604	15.0
1954.....	4,225,499	277,204	6.6
1955.....	5,129,573	166,926	3.3
Aluminum (thousand pounds):			
1953.....	3,211,158	773,640	24.1
1954.....	3,009,676	363,087	12.1
1955.....	4,007,315	345,388	8.6

Source: Office of Defense Mobilization

Committee note: This is a copyright article for which the publishers have given permission to reprint in this volume of hearings.

[From Nation's Business, January 1957]

#### KREMLIN ECONOMISTS DISCLOSE RED PLANS

IN FIRST INTERVIEW WITH UNITED STATES ECONOMIST

(By Dr. Grover W. Ensley, Executive Director of the Joint Economic Committee of Congress)

A revolution now taking place in Soviet economic thought sheds new light on what to expect from the Communists in the period ahead.

Among the significant changes are these:

Leading Russian economists no longer expect Western economic collapse, as Marx predicted. They recognize and fear the strength of capitalism.

They look to the future as a long period of economic competitive struggle, although they expect eventually to win.

Younger, more flexible, Soviet economists are gaining stature and power in economic circles, as against the older Lenin-following economists.

These younger economists know a great deal about business trends in the United States. Their familiarity with economic documents, studies, and statistics produced here is noteworthy. They are eager to learn all they can about our business and industry and economic thinking.

The younger men understand that the American capitalist economy today is quite different from that of any period in the past, and that our economy never was like that of prerevolutionary Russia.

Russia's older economists, on the other hand, are unyielding in following the original concepts of communism. They continue to view capitalism through the eyes of Marx, Lenin, and Stalin. They scoff at our estimates of future growth because we "depend entirely upon decisions of millions of consumers, as well as hundreds of thousands of independent business men." They say that when they project economic goals they "are the law" and hence "must be achieved." They brand as "planned unemployment" the assumption in our Joint Economic

Committee's Potential Economic Growth of the United States During the Next Decade that in 1965 there will be a labor force of about 80 million, with about 3 million temporarily unemployed. They strongly maintain there is no unemployment in the Soviet Union—nor can there ever be. They neglect to add that many workers are assigned tasks of very low productivity, to say nothing of their slave-labor camps of the East.

The younger economists, however, seem more understanding of the meaning of temporary unemployment in the United States.

As the younger men gain prestige—which they are doing—and as their economic thought becomes better understood by Russia's political leaders, it seems inevitable that Communist policies will undergo some significant changes.

I learned of these developments recently during an unprecedented meeting in Moscow with seven top Russian economists at the Soviet Academy of Sciences.

My basic conclusion from this discussion is that the Communist economy, even with significant changes, can never outperform our own.

This doesn't mean that we need not fear communism. Quite the contrary. Economic competition will be fierce in the years ahead. But more important, Kremlin leaders are imperialistic by nature. Theirs is a ruthless dictatorship, and their philosophy is that the end justifies the means—whether in their own economic development or extending their authority abroad.

As these leaders—quarreling among themselves, watching upheaval in the satellite countries—come to understand this new concept that capitalism won't destroy itself, anything, in my judgment, can happen. Time, they have stated over and over again, is in their favor. Once they realize fully that time is not in their favor, they may panic.

We can never for a moment lower our guard against that possibility. This is a two-front struggle.

To meet the Communist threat, we must maintain military might and we must maintain economic might. To fail on either front could lead to the victory the Soviet bosses expect to achieve.

Although we need not fear the Communist economic struggle, we must meet it wisely because it is a well-calculated attack.

In the underdeveloped countries they are selling Soviet economic growth. I am convinced this growth is exaggerated. Nevertheless, it is great enough to win the respect of the underdeveloped countries, particularly in Asia.

After talking with the Russians and seeing a small part of their country, I am convinced more than ever that their method of allocating resources through central planning can never be as efficient as our private-enterprise system. What is essentially wrong with Socialist planning is that it fails to meet the market test, and the incentive offered to the individual can never bring forth the efficient effort that our free system provides.

But the people of underdeveloped nations don't understand this. They see a Russia that is expanding with terrific speed.

The Russians admit that they have made errors of economic judgment in the past. But they claim to the outside world that they now have perfected economic and social planning.

They urge the underdeveloped countries to profit from Russia's past mistakes. In Moscow I saw many representatives from these countries. They are in Russia to learn Communist techniques.

Russian technicians likewise are numerous in the underdeveloped countries of Asia that I visited.

The Communists are showing off Red China with pride. Industrial growth in China, they claim, has been accomplished in less than a decade, and underdeveloped countries can do as much if they follow the same techniques.

That Red China's growth is being achieved at great human cost escapes many of the leaders of the underdeveloped countries or, I fear, is considered by them to be a justifiable cost of revolution. This is particularly true among Asians, where life is cheap and suffering is common. There, a philosophy that the end justifies the means is easier to accept. On this battleground the Communists expect to win their greatest victories in the years just ahead.

As for the future, it is clear that the Communists will pursue world trade on the basis of what is politically expedient for them.

The Kremlin leaders understand—as do the Soviet economists with whom I talked—that, if they are to hold the Communist countries together, they must be made economically, as well as politically, interdependent upon both Russia and one another.

To speed that goal, Russia is decentralizing production within the Communist bloc and seeking the advantage of division of labor. Each country, in future

years, will attempt to produce what she is thought to be best suited to produce. The plan, of course, is aimed at increasing dependence on Russia.

In the future, each country is to have more voice in determining its production. You can expect that Kremlin to yield more and more to growing pressures that control be vested in local hands.

It's difficult to know how much real and immediate influence the Russian economists have on Soviet political leaders. Recent Kremlin decisions obviously have been inspired mainly by political reasons and purposes.

But I think it is significant that the younger economists who talked with me are fully aware of the economic importance of the new decentralization of planning and control, as well as of production.

I went to Russia on my way to Bangkok. The State Department had invited me to be the chief United States delegate to the working party on economic development of the United Nations Economic Commission for Asia and the Far East.

Through the State Department I requested interviews in Moscow with economists at the Soviet Academy of Sciences. The request was granted by the Soviet Ministry of Foreign Affairs.

John Armitage, head of the economic section of our Embassy in Moscow, and I were met at the academy by the vice president, Academician K. V. Ostrovytyanov, and six of his colleagues. He apologized for the absence of Academicians E. S. Varga and S. Strumilin, who were indisposed that morning.

Besides Mr. Ostrovytyanov, there were Academician V. S. Nemchinov, Prof. A. A. Arzumanyan, Dr. Ya. A. Kronrod, and Dr. V. Ya. Aboltin, Mr. Perevertaylo, and Mr. Ostrovytyanov's assistant, V. A. Zaytsev. S. Shetinin, a young employee at the academy, served as interpreter. Also present was Natasha Burlova, interpreter-guide, who was assigned to me during my stay in Russia.

We were seated around a large conference table, the Russians according to rank. Tea was served with biscuits, candies, and other delicacies.

Two of the seven have titles of "academicians," the highest intellectual rank in the Soviet system. They are very highly paid.

Mr. Ostrovytyanov, the senior man present, made it clear early in the interview that because he had lived under both capitalism and socialism—he was obviously a contemporary of Lenin—he understood the two systems and dismissed any possibility that I might tell him anything virtuous about capitalism.

Throughout the talks it was clear that the two elder men scorned capitalism, whereas the younger economists were clearly impressed by capitalistic achievements. At points, the younger ones agreed with me that there have been significant changes in our economic system. They agreed that it is not inevitable that capitalism will go the way that Marx predicted and, in the same vein, that the United States will not necessarily have another 1929-type crash.

We know, of course, that Soviet Party Boss Khrushchev sharply criticized Russian economists last February, pointing out their repeated failures accurately to predict or forecast trends in the United States. This criticism apparently has had little effect on the older economists. But it surely has stimulated the younger men to study the economy of this country. They showed themselves to be familiar with recent professional economic publications, documents, and research reports from the United States.

My first questions concerned the methods Russia uses in allocating her resources. Under their system, the academy economists claimed, central planning permits the best possible allocation of resources between consumption and investment. The Soviet economists are spending a lot of time trying to improve their methods of planning. They admitted that they had made errors in the past—misjudgments, they called them—but they insist they are about at the point of perfection today. I was struck, for example, by the cocksure attitude of the Soviet delegates to the Bangkok meeting with respect to the present status of their planning methods.

The Academy economists agreed to the accuracy of western estimates that Russia is devoting about 25 percent of total production to investment (that compares with 18 or 19 percent in the United States, if we include government as well as private investment).

They admitted that devoting this large percentage to investment means that, in the short run, consumers will have less to eat and wear. But they insist that the long-run picture will make it possible to raise living standards more.

I asked whether this high rate of investment would taper off once Russia becomes more developed. This has been the case in the United States and other advanced countries.

Mr. Kronrod, perhaps the most widely quoted Russian authority on investment, stated emphatically that the high rate of investment will continue indefinitely. At that point he acknowledged familiarity with recent studies of the National Bureau of Economic Research in the United States which show that the productivity of capital actually increases as the economy becomes more developed.

Under the theory additions to capital stock result in greater increases in output than such increases would have produced at an earlier stage of development.

This is a significant finding which we have been discussing in the United States for 2 or 3 years. For example, at hearings of the Subcommittee on Tax Policy of the Joint Economic Committee a year ago, some of the academic and business witnesses used it as a basis for suggestions that tax policies should encourage increased investment.

Labor economists and other witnesses, however, felt that the implication of this research finding was that we should stimulate consumption, not only as the best way of stimulating continued economic growth but also in order to make the benefits of increased capital efficiency available to the consumers as soon as possible.

The Russian economists seemed aware of this debate in the United States. They found nothing unusual in the fact they were on the side of the "capitalists" in this discussion.

They indicated that their industrial production is increasing at a high rate. They used the figure of 10 to 12 percent a year. Western estimates, including those of our committee staff, are considerably under that. For example, we believe that during the 1948-55 period the annual rate of growth in Russia was about 7 percent, as compared with 4 percent in the United States. During the 1920's, when the United States experienced one of its most rapid growth periods, our rate of growth exceeded 6 percent, not significantly different from the current Russian rate of growth.

I asked them if they expected this high rate of growth to continue indefinitely. They are confident it will.

When it was pointed out that the growth rate was in fact less in their current 5-year plan than in the preceding one, Mr. Kronrod emphasized that different 5-year plans concentrated on different major tasks. The growth rate, he insisted, varied from plan to plan, but the general growth rate would continue in the order of 10 to 12 percent annually. The current (sixth) 5-year plan, he stated, was concentrating on qualitative improvements in the economy, complex and improved mechanization, automation, specialization and improved technical training.

This point of view was seconded by Mr. Ostrovtyanov in another connection when he said that previous plans had been "administrative" and the current plan would be more "economic." By this he seemed to mean that previous plans had aimed at quantitative growth without much regard for cost factors and careful coordination within the plan for efficiency of production, whereas the current and future plans would pay greater attention to such factors. Western hopes and expectations are that as consumers in the Communist economies get their foot in the door and become educated to improved levels of living, they will, through one means or another, see to it that they get a larger share of the increased production. Thus the relative proportions going to investment and the rate of growth itself may tend to decline. The Russians are confident that they can improve living standards in a controlled way and still continue to emphasize investment at the expense of current consumption. Consumption is controlled but, unlike the United States, actually is discouraged by a variety of mechanisms. For example, consumer credit is viewed as a capitalistic trick to subjugate the workers. So it is not allowed, as it would be a stimulus to consumption which would interfere with investment goals.

According to our best estimate, Russia's gross national product last year was about 1,086 million rubles, a figure which cannot be compared exactly with our gross national product of \$390 billion for the same period. But it is clear that their GNP in real terms is no more than a third of our GNP. I think this guess gives them the benefit of the doubt.

It is significant that while their rate of growth currently may be a little higher than ours, we are experiencing a greater growth in absolute terms than the Russians. Comparing very roughly, if you apply 7 percent to their figure you get an annual increment of approximately \$10 billion, whereas if you apply 4 percent to our GNP of \$400 billion you get an increment of \$16 billion. We

can't be complacent in these figures, however, since the dictators in Moscow can do what they want with the increment, while in our country the individual at the marketplace and at the ballot box decides whether it should be devoted to civilian or military uses, foreign or domestic, consumption or investment.

I asked them how they resolved conflicts among themselves, in, for example, allocating goods and services. They were emphatic that there need be no differences of opinion among technicians when latest scientific methods are used.

I told them that I couldn't accept that and I didn't see how they, as intellectuals, could expect me to believe it. We know that conflict is the essence of scientific method and human relations. I told them, "Let's assume for a moment that you all agree as to how something should be done. How do you convince the people on the street that your formulas come out best for them? Don't they have a voice in the matter?"

"Oh, they have a voice in the matter," they said emphatically. "But through years of experience the people have come to have complete confidence in our methods so that there is no public dissent."

If I were there now I would ask them if that was true in Hungary and Poland.

Later, at the Bangkok meeting, the Russian delegates continually emphasized the advanced development of their techniques, the multiple correlations, the most involved econometric models, but they would not go beyond that in spelling out exactly how they proceed. Questions designed to obtain more detailed information were ruled out of order by the bureau chairman.

At various points in our discussion in Moscow, the Communist economists tried to bait me with statements and questions that reflected the party line and which were obviously calculated to put me on the defensive. For example, I asked if defense expenditures account for a sizable portion of their industrial growth. They flared back at me with the charge that they have been disarming rapidly, dropping 800,000 men from their armed forces in the past year while the United States has remained what they call an "armed camp."

I took pains to point out that they were wrong, that they are demobilizing just 10 years after we had, and that we reviewed our demobilized status only after the aggression in Korea made clear the imperialistic threat of the Communist system. I said that today we have but 2.8 million men in our Armed Forces. When I asked them how many they have, they avoided answering the question.

Likewise they ducked questions as to what percentage of their total production is going into defense—this after I had told them that we are devoting not more than 10 percent of our production to defense.

They would not face up to these questions. But informed western estimates are that the Russians are devoting at least 15 percent of their production to defense. It also is estimated that they have nearly twice as many men in their armed forces as we have and that last year's demobilization was made necessary because of severe manpower shortages.

During our discussion, the academy economists went out of their way to tell about their recent discoveries of the economics of the division of labor. By that they meant, as they put it, that Poland would produce what she can most economically produce, with Czechoslovakia, Russian, China doing the same and then trading with one another.

This is a recent development. Under the old Lenin-Stalin program each unit tended to produce everything itself and exports were based on what was needed for imports. That was a kind of isolationism. Now they have apparently discovered the laissez faire economics of the division of labor and comparative advantage.

Next the economists emphasized economics in decentralizing planning.

I think it is important to recognize those two trends in the system. Actually they are not discoveries. Both of these points, particularly the division of labor, were the keystone of Adam Smith's *Wealth of Nations*, published in 1776. Incidentally, this laid the groundwork for the overthrow of mercantilism with its detailed government controls and for the whole free-trade movement of the 19th century.

When I suggested this, Mr. Ostrovtyanov said, "Oh, no, Adam Smith talked about the division of labor only in terms of a given plant. He had no concept of the economics of trade between and among nations." I told them to reread Adam Smith.

I tried to find out how far they carried local initiative. In one sentence I used the words "private initiative." They kept agreeing with me. Finally my colleague from the Embassy said to them, "I think you have gotten the transla-

tion wrong. You are not willing to grant the advantages of private initiative, are you?"

"Oh, no," they said, "we didn't mean private initiative."

So they were quick to withdraw any appearance of agreeing that there was any merit of carrying decentralization to that point, but they clearly do see the need for greater flexibility in planning and executing programs.

They pointed out inducements they are giving for increases in productivity. In other words, it's almost a profit motive. Local managers are induced to produce more and to meet or exceed quotas—even to help determine what the quotas are in the first place. Much of labor is on a piece basis, again to stimulate production—a far cry from Marx's doctrine of "from each according to his ability, to each according to his need."

Mr. Nemchinov spoke of the youth who are migrating to the new industrial regions behind the Urals in response to "moral stimuli." Mr. Kronrod pointed out that there were significant differences of wages in various zones and that wages were higher in the east. They spoke repeatedly of inducements to achieve labor mobility "voluntarily." Their emphasis on this suggests a guilty conscience since we know that in the Soviet economy the stick is still as important as the carrot in providing labor mobility.

The emerging Russian economic system is certainly not capitalism. But it is quite different from making all the detailed plans in Moscow and then using a whip to make sure that in each area and in each industry those quotas are achieved.

Although the Russians boast to the outside world—particularly the underdeveloped countries—that they have perfected their methods of planning and controlling economic development, the academy economists were frank in admitting to me that, at the academy, they are currently pursuing research projects to find more scientific bases for planning operations.

The list of projects included ascertaining the prospects of economic growth in the next 10 to 15 years, measuring the effectiveness of capital investment, determining the productivity of labor, and establishing basic norms for construction. More research attention is being given to incentives, price policy, the wage system, and cost accounting.

In my visit to Russia I tried to evaluate the results of the Soviet allocation of resources to determine if they are getting as good results as we, using our free enterprise system. In other words, would the Communist allocation of resources match the standards set by the market in a free economy?

My impression is it would not.

This was evident in a number of ways but most noticeable in air transport. On the flight between Moscow and Tashkent—on the way to Kabul and New Delhi—we stopped at several airports with bumpy dirt runways. There were no seat belts on the Russian planes, no "no smoking" signs. It was an austere experience, to say the least. At one such airport in central Asia there was a terminal building surrounded by spacious grounds and all enclosed by a steel and stone fence.

This was not a security or protective type of fence which would keep people out of the grounds. It was purely ornamental.

When I thought of the manpower and materials that had gone into that fence I thought to myself, "Now if this were the United States, with the same amount of resources going into the terminal, we would have taken that brick and steel and mortar and made one good runway."

Apparently some architect or engineer back in Moscow has the notion that an airfield has to have some such ornamental fence around it. That is the way in which they allocate their resources in building an airfield. The physical layout and methods for processing passengers at the great and relatively new airport in Moscow are maddening from the standpoint of efficiency.

It's in the area of the allocation of resources, I think, that the free world can find its greatest hope. Sooner or later the Russian collectivist system will have to be put to the test. In the world's market place it will fail.

I conclude that the Communist threat is not so much economic as it is political and military. We must not relax our national policies calculated to counter Soviet imperialistic ambitions.

94

~~416~~ 94

# INSTRUMENTATION AND AUTOMATION

---

---

## HEARINGS

BEFORE THE

SUBCOMMITTEE ON ECONOMIC STABILIZATION

OF THE

JOINT ECONOMIC COMMITTEE

CONGRESS OF THE UNITED STATES

EIGHTY-FOURTH CONGRESS

SECOND SESSION

PURSUANT TO

SEC. 5 (a) OF PUBLIC LAW 304

79TH CONGRESS

---

DECEMBER 12, 13, AND 14, 1956

---

Printed for the use of the Joint Economic Committee



UNITED STATES

GOVERNMENT PRINTING OFFICE

85561

WASHINGTON : 1957



140

## JOINT ECONOMIC COMMITTEE

(Created pursuant to sec. 5 (a) of Public Law 304, 79th Cong.)

PAUL H. DOUGLAS, Senator from Illinois, *Chairman*  
WRIGHT PATMAN, Representative from Texas, *Vice Chairman*

### SENATE

JOHN SPARKMAN, Alabama  
J. WILLIAM FULBRIGHT, Arkansas  
JOSEPH C. O'MAHONEY, Wyoming  
RALPH E. FLANDERS, Vermont  
ARTHUR V. WATKINS, Utah  
BARRY GOLDWATER, Arizona

### HOUSE OF REPRESENTATIVES

RICHARD BOLLING, Missouri  
WILBUR D. MILLS, Arkansas  
AUGUSTINE B. KELLEY, Pennsylvania  
JESSE P. WOLCOTT, Michigan  
HENRY O. TALLE, Iowa  
THOMAS B. CURTIS, Missouri

GROVER W. ENSLEY, *Executive Director*  
JOHN W. LEHMAN, *Clerk*

---

### SUBCOMMITTEE ON ECONOMIC STABILIZATION

WRIGHT PATMAN, Texas, *Chairman*

JOSEPH C. O'MAHONEY, Wyoming  
ARTHUR V. WATKINS, Utah  
AUGUSTINE B. KELLEY, Pennsylvania  
JESSE P. WOLCOTT, Michigan  
WILLIAM H. MOORE, *Economist*

# CONTENTS

---

Topics in order of consideration:

	Page
The role and relationship of instruments and automatic controllers to automation.....	2, 121
Robert T. Sheen, president, Milton Roy Co., and 1955-56 president of the Instrument Society of America, Philadelphia, Pa.....	33
Thomas Roy Jones, president, Daystrom Co., Elizabeth, N. J.....	72
Development of scientific, technical, and engineering skills.....	72
Howard L. Bevis, chairman, the National Committee for the Development of Scientists and Engineers, president emeritus, Ohio State University, Columbus, Ohio.....	78
The effects of instrumentation and automation in the area of automatic processing and in nucleonics.....	78
Dr. John Grebe, director, research and nuclear development, Dow Chemical Co., Midland, Mich.....	97
The changes and problems in the field of education in connection with the introduction and expansion of automatic controls.....	97
Prof. Elmer Easton, dean of the College of Engineering, Rutgers University, New Brunswick, N. J., and chairman, Engineering Division, Association of Land-Grant Colleges and Universities.....	127
Systems engineering and systems automation, data reduction and data utilization—its coming role in industry and as a part of automation.....	127
Albert F. Sperry, president, Panellit, Inc., Skokie, Ill.....	143
Instrumentation and automatic control as tools of automation in the petroleum refining industry.....	143
Chalmer G. Kirkbride, executive director, research, patent, and engineering department, Sun Oil Co.....	153
Instrumentation and automatic controls in aeronautics.....	153
Dr. Lewis Ridenour, Lockheed Aircraft Corp., Burbank, Calif.....	164
The need for trained scientists and research workers in the field of automation.....	164
Dr. Detlev Bronk, president, National Academy of Sciences, National Research Council, Washington, D. C.....	171
Developments in automation during the last year and especially the work of the United States Department of Labor in connection with the problems of labor, employment, and technological change.....	171
Rocco C. Siciliano, Assistant Secretary for Employment and Manpower, United States Department of Labor, Washington, D. C.....	187
Developments of the last year in the field of instrumentation and automatic controls as they may affect labor and employment generally.....	187
George Meany, president, American Federation of Labor-Congress of Industrial Organizations, Washington, D. C.....	187
Alphabetical list of witnesses and exhibits:	
Bevis, Dr. Howard L., chairman of the National Committee for the Development of Scientists and Engineers, and president emeritus of Ohio State University, Columbus, Ohio.....	72
Exhibit: The President's charge to the National Committee for the Development of Scientists and Engineers.....	77
Bronk, Dr. Detlev, president, National Academy of Sciences, National Research Council.....	164
Chilton, Dr. Thomas H., president, Engineers Joint Council.....	16
Easton, Elmer C., dean, College of Engineering, Rutgers University..	97
Exhibit: Little Ivan Goes to School, analysis of Russian educational system, presented by Dr. C. J. Lapp, Director of the Office of Scientific Personnel, National Research Council, at a meeting of the American Association of Land-Grant Colleges and State Universities, Washington, D. C., November 13, 1956..	107

## Alphabetical list of witnesses and exhibits—Continued

Grebe, Dr. John, director, research and nuclear development, Dow Chemical Co., Midland, Mich.....	Page 78
Exhibits:	
Our political crisis and faith, by the Reverend Ernest A. de Bordenave, Christ Church, a reprint from the Journal of the Franklin Institute, January 1956.....	84
Harris, Seymour E., chairman, department of economics, Harvard University.....	194
Jones, Thomas Roy, president, Daystrom, Inc., Elizabeth, N. J.....	33
Exhibits:	
Advance report—1954 census of manufactures.....	41
Articles from Control Engineering.....	59
Considering Today's Problems in Instrumentation, by Dr. Robert J. Jeffries, technical planning adviser, Schlumberger Instrument Co., Ridgefield, Conn.—condensation of the introductory address by Dr. Jeffries before the first meeting of the ISA Education Foundation Development Commission, St. Petersburg, Fla., on February 28, 1956..	64
Excerpts from A Challenge and an Answer, a brochure prepared to justify and explain the nature of the Foundation for Instrumentation, Education, and Research of the Instrument Society of America.....	68
General-purpose electronics test instrument industry, and industrial mobilization and defense planning study by the Scientific, Motion Picture, and Photographic Products Division, Business and Defense Services Administration, United States Department of Commerce, July 1, 1956....	64
Kirkbride, Chalmer G., executive director, research, patent and engineering departments, Sun Oil Co., and past president, American Institute of Chemical Engineers.....	143
Exhibit: Financial data for petroleum industry in the United States.....	146
Meany, George, president, AFL-CIO; presented by Stanley H. Ruttenberg, economist, AFL-CIO.....	187
Riedenour, Louis N., director of research, Lockheed Aircraft Corp., missile systems division, Palo Alto, Calif.....	153
Sheen, Robert T., 1955-56 president of the Instrument Society of America, Philadelphia, Pa.....	2, 121
Exhibits:	
Annual conference and exhibit attendance of the Instrument Society of America.....	4
Articles from Control Engineering.....	24
Engineering manpower—United States and U. S. S. R.....	7, 24
Essentiality of instrumentation and automation to economy and national defense, and inadequacies in present situation.	8
Growth of instruments and related products industry.....	5
Letter to Hon. Wright Patman, December 19, 1956.....	201
National organization chart of the Instrument Society of America.....	Facing 4
Number of employees in instruments and related products industry.....	125
Organization chart of the technical industries and standards and practices divisions of the Instrument Society of America.....	Facing 4
Public Education a Menace to Science, an address by Dr. Arnold O. Beckman, founder-president, Beckman Instruments, Inc., and president, Los Angeles Chamber of Commerce, delivered before, town hall of Los Angeles, July 31, 1956.....	18
Shifts in the work force.....	6
Statement of Dr. Thomas H. Chilton, president, Engineers Joint Council.....	16

CONTENTS

v

<b>Alphabetical list of witnesses and exhibits—Continued</b>	
Siciliano, Rocco C., Assistant Secretary of Labor for Employment and Manpower; accompanied by Ewan Clague, commissioner, Bureau of Labor Statistics, and Leon Greenberg, Chief, Division of Productivity and Technological Developments, Bureau of Labor Statistics. Exhibit: Employment in the major occupations of the United States, 1910, 1955, 1965.....	172
Sperry, Albert F., president, Panellit, Inc., Skokie, Ill.....	127
Exhibits:	
Automatic controllers, operators, technical staff, and management—prewar (1920-40), postwar (1945-54), today (1955-60), future (1960—).....	134
Feedback loops involved in complete control of a processing operation.....	132
Role of the computer in the industrial data processing system.....	135
Walker, Dr. Eric A., president, the University of Pennsylvania.....	116
Additional information:	
Letter from Thomas G. Gill, president, Washington Plate Printers Union, to Hon. Wright Patman, December 15, 1956.....	200

# INSTRUMENTATION AND AUTOMATION

---

WEDNESDAY, DECEMBER 12, 1956

CONGRESS OF THE UNITED STATES,  
SUBCOMMITTEE ON ECONOMIC STABILIZATION OF THE  
JOINT ECONOMIC COMMITTEE,  
*Washington, D. C.*

The subcommittee met, pursuant to notice, at 10:10 a. m., in the Old Supreme Court Chamber, United States Capitol Building, Washington, D. C., Hon. Wright Patman (chairman) presiding.

Present: Representative Patman.

Also present: John W. Lehman, clerk, and William H. Moore, staff economist.

Chairman PATMAN. The subcommittee will please come to order.

Somewhat over a year ago, this subcommittee held an extensive set of hearings on the subject of automation and technological change.

At the close of the hearings, we concluded that the great benefits of an accelerated pace of technological change could be realized for the Nation without substantial social costs by way of lost jobs or excessive personal suffering by reason of displacements.

The subcommittee was convinced, however, that the problems of automation are by no means negligible or settled. If it were not for our present high-level employment, prosperous economic situation, we might be faced with some painful adjustments as a result of the great rush of technological change.

For this reason the Subcommittee on Economic Stabilization feels that it is desirable to review regularly the role being played by this potent force in our economy.

Automation and technology are bringing us new and better products at lower costs. As a Nation we welcome the fruits of this advancing technology, being at the same time watchful that it does not cause personal hardships for displaced workers.

In a sense these hearings are a continuation of those of last year and may well become another in a series of more or less annual occasions for checking up on our progress in this field.

While it is impossible to anticipate at this time what the evidence presented at these hearings may be, it does not now seem likely that any special report to the Congress will be called for.

The proceedings of these hearings will, of course, be given full consideration by the Joint Economic Committee in connection with its March 1 report.

In this particular series of hearings, we are stressing the role of "instrumentation." For those of us who are not engineers or technicians in the field, the word may sound rather formidable and the field one which is rather remote to our daily lives and concerns.

I am sure the witnesses who will appear appreciate the fact that

they are talking about a field in which we know little, but are anxious to, and I am sure will, learn a great deal more.

The first witness this morning is Robert Sheen, president of the Milton Roy Co., and retiring president of the Instrument Society of America.

Since Mr. Sheen wears those two hats, he is going to divide his presentation of materials to the subcommittee into two parts—speaking this morning primarily as an officer of the Instrument Society of America, and at a later point in the hearings coming back to tell us some of the special problems of small business in the field and in more detail about the place of instruments in the broad, growing fields of automatic processes.

Mr. Sheen, we are delighted to have you this morning to start these hearings. And you may proceed in your own way. Do you have a prepared statement?

**STATEMENT OF ROBERT T. SHEEN, 1955-56 PRESIDENT OF THE  
INSTRUMENT SOCIETY OF AMERICA, PHILADELPHIA, PA.**

MR. SHEEN. Mr. Chairman, members of the committee, my name is Robert T. Sheen, 1955-56 president of the Instrument Society of America. In the hearings before this subcommittee a year ago, considerable interest was expressed by the subcommittee in instrumentation and automatic controls—as the tools of automation.

It will be my purpose to present to you data and information on the specific growth of this field and more particularly and specifically on the role of the Instrument Society of America and its programs of service and education.

I will make several specific recommendations as to actions the Instrument Society of America believes can be taken by the Congress to avoid a possible technical recession.

Our economy is in danger of a technical slowdown due to shortages of skilled manpower. Only a year ago your committee heard testimony on this subject and then expressed concern that the United States was falling behind in the education of scientists, skilled technicians, and skilled labor.

That critical deficiency is in even sharper focus today despite much good work that has been accomplished and plans that have been made through a number of agencies, including the government, to improve the national situation.

Simply recognizing the fact that thousands and thousands of engineers and technical personnel are required on the industrial front is not good enough.

We of the Instrument Society of America believe that our Nation today is at the crossroads of our destiny: Each of us is concerned with the matters that affect the welfare of our Nation.

The Instrument Society of America submits that the need for scientific and engineering personnel is particularly pressing in the field serviced by ISA, namely, instrument-automation users and manufacturers.

This urgency grows out of the fact that instrumentation-automation is indispensable to our economy and to our defense; that increasing needs for instrumentation-automation demand more adequately trained personnel at all levels of instrumentation design and application.

We submit, and want to bring into clear focus, an irrefutable fact—that our progress as a Nation is tied closely to advancing techniques in instrumentation-automation; that we desperately need more trained manpower to continue our progress, and that unless this challenge is met now we will face an increasing technological slowdown which will seriously threaten our economy and our security.

First, let me emphasize as strongly as possible that the road to automation is not a quick one—but it is an essential one and an inevitable one.

Most important of all, gentlemen, automation—its effect on American industry and on American economy—is not a subject for controversy between management and labor. Both have a definite common objective in doing everything possible to accelerate the understanding, the education for, and the achievement of automation and what automation can do to give us a strong national domestic economy and a military preparedness so essential in our world of today.

What is the relationship of instruments and instrumentation to automation? Instruments are the devices and tools that make automation possible.

As a simple example, consider temperature, its measurement and control. The thermometer is a temperature-measuring instrument. The thermostat is the instrument that responds to temperature as a controlling device for fuel, steam, or the heating or cooling medium.

Other types of instruments are used to measure and control physical, chemical, and electrical variables. Still more complex instruments are the computers, frequently tied directly into the accounting system of the plants. Later witnesses will discuss specific types of instruments and their applications.

What is the role of the Instrument Society of America in instrumentation-automation? The Instrument Society of America was formed in 1946 with 11 local sections. Today there are 86 sections throughout the United States and Canada, and a membership of approximately 10,000.

In structure, it is a technical society and the membership is open to all with an interest in this subject. It is not a society of “nuts and bolts mechanics,” nor is it a society of “long-haired college professors.”

It is the only technical society in America devoted exclusively and completely to the interests and problems of instrumentation and automation. It embraces the long-haired college professor, the design engineer, the operating engineer, and the technician. It includes the medical scientist, the biological scientist, and trained instrument mechanics.

Present membership comprises approximately 43 percent as engineers, 4 percent as technicians, 10 percent as mechanics, 7 percent as educators and the remaining miscellaneous interests, and 30 percent in financial, business, sales, and production management.

The organization of the society is shown on chart I. You will note that its interests embrace virtually all the fundamental industrial areas of our economy.

And here I will refer you to the charts that are appended to the testimony that you have in front of you.

In these particular charts you will see the fact that the society for example has a number of district vice presidents, serving various areas of the country to bring us close to our various sections.

There are several technical divisions as such headed by operating vice presidents.

Then under the second portion of the chart, that is labeled as table 1-A, you will find a typical industrial division shown as a nuclear division, where the director is Dean Joseph Weil of the University of Florida chairmaning that particular division.

To give you a further idea of how this society cuts across the various fields of interest in the divisions, you will note aeronautical, chemical and petroleum, food, heating and air conditioning, medical and biological, metal and ceramics, nuclear power, transportation, administrative automation, machinery, instruments equipment manufacture, rubber, paper, scientific laboratories and so forth.

(The charts are as follows:)

### I S A ANNUAL CONFERENCE AND EXHIBIT ATTENDANCE

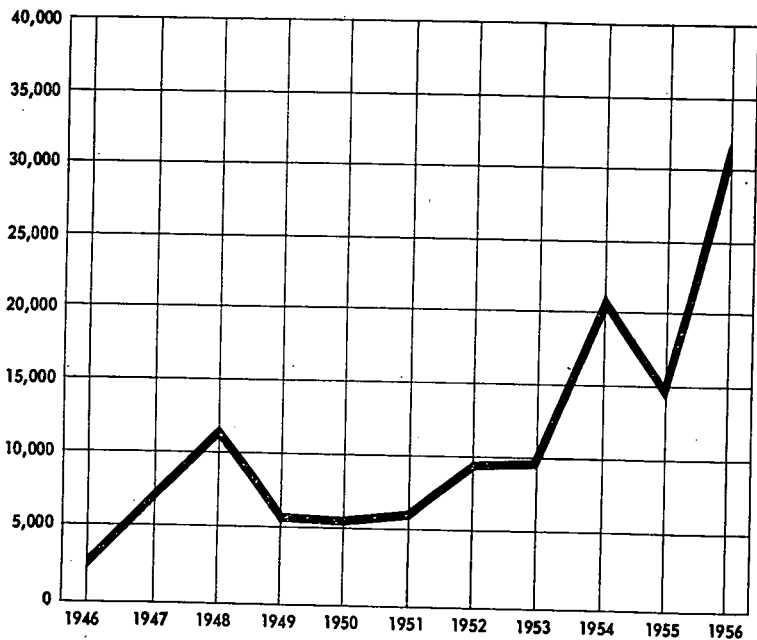
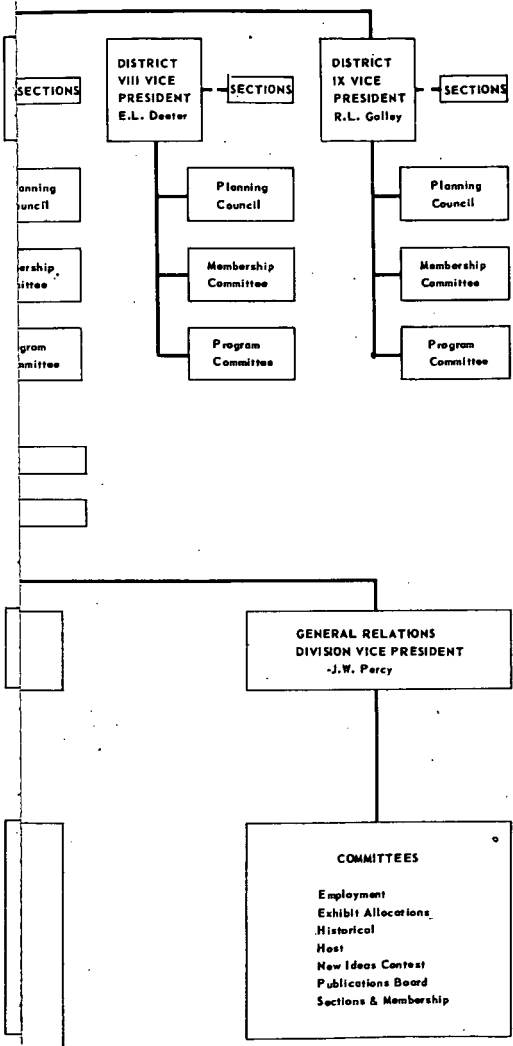


Table 1b.



CT-  
Jeffries



IN

TECHNICAL, INDUS

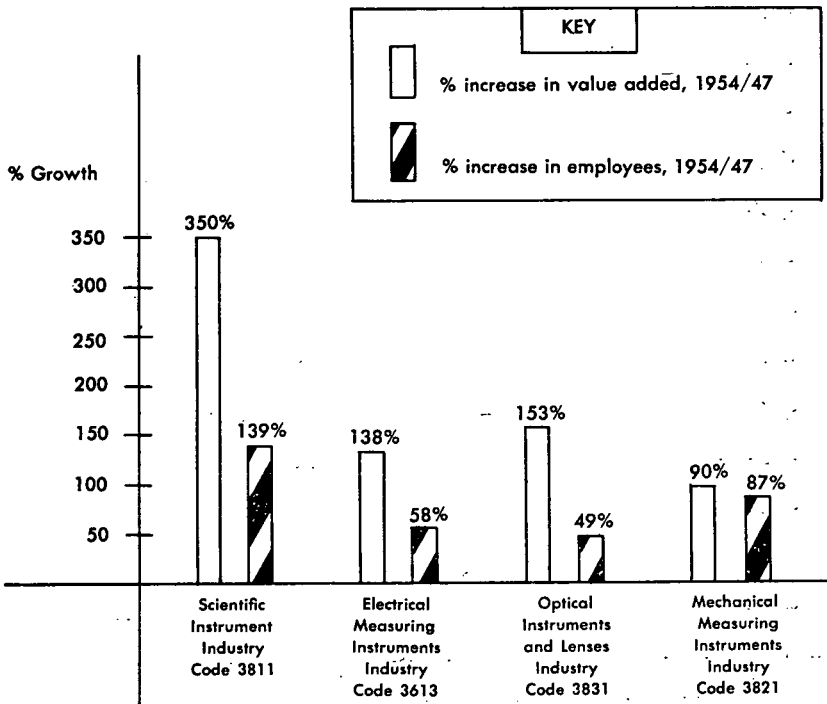
ES:

While only the Nuclear Industry Division is shown for illustrative purposes, other Industry Divisions represented by "X" are: Aeronautical, Chemical & Petroleum, Food, Heating & Air Conditioning, Medical & Biological, Metal & Ceramics, Power, Transportation, Administrative Automation, Machinery-Instruments-Equipment, Mfg. & Rubber, Paper, Scientific Laboratories, and Textiles.

Each of the 14 Industry Divisions may establish those technical committees most appropriate to their respective industries.

Dashed lines indicate the representation of the technical committees within the Industries Division on the appropriate committees of the Technical Division.

## GROWTH OF INSTRUMENTS AND RELATED PRODUCTS INDUSTRY



**Table 2.**

## SHIFTS IN THE WORK FORCE

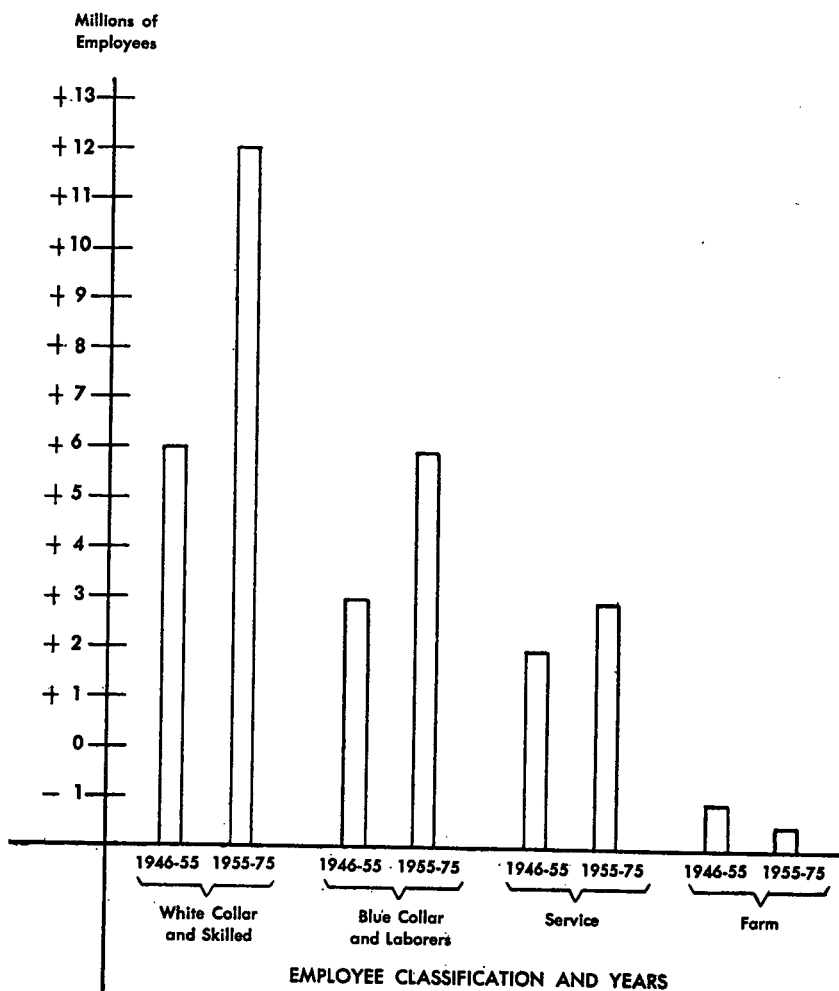


Table 3.

**ENGINEERING MANPOWER—U.S. and U.S.S.R**

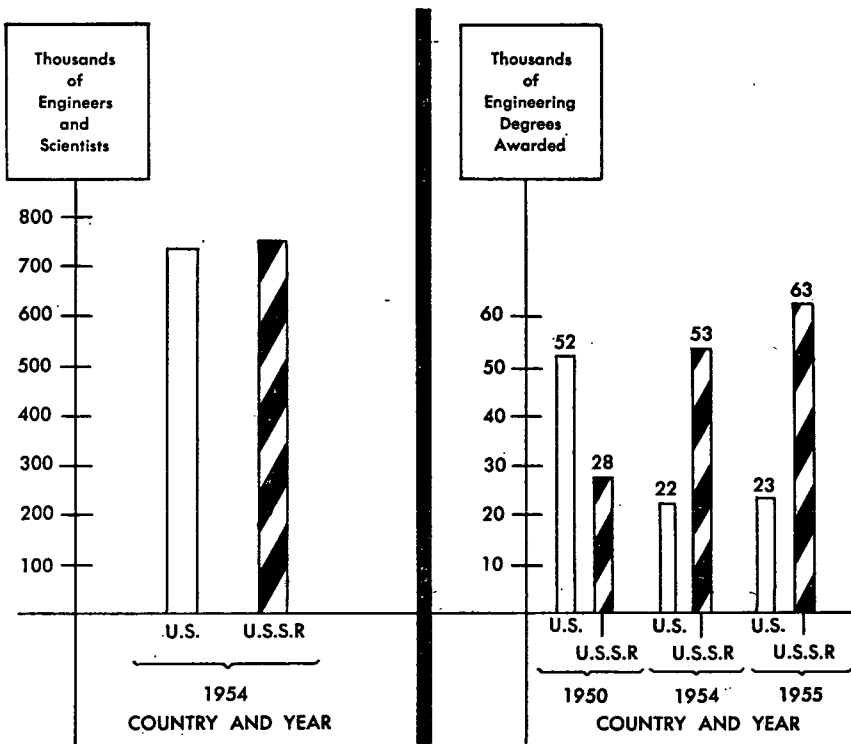


Table 4.

**Acknowledge ESSENTIALITY of  
INSTRUMENTATION and AUTOMATION to**

- 1—ECONOMY
- 2—NATIONAL DEFENSE

**Acknowledge INADEQUACIES IN  
PRESENT SITUATION**

**FOUR MAJOR NEEDS**

- 1—EDUCATE CURRENT FORCE
- 2—MANPOWER DEVELOPMENT
- 3—EFFICIENCY
- 4—COMMUNICATION

**MEDIA FOR SOLUTION**

- 1—HIGH SCHOOLS
- 2—TECHNICAL INSTITUTES
- 3—ENGINEERING EXTENSION SERVICES
- 4—MILITARY
- 5—FOUNDATIONS
- 6—NATIONAL BUREAU OF STANDARDS
- 7—INFORMATION CENTERS
- 8—MILITARY-INDUSTRIAL CROSS-FERTILIZATION

**Table 5.**

Mr. SHEEN. There are obviously many special types of instruments and controls peculiarly designed and adapted to the needs of each of these specific industry interests.

At the same time, there is a common language of instrumentation and many instruments used in one field can be applied in others.

The society therefore serves both as a sounding board for problems and needs of the specific interest—and even more important to a cross fertilization of ideas between the several interests through the media of the technical committees.

Take for example, computers and the field of data reduction. This is instrumentation that has a broad field of application from office automation through the aircraft industry to petroleum refining.

This organization chart illustrates graphically the role of the Instrument Society of America serving as a catalyst in the dissemination of information to enhance the cross fertilization of ideas, and know-how.

The Instrument Society of America holds an annual conference and exhibit. At the meeting this year in New York City, over 30,000 attended the exhibits in the new Coliseum Building of over 450 manufacturers of instruments.

Approximately 3,000 attended conference sessions on analysis instrumentation, instrumentation for production processes, testing instrumentation, computers and data handling, aeronautical, transportation, operating and maintenance, biological and medical, nuclear radiation and physical properties and measurements.

Four sessions were devoted to instrumentation in the International Geophysical Year and instrumentation required for the world-circling satellites. This is a very interesting aspect of instrumentation. These satellites are being sent into outer space for one reason only and, that is, to carry instruments around the earth, sending back signals to the earth, received by instruments on the face of the earth, to tell us about conditions that exist in outer space.

Referring again to our exhibit in New York clinics were held including data handling workshop, maintenance clinic and analytical clinic to give information and educational training not obtainable from any other source.

In addition to this organization, which includes the national industry divisions and committee structure, we are a society with local roots throughout the 86 local sections spread throughout the United States and Canada.

There is just beginning, with our encouragement and cooperation, similiar activities in foreign lands. For example, a Mexican Society for Instrumentation and Automatic Control was formed this year and used as the basis of their constitution, the constitution of ISA.

Each of the local ISA sections have local officers and local programs and a series of 8 to 12 local meetings a year. Many of the local programs are geared to the needs of the instrument users and manufacturers in the specific areas; for example, sections were quickly formed at Oak Ridge; Hanford, Wash.; and Savannah River, comprised of men specifically interested in nuclear instrumentation.

I am happy to report that there are many examples where the initiatory efforts of the local ISA sections have resulted in the establishment of permanent regularly scheduled courses for instrumentation in local institutions—colleges, technical schools, and high schools.

To sum up, the Instrument Society of America is the only technical society in America devoted exclusively and completely to the interests and problems of instrumentation and automation.

Therefore, it is keenly aware of the growth problems and the necessity to insure its orderly progress and acceptance.

During the 10 years of ISA's existence, we have witnessed a tremendous growth in the broad instruments industry. Chart 2 summarizes the growth data, in terms of increases in value added in 1947-54.

And again you will find this chart included in the material before you.

McGraw-Hill's economics department estimates that the production of control field products will grow 70 percent by 1960, 200 percent by 1970—the fastest growth rate of any industry.

They point out that factory sales of data processing equipment alone have soared from rock bottom in 1940 to \$25 million in 1953. Sales in this field are expected to reach \$500 million in the next 4 years.

This rapid growth attests to accelerating industrywide needs, in the sciences, in engineering, and in production.

A spokesman (assistant to the chief engineer, September 20, 1956) for E. I. du Pont de Nemours just this past September states:

A large and constantly growing percentage of the money spent on new Du Pont plants goes for advanced instrumentation. This year we'll spend about \$5½ million on instruments of all types, including the highest percentage ever for automatic control components.

You might gage the importance of instruments to today's plant from this example: A project we completed last year, a moderate-sized manufacturing plant, cost \$8½ million. Of this sum, \$1¼ million went for instrumentation.

Highly advanced instrumentation is a basic economic necessity as far as we are concerned. Many of the processes which are typical of today's chemical manufacturing, would be completely impossible without extensive instrumentation. There is just too much to do and too little time in which to act for any operator to handle the many demands of complex multipurpose operations.

In one Du Pont plant, for example, 520 variables affect product quality and output. Keeping track of these variables and making necessary process adjustment in time and with safety is a job which can be handled only by automatic controls.

I anticipate that Dr. John Grebe, of Dow Chemical Co., will probably amplify this subject in greater detail this afternoon.

Other factors in the rapid growth of the instruments using and manufacturing industry are the increasing defense needs of our country.

We submit that technological advances made possible by the advent of instruments and automation have enabled us to remain strong in the face of the Red menace.

For example, the Aircraft Industries Association of America, Inc., states:

Along with the larger flight test program is the necessity for advanced methods of data recording. The complexity of instrumentation has increased in order to record the data for a complete evaluation.

New systems have been developed which are capable of continuously and automatically measuring as many as 600 different channels of data by telemetering the information to the ground to be immediately analyzed by highly trained personnel.

To accomplish this task of testing aircraft, the industry has been forced to expend substantial amounts of time and money on the development of instrumentation systems and to maintain a higher level of professional and technical knowledge among its personnel.

Statements of this type, emphasizing the indispensability of automatic equipment to the advancement of our technology, as well as to our defense effort, are also carrying an increasing emphasis on the manpower shortage problem that has developed.

In the past, we have heard fears expressed that automation may take place more quickly than people can be trained to fill other jobs.

In August of this year, however, the United States Department of Commerce reported that employment had hit the peak of a peak year—67 million people at work.

New jobs have been created at the rate of approximately 1 million per year, for the past 10 years, while the labor force's natural growth



is estimated at only 600,000 a year. The people most in demand are trained, skilled workers, as indicated by chart 3.

Statements such as these indicate that what should concern us is not an erroneous assumption that automation may take place too quickly, but that we are not able to move ahead in instrumentation and automation as quickly as we should.

Quoting again from the Aircraft Industries Association of America, Inc.:

The optical bombing system of the heavy piston engine bomber required 3 "black boxes" of electronic equipment, the medium jet required 43 "black boxes," all of great complexity. Current planning must include provisions for the scientists and engineers qualified to design and develop the mechanical and nuclear aircraft of the next era of flight, and the facilities to manufacture them. The aircraft manufacturer faces the unique threat of being run over by the future.

The Instrument Society of America believes that the primary problems lie within the field of education and training. My predecessor as president of ISA, Mr. Warren H. Brand, appointed a special ISA president's commission comprised of men qualified in this field to study what ISA could do to accelerate educational programs.

This commission reported back to me and recommended the formation of a foundation for instrumentation education and research. This foundation was formed this year and ISA has budgeted approximately \$50,000 to start work of the foundation for the coming year.

The work of this foundation will be largely conceptional and catalytic to stimulate, organize, and promote educational programs at all levels. There is much that this foundation can do as a contribution toward the solution of this problem. The needs are urgent and great.

It is no secret that our country's greatest rival in the struggle for the minds of men, Communist Russia, has a crash program to spawn engineers and technicians of all kinds. These forced programs have been underway in Russia for years and heavy emphasis has been laid on automation by Russia as most necessary to achieve her objectives.

Chart 4 shows the comparison on the technical trained manpower between Russia and the United States.

For a further excellent discussion of this subject, I commend to the committee a recent article by Dr. Arnold O. Beckman, president of Beckman Instruments, Inc., and a past president of the Instrument Society of America—given before the Los Angeles Chamber of Commerce—that appeared in the November 30, 1956, issue of the U. S. News & World Report, appended to this report.

This report clearly indicates that we are now behind in this race with Russia in educating scientific manpower. We don't have to wait for an H-bomb to strike us to lose the cold war. We will lose it soon in the scientific manpower war if we do not bend every possible effort to solve the shortage of skilled labor and technical experts on the industrial front.

What does the ISA specifically suggest for the consideration of this committee? In the interest of clarity these recommendations are summarized on chart 5.

First, we believe that Congress should acknowledge that instrumentation-automation is essential to both our domestic economy and the national defense and that preparation for instrumentation-auto-

mation should be a common goal not only for management and labor but also for educators and for our Government.

Secondly, we hope that following this hearing that Congress will acknowledge that there are inadequacies in the present situation due largely to insufficiently trained and inadequately educated manpower.

The third point is that there are four specific needs that must be filled to correct the inadequacies of the present situation. These four needs in summary are:

1. Education of the current work force.
2. The steady influx of more engineering and science student graduates into our technological environment.
3. Increase the efficiency of each worker through the availability of instrumentation services.
4. An enhancement of the effectiveness of each person in activity through a broader base of communications as to instrumentation techniques and equipment.

Perhaps the greatest and most urgent need is for an education of our current work force. Note that we stress the educational programs for the workers now in industry just as heavily as the education of our youth to assume positions of responsibility in this new age of instrumentation-automation.

For our present workers, this means education of potential users of instrumentation-automation equipment, so that the equipment can be introduced and utilized more effectively in their own industrial areas to take advantage of our technological prowess to date.

There are specific problems in this area which should be recognized. Technical institutes and vocational high schools either are not aware, or do not have the facilities or staff to train the great host of sub-professional instrumentation personnel required to assist in research and to man the highly instrumented plants of today and tomorrow.

Educators in our colleges and universities do not have the equipment nor the experience, in most cases, to incorporate modern instrumentation techniques and courses into their curricular and student experiences.

We find that process designers, plant and machinery designers, instrument component and systems designers, all need to understand the fundamental principles of measurement, computation data handling, automatic control, and the status and dynamics of the situation to which instrumentation is to be applied.

They need desperately to keep up with the advances of fundamental and applied knowledge in these fields. They need to continuously appraise or evaluate the potential and application of new equipment and techniques of instrumentation.

There is, concurrently, an increasing demand on the abilities of the technicians who operate and maintain the complex devices and systems of instrumentation. These technicians need the opportunity to improve their talents.

In many instances, their whole backgrounds in physics, mathematics and quantitative concepts of measurement and control need up-dating. All too often, their technical background is nonexistent.

This need is a national need—every paper mill in the South, and every chemical plant in Florida, has a need for an education of its current work force at all levels, from a mechanic who must maintain the instruments, to the president who must pass on their purchase.

The educational activities directed to meet this need must be offered locally—they must be offered at a time and via a medium which is economically and physically feasible.

The teaching force taken at large for such an activity does not now exist. The very first job would be the development of such a teaching force. People in the working world must be upgraded so that they can become teachers of others in the working world. This is a postcollegiate, post-high-school educational project.

The second and obvious need inherent to this situation is for the regular influx of new blood into these areas of technological development.

This means, of course, that we must have more graduates of science and engineering from our colleges. This is a problem which is already recognized by many and to which we can only add our emphasis.

We are very pleased to acknowledge the efforts of the several groups who are studying and striving toward this objective and we wish merely to recite at this point that it is one of our major needs.

Anything which is done to enhance the development of future scientists and engineers in this country and our capacity for training them; anything done to enhance the attractiveness of the professions to procure and maintain such people in such activities is a step toward the solution of some of our problems.

Thirdly, we need access to know-how on what has been done—access to advice on how something might be done—what equipment is available, how it can be operated and, perhaps, equally important—access to such equipment that might be needed on a very infrequent schedule, but where purchase could not be justified on a continuing basis.

Some means for providing instrumentation reference, and calibration services for various scientists in all the fields is essential if we are to use these men most effectively. This could conceivably take the form of a series of regional instrumentation service centers.

This problem of communication also implies that there should be more effective exchange of information between the programs of the Government and those of industry. Each has much to learn from the other.

Therefore, I would cite as one of the most urgent needs, the cross-fertilization of military and industrial ideas and techniques.

The fourth need in this broad field of instrumentation-automation has to do with the efficiency of the people working in it and has basically to do with communications.

I am speaking broadly here of the need of a central clearinghouse for the rapidly accumulating information and knowledge. This would avoid, at least in some degree, the duplication of valuable time by a number of workers on a similar subject, all of whom are achieving a common result but without knowledge of the work of the other, thus wasting valuable time which otherwise would have been saved.

Under this area of admitting major needs, I have named essentially four problems if we are to use instrumentation-automation in as most effective a way as possible in enhancing our economy and our national defense.

Now having stated the four needs, I will now suggest seven possible media through which our major needs might be met. These are—

1. Improvement of curricula and training of teachers in high schools;
2. The development of technical institutes for vocational training;
3. The establishment of engineering extension services in the land-grant colleges;
4. Effective utilization of the military training period;
5. Enhancement of the programs in the National Science Foundation and in the Foundation for Instrumentation Education and Research;
6. A more active role by the National Bureau of Standards in communication of information, the development of a national information instrumentation-automation center; and
7. A series of systematic military industrial cooperative studies and liaison activities.

First, our high schools must develop better preparatory courses to encourage and attract and prepare students for collegiate work in the sciences and in engineering. We also must have at the high school level, vocational courses developed to produce technicians and mechanics to serve those industries.

In the same way when in past years we recognized the necessity for vocational training for carpenters, plumbers, electricians, and printers, we must now develop vocational training for instrument mechanics and instrument technicians to take at least a part of the load from the more highly educated engineer.

In line with this, there is a great need now for the development of a new type of educational institution—new in the sense that it is not now existent in numbers nearly significant with respect to the magnitude of the problem.

We need the development of technical institutes. These would be post-high school, they would be specifically oriented in the programs toward the development of technicians to serve these newly spawned areas of need.

Basically, what I am saying is that we should revive a series of technical institutes at the community level throughout our Nation. But in each community the curriculum objectives of these technical institutes could be in large part directed specifically toward the industrial needs of that area.

For further education of the current work force on a national scale at the professional level, engineering extension work by our universities may be desired. We have witnessed the excellent work done by agricultural extension services as part of our State universities.

It is strongly recommended that a comparable program be developed of engineering extension services administered through the engineering stations in land-grant colleges.

Such programs might provide for trained representatives comparable to the county agents who would be available as a service to industry to work with them on the definition of their instrumentation problems, communicating to them the developments and latest techniques in equipments and applications.

Such a service might embrace a program of basic research in instrumentation technique and equipment appropriate to the area being served. It might also conduct courses and conferences for the industries of that area.

It is within our concept that instrumentation-automation education for the existing work force must be locally based but perhaps nationally coordinated and supported, at least in part.

Another area where much can be done to contribute toward meeting the needs is in the area of military training. The military has a great need for many of the skills which are also required by industry with respect to the subject matter in content of instrumentation-automation.

It seems entirely feasible to us that with planning and some little additional effort, the training programs of the military could be guided and articulated so as to provide a continuing flow of technicians into industry who will already be trained and be competent to maintain and utilize the most advanced instrumentation techniques and equipment.

The objectives and the work of the National Science Foundation are most commendable and a later witness will speak to you in greater detail on its programs.

We would encourage greater recognition of the importance of measurement and control in instrumentation-automation as part of basic sciences; and hence, a legitimate concern of the National Science Foundation.

The Foundation for Instrumentation Education and Research, born of the Instrument Society of America this year, and, as previously described, can and we expect will, play an increasing role in meeting the needs. This foundation invites to its support those interested in furthering these objectives.

Another agency that has been and will continue to contribute greatly toward meeting the needs of instrumentation-automation is our National Bureau of Standards. As guardian of our national standards of measurement, it will continue to play an active part in instrumentation education and communications.

The initial efforts toward the establishment of an instrumentation information service within the National Bureau of Standards, and the program of the Armed Services Technical Information Agency, are to be commended, but they are just the beginning of filling the need for an effective information service.

Certainly the potential users of such service should play an important role in the determination of its machinery and mechanics of operation.

One last medium which seems entirely feasible as the means toward resolving some of the needs which I have recited, is for a series of military and industrial conferences. Perhaps the answer to this may be the formation of a military-industrial liaison committee on instrumentation and automatic controls.

Such committees and such conferences serve the purpose of communication, cross-fertilization, and definition of problems and ideas.

Into such meetings would come industry knowledge of militarily developed techniques and equipment. Out of such meetings would come the military appreciation of the requirements of industrial environment.

Together, it is quite conceivable that there could be formulated a private series of evaluation projects which would tend to establish or deny the applicability of military developments toward industrial areas.

Such studies and projects might be undertaken by Government agencies, by universities, or under the direction of appropriate non-profit foundations.

In order to put action into these several recommendations, I propose to you, on behalf of the Instrument Society of America, that Congress, or some other proper administrative body of the Government, establish a task force—perhaps it might be called an Instrumentation-Automation Commission for Effective Productivity and Research.

This commission should have as its objectives the study of these 4 basic needs, and the applicability of these 7 and possibly other mediums as solutions to the stated problems.

We further respectfully suggest that the representatives on such a commission be invited from the Department of Defense, the Foundation for Instrumentation Education and Research, Land-Grant Colleges Association, the Department of Commerce, the American Society of Engineering Education, the Instrument Society of America, Engineers Joint Council, and from the National Science Foundation.

On behalf of the Instrument Society of America, I assure you that we will be most happy to cooperate by furnishing individual representation on such a group, by assisting with statistical information, and to contribute in any way possible through our membership and the agencies of our national office in the studies of these urgent problems.

While preparing this material, I had several communications with the Engineers Joint Council, and Dr. Thomas H. Clinton, president, submitted to me, just this week, a statement to be included along with my material. With your permission, I would like to include this now.

Chairman PATMAN. They will be inserted along with the charts and other material that you referred to in your presentation. And do you know of anything else that should go in the record in connection with your testimony?

Mr. SHEEN. Yes, sir; there is also an article from the December issue of Control Engineering, which was devoted very largely to this specific subject. We are suggesting this also be included in the testimony of this hearing.

Chairman PATMAN. They may be inserted.

Mr. SHEEN. Thank you, sir. I will be very happy to answer any questions that you may have.

(The statements by Dr. Thomas H. Chilton, Dr. Arnold O. Beckman, and the article from Control Engineering are as follows:)

STATEMENT OF DR. THOMAS H. CHILTON, PRESIDENT, ENGINEERS JOINT COUNCIL

Transmitted to Robert T. Sheen, president, 1955-56, Instrument Society of America, for incorporation in testimony presented to Congress of the United States, hearings before the Subcommittee on Economic Stabilization

ENGINEERS JOINT COUNCIL,  
New York, N. Y., December 7, 1956.

Mr. R. T. SHEEN,  
Milton Roy Co., Philadelphia, Pa.

DEAR MR. SHEEN: In response to your suggestion, I am sending you under separate cover a brief statement that I would be pleased to have you present on my behalf before the Subcommittee on Economic Stabilization of the Joint Committee on the Economic Report. I hope it reaches you in time to serve the intended purpose.

Sincerely yours,

T. H. CHILTON, *President.*

The term "automation" is relatively new; the concept is not. Actually, automation is merely the further application of instrumentation and automatic controls in manufacturing and industrial processing. These applications of instrumentation and automatic control have permitted a basic expansion in the overall economy of the country through increased productivity at lower production cost. This has been accompanied by important achievements in making the labor requirements less onerous. Not the least of these achievements has been in industrial safety.

It is believed by those who have watched these developments in genesis and application for at least two decades that technological developments incident to the further application of instrumentation and automatic controls will produce an enlarged need for technically educated people. These requirements are both quantitative and qualitative. They indicate the need for increased emphasis in the whole hierarchy of technical education.

For engineering education these requirements include more complete orientation and curricula emphasis on the mathematical and scientific basis of engineering and for further development in engineering graduate education or its industrial equivalent. It involves also a further understanding and development of technician-level training which has as its unique characteristic and goal bridging the gap between the highly skilled and the highly educated in technical activity.

There is in industry, engineering education, and the engineering societies, growing awareness of these needs if not full agreement on the method of their achievement. The problems are greatly sharpened by the current requirements of national security. These requirements have helped considerably in achievement of the realization that the recruitment, training, and utilization of technical personnel should be seen as an integrated sequence of responsibilities with which the professional societies, education, industry, Government, and the public are all vitally concerned.

The engineer has proved himself essential in fields other than engineering, such as administration and management. The application of engineering know-how in such functions will become increasingly important as integration of individual unit operation becomes essential in order to effect balanced stability between the productive and consuming cycles.

The work of the engineer, in applying instrumentation and automatic control to what have heretofore been standardized manual or semiautomatic operations, will have important effects on the utilization of the country's labor force. We have already alluded to some of these. Devices can perform many functions faster, more efficiently, and with greater safety than can individual persons. We have every assurance, however, from our experience with these applications, that, while they have the short-range effect of job change, their somewhat longer range effect is employment increase. Of course, this involves retraining and reassignment. It is therefore clear that the skill level of the labor force must rise. The widespread use of training programs initiated by industry, by workmen's association, and other institutions have enabled these transitions to be made with a minimum of undesirable social or economic effect.

Outstanding examples of these phenomena have already been accomplished in certain industries such as the chemical industry and communications industry. Indeed the growth which has taken place here would not have been possible without the application of instrumentation and automatic control of productive processes.

Thus, present-day advances in technology require instrumentation and automatic control of processes. Requirements of speed of operation and quality control have far exceeded human sensory capacity. Hybridization of these devices would involve sacrifice of safety standards and the abandonment of technical achievements.

Instrumentation and automatic control can be the answer to two heretofore apparently opposing forces: rising monetary costs and rising production. Thus is promised an answer to the need for the expansion of our productivity to meet the needs of our population, to achieve an ever-rising standard of living. As such, it is quite possibly the key—technologically speaking—to freedom from want.

THOMAS H. CHILTON,  
*President, Engineers Joint Council.*

## PUBLIC EDUCATION—A MENACE TO SCIENCE?

An Address by Dr. Arnold O. Beckman, founder-president, Beckman Instruments, Inc., president, Los Angeles Chamber of Commerce

The purpose of my remarks today is to call attention to a situation which, in my opinion, is one of the major problems confronting our Nation, a situation which may be a decisive factor in our national security. It unquestionably will be a limiting factor in the rate at which new scientific and medical discoveries will be made. It will determine to a great extent how rapidly we can reap the benefits of the new industrial revolution known as automation. It is a serious situation which affects all of us, whether we are parents, educators, employers in search of talent, or simply citizens and taxpayers. I refer to the shortage of competent technical manpower, especially in the fields of electronics, physics, and mathematics.

Why is the situation so serious, one may ask? Aren't we habitually short of really good men in almost every field? Hasn't it always been, as Sophie Tucker used to sing, "A Good Man Is Hard To Find"? Is there anything new or alarming in the fact that we don't have all the able scientists and engineers we could use at the moment? Why worry that we could move ahead a little faster if we had a few more. Look at all the amazing discoveries and technological developments of our country during the past few years. The United States leads the world in science and industry. We are doing all right. Why worry?

In March of this year the Congressional Joint Committee on Atomic Energy published an authoritative and disturbing report on Engineering and Scientific Manpower in the United States, Western Europe, and Soviet Russia. Statistics cited in this report showing the number of engineers and scientists in our country and in the Soviet Union should destroy any feeling of complacency we might have concerning the superiority of the United States in science and technology. They point up the need for immediate and effective action if we are to provide adequately for our national security and maintain a leading position in the future in scientific discovery and technological development.

In 1954 Russia had more than 540,000 engineers, plus about 160,000 scientists in educational and research institutions, a total of 700,000. In the United States there are between 700,000 and 750,000 actively employed engineers and scientists. At the moment, therefore, we are about on a par with Russia.

This fact may come as a shock to many of us who are accustomed to think of Russia as a backward country. Even more shocking is a study of the trends in technical education in this country and in Russia. From 1900 to 1950 engineering and scientific professional graduates in the United States increased almost twice as fast as did the population. Since 1950 there has been a sharp decline: 52,732 first professional or bachelor's engineering degrees were granted in 1950; in 1954 there were only 22,236 such degrees. Sixty-one thousand and one similar degrees were granted in natural sciences in 1950; in 1954 only 31,168. Despite the increase in total population during this period and the increased demand for engineers and scientists by new technologies and greatly increased emphasis upon research, the annual crop of technical graduates decreased by more than 50 percent.

Contrast this situation with what has taken place in Russia. In 1950 there were 28,000 engineering degrees awarded in Russia. In 1954 the number had nearly doubled, being 53,000. For 1955 the number is estimated at 63,000, a figure to be compared with only 23,000 similar degrees for the United States.

Over the last 5 years we have turned out only 142,000 engineers, compared to an estimated 216,000 in Russia.

Allen W. Dulles, Director of the Central Intelligence Agency, has summed up the situation with a prophecy for the decade 1950-60. The Soviets will graduate 1,200,000 in the sciences, while the United States will graduate 900,000. He said: "Unless we quickly take new measures, increase our facilities for scientific education, Soviet scientific manpower in key areas may well outnumber ours in the next decade."

The latest available engineering enrollments show that the United States has 1 engineering student for every 974,000 of its total population. Russia has 1 to every 725,000. The population of Russia is one third greater than that of the United States.

There is no comfort to be gained from the hope that the quality of Soviet training is inferior to ours. Russian university students start out with more intensive mathematical and scientific preparation at the high-school level. They



study harder and longer in college. The Joint Committee report states that because of the emphasis on science and the vigorous scholastic competition in the Soviet educational system, Soviet graduates are professionally as competent as scientific graduates in the United States.

Science predominates in Russian higher education. More than half of all Russian university graduates are in the fields of science and mathematics; only a fifth of the United States graduates are in these fields. Russian doctors of philosophy, or the equivalent, are 3:1 in favor of science and engineering, in comparison with 1:3 for the United States.

Why has our country failed to provide the number of technical graduates it needs? With a current need of 35,000 to 50,000 new engineers per year, why have our schools provided only a little over 22,000 each year for the past 2 years? In my opinion, the blame rests squarely on our public education system, especially at the high-school and elementary levels.

In what ways has our education system failed? First, it has failed to anticipate and prepare for the steadily increasing need for more scientists and engineers. An essential function in any big business is to forecast future needs for its products and to anticipate and be prepared for changes in its output to meet the changing needs of the times. We should not forget that education is big business. Of the \$1.8-million 1955-56 California State budget, 38 percent, or \$784 million, is for education. This is big business, and we, as taxpayers, have a right to expect that our public-education business will be operated as efficiently as other businesses.

Public utilities and large manufacturing companies are constantly engaged in market surveys, studies of trends, et cetera. They accept without question the responsibility for seeing that telephones, electricity, and manufactured products of all kinds are provided when and where needed. Our public education system has an equal responsibility to anticipate the needs for its product, trained students, in the quantities required and with skills necessary to meet the needs. This is an essential part of the business of education. The job has not been well done.

Our educational system appears to have failed in another serious way, namely, by permitting progressive deterioration in the rigor of its mental training and disciplines. Our elementary and high schools appear to suffer from what might be described as pernicious softening of the curriculum. Over the past two or three decades there has been a marked decline in the number of students required to take subjects such as mathematics, physics, and chemistry, which demand and develop clear thinking and analytical reasoning. At the beginning of the century 1 in every 5 high-school students studied physics; today only 1 out of about 25 throughout the Nation. In place of basic courses in mathematics and science, students have been permitted to choose elective courses which fail to provide an adequate foundation for college work in any field of engineering or science. The result is that our high schools have been turning out thousands of students woefully unqualified to undertake college-level studies in technical fields.

One explanation which has been advanced for the shortage of technical graduates from our universities is the inadequate number of university professors. It is said that our universities are losing professors to industry, because of higher salaries paid by industry. Whether or not this is true to a significant extent appears to have little bearing on the technical manpower problem. There is no evidence that university students are denied training in science and engineering because of an insufficient number of university professors or inadequate laboratory or classroom facilities. The technical manpower problem arises from the fact that too few students enter colleges and universities who are interested in and are prepared to follow careers in science and engineering.

The failure of our elementary and high schools to inspire students to enter technical fields and to train them properly for technical careers is reflected in the statistics of university graduates. In 1950, graduates in engineering and science in the United States represented 25 percent of the entire graduating class. In 1954 they represented 18 percent, and the forecast is that the class of 1960 will have not more than 15 percent of its graduates in engineering and science. This situation does not represent a crisis which developed suddenly. It is the inevitable result of a long history of declining interest at the high-school level in subjects such as mathematics, chemistry, and physics, which are basic to engineering and science. It is amazing that this decline should have occurred at a time when the interest of young students in new scientific developments has been at an all-time high. Even some of the most popular comic

strips for children are based on pseudoscientific subjects, involving Space Travel, Death Rays, et cetera. How have our teachers managed to kill off this interest?

There are several explanations. One is that many science teachers are not interested in science nor are they competent to teach science. A personal experience drove home this fact to me a number of years ago when a competitive examination, with university scholarships as prizes, was sponsored by a local section of the American Chemical Society. I was amazed by the number of high-school teachers who asked for sets of the correct answers so that they could discuss the examination later with their students! An investigation showed that 30 percent of the high-school chemistry teachers had taken no university courses in chemistry. There is little reason to believe that the situation is much different today.

Last November, Lewis L. Strauss, chairman of the United States Atomic Energy Commission, in commenting upon an analogous situation stated, "A survey of 30 States showed that about 1,800 new mathematics teachers were urgently needed, but 700 of the positions had to be filled with unqualified persons, including instructors in such unrelated subjects as music, home economics, and physical culture."

Last week's issue of Time magazine reports a year-long survey of instruction in high-school mathematics which was financed by the Carnegie Corporation of New York and conducted by the well-known Educational Testing Service of Princeton, N. J. The survey showed that the teaching of mathematics is in a deplorable state. A large number of elementary mathematics teachers not only did not know how to teach the subject effectively but were barely able to keep ahead of their pupils. In a survey of 211 prospective elementary teachers, 150 reported "a long standing hatred of arithmetic." High-school teaching is so bad that 62 percent of colleges surveyed reported a necessity to repeat high-school mathematics in college. The math situation is so bad in secondary schools that 5 years ago Annapolis abolished trigonometry as an entrance requirement, began to teach it itself.

"Elementary teachers, for the most part," according to one observer who has taught them, "are ignorant of the mathematical basis of arithmetic; high-school teachers \* \* \* fall in this category also. This ignorance is scarcely surprising, for little knowledge of mathematics is expected, even officially, of prospective schoolteachers. In the majority of cases, an individual with ambition to teach in an elementary school can matriculate at a teachers' college without showing any high-school mathematics on his record. He can be graduated without studying any college mathematics. And in this condition, he can meet the requirements of most States for a certificate to teach arithmetic. \* \* \* Nearly one-third of the States will license (high-school math) teachers even though they have had no college mathematics at all, and the average requirement for all States is only 10 semester hours."

The whole situation, says Educational Testing Service, finally boils down to this: "Future teachers pass through the elementary schools learning to detest mathematics. They drop it in high school as early as possible. They avoid it in teachers college because it is not required. They return to the elementary school to teach a new generation to detest it."

The alarming spread of teacher incompetence throughout our public-school system reflects the powerful influence of teachers colleges and certain teacher organizations which have succeeded over the years in establishing regulations and practices which may be to their interests but are not necessarily beneficial to education. Rigid restrictions governing teaching credentials, which purportedly guarantee a measure of competence, actually do nothing of the kind, as surveys have shown. These restrictions, based largely on exposure to certain courses in methods of teaching, have little to do with a person's effectiveness as an inspiring and effective teacher.

To the extent that teaching credential restrictions are arbitrary and unrealistic, they injure rather than aid the teaching profession. The Committee for the 1955 White House Conference on Education, in its report to President Eisenhower, stated, "Teacher preparation programs have the reputation of requiring needless and repetitious courses. This reputation has the effect of deterring brilliant young people from becoming teachers."

Not only are brilliant young people deterred from becoming teachers, and thus aid in relieving the shortage of competent teachers, the arbitrary restrictions prohibit many able persons from teaching in our public schools. Does it not strike you as strange that leading professors in science at famous universities, such as the University of California and Stanford University, are not

qualified to teach their subjects in our high schools, yet a high-school drama or music teacher with no training in science may do so.

If unreasonable restrictions on teacher qualifications were eliminated hundreds of competent teachers in mathematics, science, and engineering would be available from industry on a part-time basis—teachers of the kind needed now, teachers who can inspire students to enter technical fields because they can speak from firsthand experience of the challenge and opportunities of their profession. George Bernard Shaw is reputed to have said: "Those who can—do. Those who can't—teach." This cynical comment is unfair to the thousands of capable teachers who are dedicated to their profession, but it does suggest that those who are doing might, indeed, add something to teaching, that something which might inspire young Johnnie to become a future Einstein.

Many able educators have cried out against onerous policies and practices in public education which have been established largely through the influence of teachers colleges. This is an involved matter. I will merely point out here that a major criticism has been the overemphasis on methods of teaching versus the underemphasis on knowledge of the subject being taught. The late Dr. Robert A. Millikan fought this battle at the University of Chicago many years ago. He insisted that teachers of physics know something about physics and not merely have taken courses in the methods of teaching. Within the last few months, Dr. Wallace A. Sterling, president of Stanford University, also decried the fact that many of our teachers today are more concerned with the methods of teaching than with teaching.

I have been interested in education most of my life: as a student, a university teacher, a parent, an employer, and a taxpayer. During the 14 years I was engaged in teaching at the California Institute of Technology I had the opportunity to become well acquainted with the product of our high schools and to learn something about our public-school system. Many things have been happening to public education which bother me greatly. While obviously there are many factors which have contributed to our present educational problems, I believe that there are certain trends which are most important. Some of these are the trends of the times. The broad socialistic movement which has engulfed our country as well as other countries, which tends to destroy competition, eliminate free enterprise and destroy individual initiative, shows up in our school system in several ways. One is the attempt to do away with a competitive grading system in our public schools. In certain schools, grades which showed comparative performances of pupils or measured their skills were eliminated. Some schools even went so far as to attempt to grade pupils not on their performance in an absolute sense but upon their performance in relation to their estimated ability, as measured by an I. Q. test or some other means. On the basis of this standard, a moron who handed in all of his homework, even though it was worthless, would receive a higher grade than a brilliant student who was somewhat careless in turning in his papers. In some school districts where indignant parents have demanded that grades be reestablished, the attempt is made to minimize the significance of grades denoting proficiency, by having several other grades for each course. In arithmetic, for example, there are grades which purportedly measure such things as responsibility and self-direction and relationships with others. Much of this educational tomfoolery can be credited to the unfortunate influence of certain groups in our educational system, such as so-called progressive educators, who, unfortunately, before aroused parents found what was going on and demanded a change, injured untold thousands of our youth through the imposition of educational procedures based upon immature theories of a few educational cultists.

The swing away from progressive education is an encouraging sign that improvements are underway. We should not be misled, however, for, to a large extent, the same group of educators which permitted progressive education to infiltrate our public schools is still in charge. The same people are tinkering with our educational machinery, often apparently without any clear understanding of what their objectives are or should be.

Several years ago the national American Chemical Society took the lead in fighting a move to emasculate rigorous scientific instruction by eliminating specific courses in physics, chemistry, and biology, and substituting a course in general science. Educators stated that nature embraces all science; that the division into separate fields, such as chemistry and physics, is entirely arbitrary and therefore should be eliminated. While this may be an interesting subject for an argument, the fact was that the courses in general science which were offered failed to provide fundamental training in any field of science.

There is a heavy student loss between high school and college graduation. The Joint AEC Committee report states: "Of all high school graduates whose qualifications are such as to warrant their striving to become engineers and scientists, about one-half cease further schooling to go into the business of earning a livelihood. Of the one-half who go on to college only about 40 percent graduate. Thus, of every 10 high school pupils with capacities for potential careers in engineering or science, only 2 graduate from college. From there on, the attrition is even greater, for of all college graduates less than 3 percent continue their studies to earn a doctor of philosophy degree."

Recently there has been a rush on the part of certain large industries to provide scholarship funds. This action is based presumably upon the belief that lack of finances is a chief cause for the loss of technical students after high school. The providing of scholarship funds is a splendid thing, and should be encouraged. I do not believe, however, that the availability of new funds will solve the problem, at least with respect to top students. Any able student can finance himself through college today.

What can be done to improve the situation? It is obvious that more of our youth must become interested in science and engineering and must be provided with educational opportunities for proper rigorous training in these fields. The first step is to interest the student. Inspiration can come only from enthusiastic, competent teachers. Teachers untrained in a subject should not be permitted to teach that subject, regardless of the number of courses he or she may have taken in so-called pedagogy. Incompetent teachers must be weeded out.

The teachers' tenure system should be investigated. The tenure plan was instituted, I understand, as a method of taking politics out of teaching. A teacher with 3-year's full-time teaching acquires tenure status. This means that thereafter it is virtually impossible to discharge a teacher, except for very grave charges of misconduct or something of equally serious nature. Any obligation on the teachers' part to be an effective teacher during the long period of guaranteed employment is vague and usually amounts, at most, to attendance at a few lectures or an occasional summer-school course. There is no yardstick by which a person's effectiveness as a teacher is measured. To the best of my knowledge, the routine rating of teachers on the basis of their actual effectiveness in the classroom is something which is not attempted. Why not? I can see no reason a teacher should be permitted to remain on a job when he fails to perform satisfactorily. The working of the tenure principle should be carefully studied to make sure that it gives reasonable security to teachers, on the one hand, but, on the other hand, that it gives corresponding assurance to parents that their children will not be subjected to education by incompetent teachers.

Merit rating for teachers is receiving attention from some school boards and other agencies interested in the quality of teaching. In the May 1956, issue of the Tax Digest, E. Maxwell Benton, educational counselor for the California Taxpayer's Association, states: "Considerable criticism is developing of teacher salary schedules which use only the two yardsticks, college training and teaching experience, for determining salaries. There is a growing conviction that teacher salaries should also be related to the quality of instruction." He points out that the prevalent automatic advancement plan by which the mediocre teacher advances at the same rate as the outstanding teacher lowers the prestige of the teaching profession and discourages able teachers. He quotes the American School Board Journal, May 1954: "Union protection, automatic increments, indefinite tenure—these safeguards attract a certain type of person into the teaching profession. True leaders, people who 'have it on the ball,' do not search for positions offering such safeguards."

Proponents of merit rating contend that the practice of paying teachers what they are worth, rather than rewarding them merely for becoming older teachers, would bring about a great improvement in teaching. Merit programs would tend to draw and hold superior teachers. Acting upon the recommendation of a Citizens Advisory Committee, the Pasadena, Calif., School Board is now working on a procedure for formal evaluation of current job performance which will be

a part of its teachers' salary schedule code. As the idea spreads, we may hope for improvement in the quality of teaching in elementary and secondary schools.

The curriculum of secondary and elementary schools should be under constant study, and should be revised when necessary to reflect current needs. The tremendous advances in science in recent years have created, and will continue to create in the future, vast amounts of new knowledge which must be taught. How can this new information be worked into a curriculum which is considered to be overcrowded today? Several things can be done. Much subject matter of today's elementary and high school curricula could be eliminated advantageously. There is a great deal of educational rubbish and scholastic trivia in our present curricula.

Many subjects could be taught at an earlier age. Why should foreign languages, for example, be retained for the later years. These can be taught just as well, and possibly more readily, in the early years.

Our curricula today are largely the result of tradition. They are the carry-over of past generations in which classical education predominated. I think it is time that a fresh look be taken by unprejudiced, imaginative and able educators, persons who can throw off the shackles of blind adherence to tradition. Let these persons look at the world as it is today and ask themselves: "What knowledge, what training, what skills does the youth of today need to prepare him best for the problems he will encounter in his lifetime?" The answer will be a sensible, realistic course of study which, by comparison with our present curricula, would show that we are now wasting tremendous amounts of time on subjects of little value. We are dulling the interests of many potential scientific leaders by failing to provide courses, as well as teachers, which would inspire them to enter professions in which their abilities can be used most beneficially.

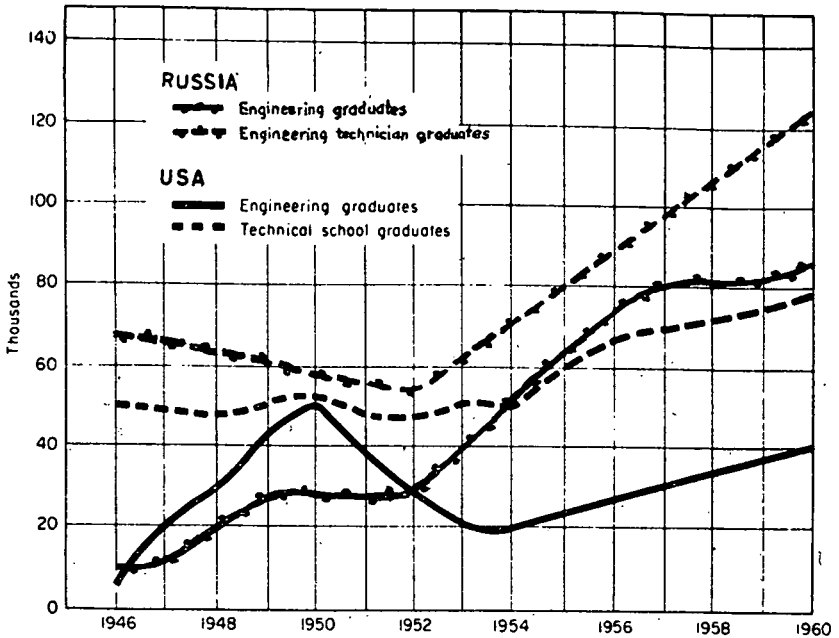
One weakness of our public-school system is the attempt to confine students of all kinds in the same classroom. Observant educators have noted that it is "impossible for a small corps of teachers to serve both terminal and college preparatory students with vital, relevant, inspiring work in the range of subjects needed by both groups." There is evidence that some of our junior colleges stress terminal courses, to the detriment of the student aspiring to enter college.

In a commencement address a few weeks ago, Dr. Frank Baxter, noted Shakespearian professor at the University of Southern California, suggested that it was high time that our public schools stop putting all students through the same mill; that we may be wasting one of our most valuable national resources when we fail to develop to their fullest extent the talents of students having superior ability; and that these talents cannot be developed favorably in an educational system geared to mediocrity. There was an immediate reaction to the suggestion that superior ability be recognized and cultivated in our public schools. "It's Un-American," said one. "It violates the principle of equal rights for all." Such shallow thinking overlooks the fact that there is no greater inequality than the equal treatment of unequals.

In these remarks I have stressed certain weaknesses and shortcomings of our public education system. I have deliberately refrained from discussing the good features, and there are many, for my primary purpose was to indicate areas in which improvement is needed and to suggest some ways in which improvements can be made. I hope that no one will construe the critical nature of my remarks, as an indication of lack of faith in our system of public education, nor lack of confidence in our public-school teachers.

Public education is a magnificent institution—I wish to make it still better. We are fortunate in having in our public schools many able, inspiring teachers who are dedicated to their profession. I have the greatest respect for them. My wish is to see their ability recognized and their burden lightened by providing them with able associates.

It is my hope that civic organizations throughout the Nation will take a more active interest in public education and will do their utmost to end the current wastage of potential technical manpower before it is too late.



*How two nations are training for control.*

[From Control Engineering, December 1956]

**UNITED STATES STEPS UP ITS TECHNICIAN-ENGINEER RATIO THROUGH SOCIETY ACTIVITIES BY EMPHASIS IN SCHOOLS WITH MORE MANUFACTURER TRAINING**

The graph above<sup>1</sup> dramatizes an aspect of engineering manpower that is often overlooked in today's frenzied search for qualified engineers: the importance of the qualified technician in backing up the engineer—and thus contributing to the solution of the current shortage.

Study the graph and see what is happening to the technician gap in the United States' most important engineering competitor. Since 1952 the Soviet Union, observing a decline in its technicians due to emphasis on professional education, has put steam into a program for getting more graduates from its technicians turned out by these schools. The dashed black line for the United States increase in technicians over the 1950 level—was exceeded, and it is now estimated that Russia's 3,500 technicians are turning out close to 1 million vocationally trained people each year. The dashed red line in the graph indicates roughly 100,000 technician graduates in 1956, but it covers only the engineering technicians turned out by these schools. The dashed black line for the United States, however, represents the enrollments in 69 technical institutes and includes all types of vocational training.

**THE OPTIMUM RATIO**

An important key to its attitude toward technician training lies in what Russia calls its optimum ratio between semiprofessionals and professionals. In prewar days the ratio was less than a desired 2:1, and declined by 1950 to only 1.3 technicians to back up each engineer. Today the aim in Russia's automatic control field is four technicians for each professional engineer—and all signs point to fulfillment of this aim.

Many American industrial firms are also aware of this need for an optimum ratio between technicians and engineers. E. Allan Williford, president of Link

<sup>1</sup> Sources: On engineering and Soviet technicum graduates—estimates from Nicholas De Witt, Soviet Professional Manpower; on United States technical school graduates—Annual Surveys of Technical Institutes, Rochester Institute of Technology.

Aviation, says, "We have approximately 120 graduate engineers at Link. We also have about 160 trained technicians, not nearly enough. We probably should have a ratio of at least three technicians to every engineer. Any lower ratio simply means that we're not getting maximum value for our engineers \* \* \*." Some other ratios:

Westinghouse Electric, Air Arm Division, 2 technicians to 1 engineer.

Standard Oil of Indiana, 1.9 technicians for each engineer.

United States Steel Co., American Bridge Division, 800 technicians, 700 engineers.

Not all companies, however, match the ratios above. A survey by the Engineering Manpower Commission of 18 oil and chemical companies, for example, showed an average 0.9 technicians per chemical engineer.

#### WHY STRESS THE RATIO?

As Bob Jeffries implies in his guest editorial on page 61, a lack of emphasis in training technicians for automatic control can result in two things:

(1) Our dedicated efforts to put automatic control in American industry can come to a grinding halt—technicians are needed to keep operating what is placed in the field—it is as simple as that.

(2) Our so-called engineering manpower shortages will never be solved—without technicians, creative engineers will bog down in a mass of routine, time-consuming operational and design details.

It is the second point that is starting to preoccupy today's engineering manager and may be the real prime mover for getting technician training in the United States well off the ground. Bidding next June for an estimated 23,000 engineering graduates will be over 5,000 companies—which means that less than 5 new recruits will be available per firm. Yet most expanding industrial firms today claim they need new engineers by the scores, even hundreds. An answer, they are finding, is to use the trained technician for some staff engineering jobs and to upgrade him, if necessary, to full engineer status. This is causing industrial recruiters to include technical institutes in their itineraries and is causing companies like Carbide & Carbon (see p. 65) to emphasize the engineering apprentice approach in its on-the-job training program.

#### ORGANIZED RATIO BOOSTERS

Though it lags notoriously right now, the United States has high hopes for matching and besting the Soviet Union's remarkable technician training program. For while both bank heavily on formal schooling plus some on-job training, the United States has, in addition to these sources, two other prime movers: (1) The engineering societies, with their focus on lower-echelon education; (2) the product manufacturers, with their free schools for training customer technicians.

The next five pages of What's New offer a current glimpse of some of these forces at work in the training of American technicians for control.

#### ISA WORKS FOR TECHNICIANS

Progress in product and technique may have been the theme at the recent 11th annual Instrument Society of America conclave (see November issue, pp. 25-40), but there was one problem in the minds of the membership that threatened to overshadow it: the problem of producing the properly qualified technicians needed to service and run the new installations.

The problem did not simply fester in the minds of ISA members, however. They did something about it. Besides conducting training clinics (Control Engineering, November, pp. 38-39), the ISA announced an education foundation with funds to attack the technician shortage problem (see p. 61); conducted a symposium on ways and means to increase the training of manpower in instrumentation; held an education committee meeting on the day following the symposium to mull over possible action based on what was learned; cooperated with Control Engineering in a display of work being done in the control field by eight education institutions.

The ISA's new Foundation for Education and Research will function as a separate corporation under the direction of a board of trustees drawn from industry, Government, and education. While its initial grant of \$40,000 is from the society itself, it hopes to be financed through funds supplied by individuals, other technical associations, and industrial contributors. It will be housed at

first in the ISA headquarters in Pittsburgh. Bill Kushnick will serve as executive director (a post he now holds, and will continue to hold in ISA).

#### AT THE SYMPOSIUM

Four of the five papers offered during the special education symposium on Tuesday, September 18, concentrated on the problem of developing instrument and control technicians. Foxboro's W. H. Furry complained that instrument technicians are too often categorized with bricklayers and carpenters—almost invariably by unions and frequently by management. He called for abolishment of the term "instrument mechanic" and said that the status of technicians could be raised by placing them on salary and thereby removing them from union jurisdiction. The body of his talk was about technician training, which he wants formalized. His three-part method: learning the why of instrument operation; showing the man what to do and how to do it; making him practice until management is sure he can do it.

Paul Huss of the University of Akron gave an impassioned plea for more emphasis on the role of the secondary school in expanding technical manpower. He felt that the humanities were being stressed too much and that more interest on a broader science-and-mathematics base could be stimulated by such things as good science films at the junior high level. He advocated "pushing the people who could become good engineers or technicians" but was "opposed to regimentation." Mr. Huss didn't quite tell the audience how to do the necessary pushing.

#### CHAPTER ACTIVITIES

The final paper in the education symposium, by A. T. Sherman, of Du Pont, dealt with instrument courses sponsored by ISA chapters and instrument manufacturers. Sherman briefly discussed the results of a survey that went to 57 instrumentmakers and the 76 ISA chapters. Of 20 chapters replying, 8 had a program of some sort—either organized and run by the chapter, or taught at a local university.

The good work that ISA chapters are performing in training technicians has been reported before. In 1954 R. J. McCausey, of Detroit Edison, found that 10 chapters conducted 37 training courses in 1952 and 1953, and that these were attended by 596 individuals. One of the best organized of these courses was run by the Boston section. It was advertised as an "instrument technician refresher course," ran for 5 weeks (2½ hours per week), and cost \$3. A total of 82 attended, and as a result of enthusiastic answers to its questionnaire, similar courses became standard activity for the Boston section.

#### UNIVERSITY ACTIVITIES

Educational activities at the college level were brought out during the ISA show in a special exhibit (see pictures below) of instrument and control development projects in eight eastern universities cosponsored by Control Engineering and ISA. Manning the exhibits were graduate students and faculty members associated with the conception and design of the photo-type systems on display. (See Control Engineering, September 1956, pp. 185-192, for details on some of the projects.)

Eight of the faculty members connected with the exhibit met in a formal session Tuesday morning, September 18, to discuss their respective projects and educational programs in control. Managing Editor Lloyd Slater, who served as recorder at this session, reports, "The interchange of ideas in this group was extremely interesting. Three of the men were medical-instrument oriented, three were outright theoretical control engineers, and the other two dealt in physics and mechanical engineering. Yet all were able to develop provocative comments about each others' project. For example, Dr. Slocumbe of Tufts became very intrigued with Jim Reswick's nonupset technique for systems analysis and planned to team up with Jim in a study of the 'dynamics' of a rat under automatic anesthesia. McClintock of RPI, on the other hand, enthusiastically saw his time-modulated six-count tape recorder as a tool in the servo analysis projects at three of the schools."

#### EDUCATORS FOCUS ON THE TECHNICIAN SHORTAGE

New York's roving team of education administrators, described in a visit to Sperry Gyroscope Co. on page 19, furnishes vivid proof that action is accompanying the intense soul-searching going on in American public school education today.



In attempting to meet industry's plea for more technically trained youngsters, the educators find themselves compelled to seek answers to the kind of questions posed by Dorothy Thompson in a recent column. Why do, she asked—

Only 4 percent of American high school students study elementary physics?

Only 7 percent study chemistry, 27 percent algebra, and 13 percent geometry?

Only half our schools offer courses in chemistry and physics?

Nathan Clark, supervisor of technical subjects, New York City Board of Education, and a member of the team of visiting educators, feels the need for a concerted effort by both industry and State and local education authorities. "There are countless American children entering high school," points out Clark, "with IQ's of 105 or over who could make very capable technicians or engineers. In our vocational program we have found we can give these students a full 4 years of math and 4 years of science. Further, our laboratory work gets the student's hands busy with electronic and industrial devices, as well as his mind into the basic theory behind such equipment. Then when the boys and girls graduate they are literally conditioned for industry—and are happy and interested in the jobs they get." Mr. Clark goes on to point out that this "industrial conditioning" is often lacking in most technical schooling—even colleges. "Why do 50 percent of graduating engineers drop this field in their first 5 years out in industry?" he asks.

Supervisor Clark is very enthusiastic about the New York board's program of meetings with industry to determine what the latter needs in the way of special training in vocational school graduates. In the get-together with Sperry, for example, observation of Sperry technicians at work suggested some mild adjustments in the courses offered in five New York technical high schools. After it reviews the suggested adjustments, the group will confer with Sperry again.

#### STEPPING UP TRAINING

New York City, advises Clark, is now embarked on a stepped-up plan for technical education. "We are working out better ways to select students and are determining what schools can best be set up for technical education." But city programs are relatively easy, he comments. "Other, smaller communities have a great problem in getting the necessary funds to train or hire the proper type of teacher for technical education. Engineers are needed—hence the community must compete with local industry. It seems to me that industry, in order to satisfy its larger, broader need for technicians and engineers, must get behind a local movement for higher starting salaries to entice teacher-engineers into nearby schools. From these schools will come the technicians they need so badly."

Industrial leaders, increasingly aware of the technician shortage and the potential for technician relief of the more difficult professional engineer problem, are starting to echo Nathan Clark's sentiments. The Thomas A. Edison Foundation meeting at West Orange, N. J., November 19-20, and the joint program for technical education of the Columbia School of Engineering, which held a session at Arden House, Harriman, N. Y., October 30-November 2, brought together educators and industrialists to discuss what draws young people to technology and how our colleges can help the hard-pressed science departments of high schools. These are but two of the many meetings throughout the land that are approaching the so-called engineering shortage problem in this new direction: through renewed, rebuilt emphasis on technology in secondary education.

Editor's note: The report above on increased activity by educators in technician training does not include the important area covered by the post-high-school technical institute. Many schools in this category have added, in the past few years, special courses in instrumentation and control. We hope to survey these courses and perhaps come up with an Industry's Pulse (similar to the one this month) that will tabulate the information.

#### BOB JEFFRIES, A CATALYST FOR TRAINING

Robert Joseph Jeffries is never completely happy unless he's doing at least six things at once. In his 15 years as an educator and consultant he has tackled control field projects ranging from motor control through aeronautics to navigation and human engineering—often keeping to a schedule that would shame an election-year campaigner. A typical Jeffries week: teaching at Michigan State,

editing the ISA Journal in Pittsburgh, serving on a national committee in Washington, and spending a day each with clients in Chicago and Detroit.

Today, as assistant to the president of Daystrom, Inc., Jeffries still maintains his wonderfully varied, back-breaking pace. Catch him for a few minutes between flights and he'll enthusiastically tell you why. "I'm a flying catalyst. People are the most important ingredient in the future of our company—and our technology. I'm making it my business to activate this ingredient—to launch and catalyze programs for training and developing the potentials of people. A catalyst has to be where the reactions are—not on a nice quiet shelf." (Editor's note: Jeff then stayed on the ground long enough to give us his views on educational needs—see editorial, following.)

#### START OF THE REACTION

Bob Jeffries' career as a control catalyst began with EE and MS degrees from the University of Connecticut, which he sought with funds earned as a surveyor of the "fine terrain" of his native Connecticut, as a teacher of motor control and electronics, and as a summer employee of Pratt & Whitney. During the era of the VI's and V2's Jeff was at Langley Field with the NACA working on the development of its prototype missile tracking system and teaching extension engineering courses at nearby University of Virginia. In 1948 Jeffries was awarded his doctorate in engineering by Johns Hopkins, where he taught electrical engineering and participated in a pioneer study of human dynamics in control—a subject which later became known as "human engineering." In the fall of 1948 he went down to North Carolina State College, where he directed a pilot research installation of a long-range navigational system and taught automatic control (using the new Brown and Campbell text).

In 1953, during his fourth year as an associate professor of electrical engineering at Michigan State, specializing in automatic control, Jeffries, then chairman of the ISA Education Committee, roganized the first national industry-government-university meeting devoted to educational problems posed by the new technology. Meanwhile he was editing the newly founded ISA Journal and squeezing out hours for consulting to industry on problems of control, system design, and education. Soon he and two associates formalized their consulting practice in Educational & Technical Consultants, Inc.—a service which draws on the talents of specialists in 73 colleges. One of his clients, Schlumberger Well Surveying Corp., took a cue from his report and formed Schlumberger Instrument Co., bringing in Jeff as technical planning adviser to President Henri-Georges Doll (Control Engineering December 1955, p. 15). Upon completing his phase of the work last spring he went to Daystrom as assistant to President Thomas Roy Jones.

At 33, Bob Jeffries is only at the start of a remarkable career, but he sees no reason to pace himself. "Education is a long-term, continuing proposition," he reminds us, "but it never gets off the ground without dedicated effort." Jeff's attractive wife Anna and his two children have grown to accept his time away from home that such dedication requires. "But," says Anna philosophically, "I'm looking forward to the day when Jeff becomes president of ISA (now president-elect secretary, he'll be president in 1957-58) because I will then at least be able to keep up with his activities through the ISA Journal."

#### PROGRAM FOR TRAINING

*(Our control personality this month, Dr. Robert J. Jeffries, offers this guest editorial on the elements of a program for training people in our field)*

In today's ideological conflict between East and West, the survival of our concepts of individual dignity and opportunity depends chiefly on our continuing prosperity and on the example we set. This requires, among other things, more and better-trained engineers to conceive and design more machines incorporating the latest products of control technology, and a supply of highly skilled technicians to operate and maintain this equipment. It requires, also, that we continually upgrade existing personnel to enable them to keep pace with the growth of the field.

Several things can be done to meet the challenge. Drawing on our knowledge and associations, we might address ourselves to the following:

Bolster science education in secondary schools—this requires better teachers.

Enhance the scope and effectiveness of collegiate programs—this requires industrial and community support.

Attract people to careers in the control field—this requires broader public appreciation of its content and potential.

Cultivate a better understanding of our technology at all levels of management and employment—this requires an effective and varied industry educational program.

Translate the sophisticated theories of academic and military programs into economically justified equipment and techniques for industry—this requires an effective two-way communication in needs, interests, practices, and experiences.

Develop a practical way to tap the great reservoir of experience already in the literature—this requires an effective technique for storing and retrieving that makes the information available to all.

How can we implement such a program? A good start has been made by the Instrument Society of America with its recently established Foundation for Instrumentation, Education and Research. The foundation's functions will be largely conceptual and catalytic. In general, it will assist in developing education and research projects in instrumentation not only for other societies, but for governmental, industrial, and educational groups at all levels. These projects will be nurtured by the ISA; by individual industries and industrial trade associations; by civic, labor, and fraternal organizations; and by educational institutions and Government agencies.

The success of the foundation's program—of any program for training, for that matter—depends on how much support it gets from that group certain to benefit the most from it—the men in the field.

ROBERT J. JEFFRIES.

#### INDUSTRY'S PULSE—HOW CONTROL MAKERS WILL TRAIN YOUR TECHNICIANS.

A recent study by McGraw-Hill's department of economics indicates that the users of control will purchase over \$4 billion worth of equipment in 1957. The incoming devices and systems will bolster an already incredible array of complex, highly specialized measurement and control equipment now being used throughout business, the military, and industry. But to the users they will create this pressing question: Where will the trained technicians come from to install, maintain, and operate the new systems?

One powerful answer to this question resides in the training schools, formal and informal, offered to control users by the makers themselves. Most of the two-thousand-odd companies that manufacture specialized products for the control field are prepared to back up their equipment either with informal in-plant or use-site instruction, or through organized training facilities. It is the growing emphasis on this latter category—the formal, organized customer training school—that prompted Control Engineering recently to survey 100 control manufacturers. By October 15, 33 companies returned complete answers on their organized facilities. The answers are crammed into the next pages.

To help the user with specific requirements, the table groups control-maker schools into four categories: aircraft and ordnance, analysis and test instruments, computers and data processing, industrial control. Thus, 1 group of the 3 companies trains technicians to service and run the highly specialized systems it makes for controlling aircraft, ships, and military vehicles. One distinguishing feature of this group is its stress on field training. All three companies take their students out or even up in the air to work on operating systems.

The five makers of analysis and test equipment that answered the survey use their brief courses (mainly 1 week) to focus on theory and function rather than field application. This approach, they believe, will enable the user to broaden his own ability to put the new tools of product measurement and system test to work in the many unplumbed applications in his plant.

Operational techniques are emphasized in the courses offered by the five digital manufacturers responding to the survey. All recognize the need to equip technicians to program and code (and simply operate) the rather complex digital systems they now have on the market. Because of the complexity of these systems, background is especially important; most firms require a knowledge of electronics and/or computer experience. One even suggests that the trainee be a graduate engineer with pulse experience if he is to take the maintenance course.

A much broader approach to the service and operation of automatic-control system is offered by the 17 industrial control firms in the survey, whose courses run from 2 days to 14 weeks. Many in this group have been conducting user

schools for as long as 20 years, and several have developed special courses to suit the industrial background of the trainee.

Over all, the most impressive thing about the survey is the astounding number of people that these few manufacturers train. Excluding IBM (with its fantastic "mobile" program which handles 70,000), roughly 8,000 technicians pass through the portals of 33 control-maker training schools each year. What would the grand total be if all programs and all firms were included in the survey?

The tabulation reveals some interesting uniformity in the scope of user training by control makers:

All courses (with the exception of Kollsman's, some of Consolidated Electrodynamics', and the Westinghouse "CYPAK" class) are tuition free.

Most firms are staffing their schools with graduate engineers, many of whom are trained to teach.

Most of the companies require that their "students" be customers (at least 12, however do not).

One more thing is quite apparent from the table: more than half of all these control-maker schools seems to be enrolled to capacity long before classes start. So if you plan to send a man—get in your request right now.

Chairman PATMAN. The other members of the committee, who are in the city, are engaged with other committees. Senator Flanders is especially interested in this type of work and activity, and he wanted to be here, but he is engaged in another committee and he cannot leave. So is Senator O'Mahoney. Senator Watkins is not in town. And our House Members are engaged.

However, these hearings are printed, of course, and made available to all of the Members of the House and the Senate; and also the libraries throughout the country, and to other people.

I think you have presented a wonderful statement. I know it will be helpful to all of the Members of the Congress.

You made a statement about your proposal to have a task force set up. I do not object to any task force, and I am sure it would be helpful and constructive in its efforts and activities, but I think that the best way to get consideration of a legislative body—and, obviously, some of their recommendations would require legislation; I assume you agree to that?

Mr. SHEEN. Yes, sir.

Chairman PATMAN. Is to go directly to the Congress, and through the legislative setup to the committees having to do with these problems. Then the same people who receive the testimony will also be charged with getting something done, and take a personal interest in trying to push it through Congress.

When you go about it with a task force, you not only have to convince the task-force members, but after you have gotten up your recommendations, after months, and sometimes years of study, and have gotten up unanswerable, convincing proof of your recommendations that you need as to why they should be enacted into law, you must then go to the legislative committee. Do you not agree with me that there is something to that point that should receive consideration?

Mr. SHEEN. Possibly so. What we are trying to do is to point out that we have an immediate need.

Chairman PATMAN. That is right.

Mr. SHEEN. We have some specific problems. We are also trying to suggest possible ways to solve those problems.

Chairman PATMAN. But that makes it more important that you approach the people who have the power to act.

Mr. SHEEN. We are happy to do so.

## CTURERS

COURSE	THE STUDENTS			ENROLLMENT	
	NO. PER YEAR	WHERE FROM	PREREQUISITES	METHOD	ANY WAIT?
I. LE Sa	250	from military & distributor service facilities	none	written application from his employer	no
NO El	200	military, airframe mfrs., airlines, systems mfrs.	determined by the customer who sends him	contractual or other agreement	2 months
SP Gr	to 1,000	aircraft, govt., shipping, executive aircraft, cargo	depends on course basic knowledge essential	customers request training on specific products	3 months at most
II. BA Ca	100	metals industry, industrial & research labs	users only are invited to attend course	write well in advance of Oct 22 deadline	only one course a year
BA Ro	50	labs, surgical schools, instrument dealers	selected by management of respective companies	invitation from B&L Optical Co.	only 6 courses a year
BR Cl	60	manufacturing, research, and development	fundamentals of electr. and mech measurement	direct application to Brush or factory rep	5 weeks
CC Pa	200	from customer plants aircraft to refining	good electronics background very helpful	through field sales offices after purchase	up to 3 months
NO MD	500	all types of industry	none	merely write that you wish to attend	no
III. EL Pa	750	industry, services, research, etc	an EE degree with pulse expr for maint course	write field office or direct to Pasadena	1-3 wks
EL Lo	150	research & development groups, industry, govt	analog computer experience	invitation	no
IB Na	70,000	all types of locations, classes go to them	aptitude tests and prerequisite machine exams	through local office & local sales reps	1 month
LC Ro	250	mfg., process, govt., business, transport.	grad. eng. or mathematics, or aptitude	write or call and make arrangements	2 weeks
J Sa	200	engineering, aircraft, chemical, etc.	none	through correspondence with J. B. Rea Co.	variable
RE No	120	across all business & industry, institutions	basic knowledge of electronics	by customer or government request	few wks
RE No	1,500	from industry, business, government	none except for advanced programming	through local RR branch or RR training director	2 months
UR Lo	100	industrial, casualty firms, govt., etc.	none	contact training director of the division	no
IV. AS Cr	100	steel mills, process plants in industry	must be customers	send in name of man who will attend	usually
BA Cr	250	mainly power co.'s, but some process plants	none	request by letter, wire, or phone	5-6 mos
TR W	70	mainly process, but all areas of industry	recommendation by student's company	write giving man's name & primary interest	not often
FI M	40	all types—no restriction	none	request on company letterhead	no
TR Fe	250	process industries all over world	at least 6 mo exper. plus h s physics, math	application from customer mgmt	3 months
GR W	150	chemical & metal-working industries	no but technical background recommended	write to Mr. Shattuck, Product Service, GE	no
TR M	25-30	wherever combustion control is located	must be responsible for Hays eqpt.	direct request	no
IN Ca	100	nationwide industrial firms	should be associated with an installation	letter to Sales Training Dept.	yes
LE Ph	700	process, utilities, labs, govt., & education	nomination by L&N customer or real interest	Apply to Philadelphia L&N office	maybe
M St	60	usually from process all welcome	users or contractors of MM&M equipment	indicate desire to attend course	only 3 a year
M Ph	350	all inclusive	none	written request	3-5 mos
PO SA	40	various customers	none	request through local sales office	no
RE Cr	300	process, ferrous & non-ferrous, machine tool	Reliance Customer with electrical background	request through district office	6 months
TR Cr	100	primarily refining & chemical—many others	none	reserve through local sales office	sometime
TA B	30	bridge & road authorities, airfields	must be sent by company	automatic if a customer	no
TA Ro	275	process industries	try to fit course to background	contact local sales representative	3 months
WE Ph	100	industrial cross-section	none	through local salesman	yes

Chairman PATMAN. A lot of task forces have worked hard and have accomplished a lot in alerting the people as to the needs of certain things, but they are not the people who can act. They are only people who can present it to the people who can act.

Mr. SHEEN. We would be delighted to see this committee or any other committee act directly on these recommendations.

Chairman PATMAN. Well, this committee is set up more in the line of a task force committee, in that we do not have legislative power. Under the Employment Act of 1946, we are more than, I guess you would call, a watchdog committee. We are a committee to pass upon these questions and make recommendations to the legislative committees.

Mr. SHEEN. We will be very happy to carry the story in any committees that you might suggest.

Chairman PATMAN. That is very fine. I am not objecting to the task force; it could serve a very good purpose, but those same people will have later to be called before the legislative committee. And anything that is urgent, that is needed real soon, I suggest and urge that you consider getting hearings before the legislative committees for it. And you will have the cooperation of this committee in getting it done.

Mr. SHEEN. Thank you.

Chairman PATMAN. I started out turning down a page of your statement that I wanted to ask you about and I find I have turned down all of the pages when we got through. I won't obviously ask you about all of them. But I want to mention some of them.

You mentioned accelerating the educational programs. Of course, that is very fine. I want to commend your organization for establishing this foundation and putting up the first \$50,000 to start it off in its work. The needs are urgent and great. I agree with you on that.

You know, our committee over a year ago, November 1955, I believe it was, for the first time brought to the attention of the country that there is a great shortage of engineers and scientists. We disclosed through such witnesses as Dr. Vannevar Bush and others that Russia was way ahead of us and that Russia would graduate in 1956 twice as many engineers for instance, as we were going to.

The most alarming and shocking thing of all that was brought to our attention was the fact that Russia during the year 1956 would graduate 32 times as many technicians than the United States of America. That is what is so shocking to me. I went into it a little further. And I discovered that Russia is doing what you have suggested here on one of the pages that I turned down, that we do here in this country, that is, the young men in military service that we should pay some attention to them and give them training.

Mr. SHEEN. That is right.

Chairman PATMAN. That is what Russia is doing. That is the reason that they can graduate 32 times as many technicians. They are training their military personnel in that way. So that there is no reason why we could not do it here. I think it would be not only helping the country but be helping the young men, too. I think one of the major problems, just like you pointed out, is the problem of insufficiently trained and inadequately educated manpower.

Mr. SHEEN. That is correct.

Chairman PATMAN. Your idea about a central clearinghouse for the rapidly accumulating information of knowledge, I think is a wonderful suggestion.

And so is your suggestion about the improvement of curricular and training of teachers in high schools. I asked Dr. Bush what he considered to be the weakest point in our educational system. He said the lack of trained teachers in the high schools. He put his finger right on it.

And you have, too, here. I noticed that you brought out some other points, effective utilization of military training period. That is the point that I brought out a while ago, that Russia is getting ahead of us on technicians in that same way.

Mr. SHEEN. I had a young man in my office, a graduate mechanical engineer, Monday of this week, just out of the service, and he told me that three-quarters of his time before he was actually transferred to any technical activity at all was spent on more or less menial work and the average training of the men in his particular company (military) was actually 14½ years of school, which meant that more than half of them were college graduates.

He had a Ph. D. and M. S. working along with him on menial tasks.

I submit to you that is a radical waste of manpower.

Chairman PATMAN. Like cleaning up the barracks or KP. They do not seem to make any difference on that. We all had to go through it, you know, in military service.

Mr. SHEEN. That is true.

Chairman PATMAN. But we can utilize our manpower in a much better way than that. I think this hearing will have a tendency to bring it to the attention of the public and of the Congress.

The more active role by the National Bureau of Standards and communication of their information and so forth—I am strong for the Bureau of Standards. I believe the Congress is sold on the need to support and cooperate with the National Bureau of Standards.

I won't comment on your testimony except to say it is very helpful. I certainly appreciate it and I know Members of Congress will be greatly helped by it.

We will hear from you this afternoon on this small-business aspect of the question.

Mr. MOORE. One criticism we have of the committee's report last year on automation is that the committee did not undertake to define "automation." Those who were at the hearings discovered that automation was a pretty broad conceptual thing, rather than one that could be precisely defined and narrowed.

Since we are going to be using this word "instrumentation" so much in the next day or two, I wonder if you could point out the boundaries or how far instrumentation goes. I know it is a difficult question just as we found automation was impossible. But I think it would be helpful if we knew what you mean by that.

Mr. SHEEN. I think our next witness has one of the finest definitions in his testimony that I have as yet seen. That is by Mr. Jones.

Chairman PATMAN. That will be by Mr. Jones?

Mr. SHEEN. Although I would not hesitate to approach it, at the same time I would not want to duplicate his material.

Chairman PATMAN. One other suggestion about the task force: If you set up a task force that you expect the Congress to accept and not

go through a committee, you are thereby placing elected representatives of the people in competition with those who are appointed by someone. And you get into trouble with our system of government.

Mr. SHEEN. I understand.

Chairman PATMAN. That is what I am trying to urge upon you for consideration, that you present your proposals directly to the legislative committee on all urgent matters.

Mr. SHEEN. I greatly appreciate that suggestion.

Chairman PATMAN. Thank you very much, Mr. Sheen.

Mr. SHEEN. Thank you.

Chairman PATMAN. We will look forward to hearing you again this afternoon.

Mr. SHEEN. Thank you again.

Chairman PATMAN. Now, Mr. Jones. You may sit there at the table with him if you desire, Mr. Sheen.

Mr. JONES. I am very sorry that I did not speak first for the reason that there is a good deal of duplication in recommendations between the first speaker and my paper.

Chairman PATMAN. That is all right. We can stand it, because we need it. You cannot repeat it too much.

#### **STATEMENT OF THOMAS ROY JONES, PRESIDENT, DAYSTROM, INC., ELIZABETH, N. J.**

Mr. JONES. My name is Thomas Roy Jones. I am president of Daystrom, Inc.

To provide understanding of the basis for my observations and conclusions, it would be appropriate and valuable if I should describe to you the type of activities and the organization with which I am daily associated.

Daystrom, Inc., is a management holding company which has several operating divisions and subsidiaries whose principal activities lie in the broad fields of electronics, avionics, nucleonics, electrical indicating, recording, and controlling instruments and systems, laboratory standards, and military and industrial intelligence and computing systems.

Our products also embrace several electronic devices used in the home, for example: high fidelity sound-reproduction equipments, and hobby equipments.

One of our subsidiaries, the Weston Electrical Instrument Corp., is the world's largest manufacturer of electrical indicating instruments. One of our other subsidiaries, the Daystrom Pacific Corp., pioneered the development and manufacture of miniaturized devices for aircraft and guided missiles.

Our nuclear division is building the world's first medical research reactor for the Brookhaven Laboratories of the AEC.

The purpose in reciting these varied activities of our company is to try to explain the breadth of concern and association which my particular position as president of Daystrom, Inc., represents with respect to instrumentation and automatic controls.

My premise is that the electrical instruments, laboratory standards, and electronic test equipment of the types manufactured by Daystrom constitute the foundations of automation.



Some of our other products, in particular the devices for sensing physical quantities, the indicating, recording, and controlling instruments and systems, are the actual instrumentation of automation.

We are, therefore, vitally interested in automation and feel that we are in a good position to appraise its potential and its needs, and also to contribute to its enhanced applications in industrial and military environments.

With this introduction I should like now to try to develop a pattern which is inherent to automation—a pattern in the technological sense. Automation may be defined as anything having to do with an extension of human senses and capabilities via machines.

The senses are those of sight, touch, hearing, smell, and taste. The capabilities include motion, force, work, and the mental operations of arithmetic and algebraic manipulation, selection, and rejection.

Those are terminologies of the electronic brain.

The extension of these senses and capabilities are accomplished within the concept of automation by machine sensors, such as thermocouples and resistive elements for the sensing of temperature; orifice plates, rotating armatures, and so forth, for the sensing of flow; diaphragms for the sensing of pressure; photocells for the sensing of light; microphones for the sensing of sound; and analytical type instruments, such as, infrared and ultraviolet spectrometers, mass spectrometers, and vapor phase chromatographs, which determine the chemical composition of materials, through the analysis of light reflected by those materials.

The capabilities of motion, force, and work are realized within the concept of automation by pneumatic, hydraulic and electromagnetic actuators. Equivalent mental operations are performed by analog and digital computers—popularly known as electronic brains—in the most elementary machine equivalents of mental arithmetic, selection, and rejection.

Electrical instruments, laboratory standards and electronic test equipment are the foundation of automation because these equipments are used in the development of automation equipments and systems. (Electrical instruments, laboratory standards, and electronic instruments are essential to the development of sensing, indicating, recording, controlling, actuating, and computing automation equipments.)

Therefore, the instrument development and the instrument manufacturing activities in which Daystrom and other similar companies engage constitute the source of knowledge, the components, and the application know-how which make automation possible.

These devices, such as my company makes, must precede and are essential to automation applications. Therefore, the instrument industry is necessary if automation is to exist. Automation as an industrial evaluation will be no more healthy nor dynamic than is the instrument industry.

Should automation be encouraged? The answer is, categorically, "yes." The principal arguments have been previously stated in hearings before this committee some time ago by representatives from several industrial areas.

I add my endorsement to their arguments as to why automation is beneficial to our national welfare.

In addition, I submit the following points as a summary of my personal beliefs as to why automation is good and should be accelerated in its application.

First, automation is essential to the economy. If this Nation is to increase its productivity at a rate which will provide a standard of living to which we all aspire, with our available manpower, we must have a greater unit productivity on the part of the individual worker.

The only way the American worker can increase his real wages is through an increased individual productivity. He can do this by working more hours or management can do it for him by increasing his productivity per hour.

Increased productivity per hour can be achieved only through a greater application of automation. In our research activities it is not possible to conduct the studies that must be conducted in order to advance the frontiers of knowledge—it is not possible to perform the mathematical computations which must be performed if we are to understand the world and its workings about us—unless there are developed more sophisticated types of automation equipments.

Therefore, in these senses automation is essential to our economy. Automation is essential to the creation of new jobs—new jobs which are better jobs, which require higher skills and will therefore elevate the worker and consequently pay him more money.

Second, the advent and the acceleration of automation is essential to our moral fiber. So long as man is endowed with an ingenious and an inventive brain, one capable of creative thought, and a body capable of creative effort, he must find an application for these capacities.

It would be spiritually and morally decadent for man to ignore the possible improvement of his own position and method of operation when such improvement is obvious to him.

Therefore, I submit that it is a psychological necessity that man continually seek to extend himself to the limit of his inherent capabilities.

Great progress has already been made in this direction. When I started my career as an engineer back in 1913, I started as a laborer on a railroad-signal gang out in Oregon. My engineering training certainly was not essential to the work and there was little opportunity for me to be technically creative.

This was because our technology was temporarily stagnant. The profession of engineering had little stature, the engineer himself was not considered a particularly important individual.

Times changed gradually, but it was true not very long ago that it was considered standard practice for an engineer to serve a 2 or 3-year apprenticeship as a draftsman before he was assigned any design responsibility.

Today we cannot afford this waste of technical talent. Today we recognize and try to provide opportunities for expression of personal creativity—we try to cultivate the abilities and capacities of our engineers systematically.

Third, automation is essential to national defense. Technologically speaking, we need new weapons; we need new defenses. Missiles and aircraft fly too high and too fast to be detected and counted by means employing human senses and capabilities only. We need sophisticated weapons systems embracing refined measurements, rapid calculations, and precision control to insure our security.

When we were forced into the Second World War, we had a surplus of labor on which we could call to provide the additional production

required. Currently we are at nearly full employment. If another war should come, the war production would have to come at the expense of the civilian economy—perhaps to an extent that it would endanger the ability of the civilian economy to support the military production.

Certainly, the sacrifices and deficiencies which would be forced on the civilian economy would be far greater than anything we have ever known. The only answer to an increased demand whether it be for military or civilian goods is greater productivity through increased automation.

Now, some of the foregoing statements, which are in a sense generalities, should be supported by statistics. I propose, therefore, with the permission of this committee, to enter into the record certain statistical and factual information in support of some statements I have made. These evidences are much too lengthy to repeat here in detail. It would be helpful, therefore, if the full content of these evidences could be included within the record.

Basically, these evidences consist of statistics establishing the nature of the field of automation in terms of its products, its services, and the companies engaged in it; included is information concerning the market potential and the growth potential of the automation industry as implied and thus required by the growth and development of the industries which embrace automation. These are appendixes A 1, 2, and 3.

Chairman PATMAN. They may be inserted at the end of your remarks.

Mr. JONES. Thank you.

It would be helpful to enter into the record an article which appeared in the journal of the Instrument Society of America in April 1956, which outlines in quite a comprehensive fashion the problems faced by America in effective utilization of automation. That is appendix B.

Chairman PATMAN. It may be inserted.

Mr. JONES. Thank you.

It would also be helpful to enter into the record excerpts from the text of a descriptive brochure prepared to justify and explain the nature of a Foundation for Instrumentation Education and Research which has recently been established in recognition of the several needs of automation—needs recognized by a group of eminent leaders of the Instrumentation-Automation-Science Fraternity, a voluntary association of freemen, representing free industries, bound together by a dedication to the welfare of our country and its economy through enhanced automation. That is appendix C.

Chairman PATMAN. It may be inserted.

Mr. JONES. Thank you.

Based on these evidences, it is clear that automation is imperative; that electronics and instrumentation are essential to automation; and, in order for automation to progress, the instrumentation-electronics industries must be healthy.

Now, what is the present situation? As a matter of fact, the electronics-instrumentation industries are being held back from realizing their ultimate potential, technologically and economically, by several factors. The electronics-instrumentation industry is a dynamic growth industry, with its markets expanding, its technology developing. Economically—traditionally—you would term it “an immature

industry." There are many small, marginal operators. New companies are being formed every day. Mergers and consolidations are taking place. We are just on the threshold of recognizing this aggregate of activity as an automation industry. Already, however, this industry is beginning to be pinched by some fundamental weaknesses in our national picture.

At this point, a digression is indicated. The administration and Congress are greatly exercised over the large number of mergers which have been and are taking place. We hear much talk about little business and big business, but nowhere is anyone worried about the welfare, and the encouraging of formation, of the business backbone of the economy and the great resource of the Nation in time of sudden war—the middle-sized business.

It is not maintained that all mergers are good. A few have been economically unsound and a few have been shamefully conceived in a spirit of selfish greed—but let's not throw out the baby with the bath water.

Small business cannot match the technological research of big business. Medium-sized business, confining itself to its specialized area, can. In the case of national emergency, small business generally has not the management, the flexibility, the size or the resources to do other than be subcontractors taking the scraps perforce let out to them from the prime contractor. The big businesses have these things and, having them, tend to grow bigger. A strong layer of medium-sized business—the middle class of the economic society—is the mainstay of the normal economy and the safety of the Nation in time of war.

This subject cannot be treated in three paragraphs but suffice it to say that Congress should give serious thought, particularly in this field of instrumentation and automation, to encouraging those small businesses which, in order to achieve strength and corporate security, wish to combine. Congress should not build up roadblocks of bureaucratic redtape and delays and the huge expense of reports and legal fees.

Now to pick up the thread dropped at the digression and enumerate the fundamental weaknesses before mentioned. First, the pricing in the industry is at such a level that many small businesses in the industry itself cannot support their own growth. This is a fault, in part, of the industry itself and, in part, of the tax structure.

Second, the industry is being hampered severely by an inadequate appreciation and understanding of the capabilities, limitations, and potentialities of its products and services on the part of those whom it would serve, both in industry and in Government.

This is to say that, if industry as a whole and many Government activities are to take advantage of the potentialities inherent in existing automation techniques and equipments, there is a mass education job to be done to explain, to investigate, and to create a basic understanding of principles and practices of the potential users of automation and its techniques and its equipments. We need a vast automation-market educational program.

Third, there is a corresponding need within the ranks of the automation manufacturers themselves—those industries who manufacture electronic-measuring equipment and engage in instrumentation, components, and systems development and manufacture—for an education of their personnel as to the very latest technological, scientific

developments—the ivory-tower developments—which have application to their industry.

We need to shorten the time span between the concept and understanding of a scientific principle to the time when it is embodied in a piece of practical equipment that will be economically and technologically justified in a user plant or production environment.

The history of the application of automation equipments is essentially a pattern of timing. Some research scientist somewhere in a laboratory identifies a fundamental physical principle. At some later date—maybe months, maybe years—an instrument is devised which measures or displays or characterizes this principle.

From a laboratory bench model, over a period of years usually, there will evolve a laboratory instrument made available through the instrument industry to laboratory scientists. With years of laboratory application, gradually this instrument may get out into a plant laboratory and ultimately, several years later, out into the plant as a plant-worthy instrument. The infrared spectrometer—that is the instrument which analyzes light rays below those of human vision—is a good example of this historical evolution where generations went by from the first concepts of the infrared spectrometer to our present state of plant application of these kinds of equipments. Now this time span is being shortened. There is a greater acceptance of the new today, not only by industry but by the public. With every new instrument that is conceived, with every new instrument that finds its way into a plant, we recognize and we appreciate the shortening of this time span. But much more must be done to shorten this time span.

Fourth, both the potential user of automation equipments and the developer and manufacturer of such equipments is hamstrung; is being held back at the moment by an inadequate supply of technically trained personnel at all levels—Doctors of Philosophy, bachelor's degrees, technicians.

This country's educational system simply is not geared at present to producing the number of people required with technological training to absorb and apply and develop the automation equipments which are possible; which are desirable, and which, in many instances, are basically necessary to our modern economy. The situation is frightening.

This is now the point at which can be brought out an opportunity which has lain in the hands of the United States Government ever since the Korean war—an opportunity so great and so apparent that I am amazed that, in the face of the great national necessity, nothing has been done to take advantage of it.

I have had two sons in the Army. I have been shocked at the amount of time spent in unnecessary manual labor—or even in doing nothing at all—by men of superior technical possibilities.

I am convinced that essential military instruction and training can be condensed into half the time now taken. The remainder of the time can be utilized in study in scientific courses given by men already in the service either as officers or as enlisted men. Servicemen not interested in advancement, or incapable of carrying the work, could do the manual labor. Interest in scientific learning and scientific pursuits could be aroused to the end that technical education could be completed under the G. I. bill of rights after release from the Army.

In the automation field there is a great need for effective communications so that the work done by one group and the experiences of all

groups can be made available to everyone who has a need for the information.

With the shortage of manpower, with the needs for instrumentation-automation research and development and application; and with the urgency of needs in many of these areas, it is criminal for people to spend time rediscovering the truths already known—to go through all the growing and application pains which have previously been experienced by others.

We need fundamentally a basic system of communication in this country by which the accumulated knowledge and experience of all can be made available to all. We need an effective instrumentation-automation information, storage and retrieval system. This would embrace statistics of the industry and of the markets, technological developments and operational experience.

One major facet of the communications problem is a need—an urgent need—for a much more effective cross-fertilization between those working on military developments and those concerned with civilian application.

In order to get the maximum mileage out of our research and development dollar, both within the military and within industry, we need to have a much greater liaison activity so that the developments designed for one field of application can properly be appraised and related and correlated with the needs of other industry areas.

Specifically, the military programs of research and development have made great strides in a technological sense and have pushed back the capability frontiers of equipments far beyond those presently utilized in industry. There is a need for closing that gap, for bringing together the people from industry with their appreciation of their problems and the people with the knowledge of the military progress. Perhaps some neutral unbiased group jointly supported by military and civilian interests could evaluate the military developments and their application and adaptation to civilian production. This can be justified in terms of its effect on a national economy. It can be justified in terms of greater return for every military dollar spent on research and development. It can be justified on the basis that the increased productivity and lower costs of the resulting civilian industry will in fact result in lower acquisition costs of material by the military in its other purchasing programs.

Now there have been and there are activities which are directed toward meeting some of these needs. The Office of Basic Instrumentation of the National Bureau of Standards is an exemplary organization in its concept and limited functioning. It, too, is plagued, as I understand it, by manpower problems.

The various technical societies through the medium of the various technical meetings and symposia they hold are contributing substantially to the communications problem. The National Science Foundation through its support of basic scholarship is contributing somewhat to the manpower problem, but they are only scratching the surface with respect to the magnitude of the problem before them.

The establishment of the Foundation for Instrumentation Education and Research to which I previously referred is, as far as I know, the first specific directed activity of the instrument-automation industry as represented through the membership of the board of trustees.

To approach some of these problems that foundation, to be com-

pletely effective, will need the active support and cooperation of the users of automation equipments and techniques, civilian and military. They will need the active participation of several Government agencies. To my mind, it is the best device available on the horizon for accomplishing several of the objectives which are implicit in the problems I have described.

In summary, I should like to leave you the basic recommendations which are inherent in my previous remarks. In all of these recommendations I wish to emphasize that the Government need not undertake the actual operating details. It is rather that we need the unified approach and direction which the Government is in the best position to offer.

First, the Government should consider the establishment of a centralized, information-coordination storage and retrieval system, cooperatively planned, operated and utilized by government and industry.

Second, the Government should encourage activities designed to enhance the cross-fertilization of military development and industrial adaptation.

Third, the Government should attempt within the bounds of practicality to contribute to the support of research and development activities in small business in the field of automation techniques and equipment by letting military contracts to such organizations. The plea here is for a broader base of participation in Government research and development programs relating to instrumentation.

My fourth recommendation is with respect to the educational needs of industry and the military from the standpoint of the enhanced utilization of existing automation techniques and equipments and the concept and development of new techniques and equipments.

The Government should consider programs by which it can enhance the application of these equipments and techniques in these areas through the establishment of a series of locally based educational activities. This might take a form similar to the engineering, science and management war-training programs instituted during the early stages of the last war, or support for some of the current cooperative industry-technical society programs now in the experimental stage.

My fifth recommendation has to do with manpower development. The Federal Government should undertake immediately programs designed to strengthen our science education in our secondary school systems. First it is necessary to impress on those responsible for educational curriculums the need for instituting basic science courses in physics, chemistry, and mathematics. Every effort should be made to improve the quality and the quantity of our science teachers, particularly at the high-school level.

There must be a coordinated, integrated program of orientation and indoctrination of appropriate potential teachers and existing teachers with respect to the needs of our economy. An appalling lack of scientific instruction of any kind exists in most of our high schools.

My sixth recommendation is that the United States Government should, through the military, institute basic scientific courses of training for the men under draft in the service.

My seventh point of recommendation is that—when agencies designed to meet some of these needs are brought into existence, such as the Office of Basic Instrumentation within the Government and the Foundation for Instrumentation Education and Research outside the

Government, when these machineries are established and it is determined that they provide a mechanism by which some of these objectives can be realized, then the various Government agencies should cooperatively join and participate in the programs of those groups so that those programs may be advanced.

There are my seven recommendations to this committee. I don't think they are sufficiently detailed so that they can be formulated in terms of possible legislation at this time. But I think as principles of problems to be resolved they do point the way for the establishment of a series of advisory committees to the Congress and to various Government agencies, such committees to include representatives of the Government and of industry, both the instrument-manufacturing and the instrument-using groups. These committees should be able to sit down and give birth to specific proposals leading hopefully toward legislation.

I add only one thing in closing. One of the major characteristics of these problems is their urgency. These problems are not problems which are to be studied and treated at some distant time. They are problems which exist now and they are needs which exist now. And I state flatly that, as of this moment, automation is being held back and our national security is being jeopardized by the existence and the lack of solution to these problems. The rate at which automation can be introduced in industry will be lessened by every day that these problems go unresolved.

I appreciate the opportunity of being able to present this information to you.

(Appendixes A-1, A-2, A-3, B and C, referred to above, are as follows:)

#### APPENDIX A-1

[From the Advance Report, 1954 Census of Manufacturers, April 1956, Series MC-38-1.1]

#### SCIENTIFIC INSTRUMENTS INDUSTRY

(S. I. C. Code 3811)

During 1954, manufacturers in the scientific instruments industry shipped products valued at \$562 million, an increase of 379 percent over 1947, according to preliminary results obtained from the 1954 census of manufactures conducted by the Bureau of the Census, Department of Commerce. Average employment in this industry has increased 139 percent since 1947 (when the last census of manufactures was taken) to a total of 43,900 employees in 1954. Value added by manufacture in the industry amounted to \$342 million in 1954, an increase of 350 percent over 1947. "Value added" is derived by subtracting the cost of materials, etc., from the value of shipments. It avoids, therefore, the duplication in the value of shipments which result from the use of products of some establishments as materials by others and is the best measure available for comparing the relative economic importance of manufacturing among industries and geographic areas. Changes between the two census years for other key measures of activity for the industry are shown in table 1. No adjustments have been made for changes in price levels between the 2 years. All figures in this report are preliminary and, therefore, subject to revision in the final industry bulletin.

The scientific instruments industry represents manufacturing establishments engaged primarily in the manufacture of laboratory, scientific, and engineering instruments such as nautical, navigational, aeronautical, surveying, drafting, mathematical instruments, and instruments for laboratory work and scientific research (except microscopes and telescopes, which are in "Industry 3831, optical instruments and lenses). Establishments primarily manufacturing surgical, medical, and dental instruments are classified in group 384, "Medical equipment and supplies; mechanical measuring and controlling instruments in



"Industry 3821, mechanical measuring instruments"; machinists' precision measuring tools in "Industry 3545, metalworking machinery attachments; and instruments for recording electrical quantities and characteristics in "Industry 3613, electrical measuring instruments." The industry classification for scientific instruments used in the 1954 census of manufactures is based on the Standard Industrial Classification Manual, volume I, Manufacturing Industries, 1945 edition.

The value of shipments, as reported by establishments classified in the scientific instruments industry, consisted not only of products described above as primary to the industry, but also included the value of secondary products (which are primary to other industries). In tables 1 and 2, the \$562 million total value of shipments reported by establishments classified in "Industry 3811, scientific instruments," consisted of \$520 million manufactured products and \$42 million miscellaneous receipts for contract work, repair work, sales of scrap, etc. The \$520 million product shipments were accounted for by \$394 million of scientific instruments, and \$126 million of products primary to other industries (e. g., electrical and mechanical measuring instruments, electric motors, aircraft parts). Thus, the industry's shipments of scientific instruments represented 76 percent of its total manufactured product shipments (primary and secondary). This figure describes the "primary product specialization ratio," that is, the extent to which plants classified in an industry "specialize" in making products regarded as primary to the industry. The 1947 primary product specialization ratio for the industry was 81.

The industry's total value of shipments should be clearly distinguished from the total value of primary products of the industry shipped by all producers. The latter figure, appearing in table 3, indicates that \$620 million value of scientific instruments were shipped by all producers. Of this total, 64 percent was shipped by plants classified in industry 3811, while the remainder was shipped as secondary products by plants classified in other industries. The figure 64 percent is known as the coverage ratio, that is, it measures the extent to which all shipments of primary products of an industry are covered by plants classified in that industry, as distinguished from secondary producers elsewhere. In 1947, the coverage ratio for this industry was 84. This significant decrease in coverage ratios between the 2 years is due to the increasing production of aircraft flight instruments by establishments primarily producing ordnance equipment. Such establishments in 1954 accounted for about one-sixth of all of the scientific instruments shipped.

Relatively low coverage and specialization ratios are characteristic of the several instruments industries. There tends to be considerable overlap among scientific instruments, mechanical measuring instruments, electrical measuring instruments and fire control equipment as well as a characteristic of establishments in this group of industries to produce secondary products such as motors, optical instruments, fire control equipment and other products which require similar production facilities, materials, etc. Since the classification of an establishment is determined by its principal products in a given year, a relatively small shift in the emphasis on a given line of production (e. g., scientific instruments to electrical measuring instruments, or vice versa), may change the classification of the establishment and result in sizable variations in the general statistics such as employment, cost of materials, etc. for both industries affected. Such developments are not wholly valid measures of changes in activity of the industries but reflect important differences in the industry classification of the same establishment from one census year to the next. A somewhat more accurate picture of the changes in activity in the instruments industry is obtained by aggregating the three instruments industries. The product data on instruments are, of course, not affected by these shifts in industry classification of individual establishments.

The general statistics (employment, payrolls, cost of materials, value of shipments, etc.) are reported for each establishment as a whole. Aggregates of such data for an industry reflect not only the primary activities of the establishments in that industry, but also their activities in the manufacture of secondary products and receipts for their other activities (contract work on materials owned by others, repair work, etc.). This fact should be taken into account in comparing industry statistics (tables 1 and 2) with product statistics (table 3) which show the shipments by all producers of the primary products of the industry.

More detailed figures for this industry will appear later in the Census Bulletin, MC-38A, Instruments; Surgical, Dental, and Ophthalmic Goods, which will be published and offered for sale at a later date by the Superintendent of Documents, United States Government Printing Office. Also, in this bulletin, there will be a comprehensive discussion of such concepts as industry, establishment, secondary production, as well as the various statistical items such as employment, value added, etc. Similar advance reports and final bulletins will be issued for other industries during the coming months. A summary of preliminary United States totals for each manufacturing industry and totals for each State will also be issued in the next few months. Advance reports for individual States will appear in May and June of 1956, to be followed later in the year by the detailed State bulletins. (Order blanks which list these reports and bulletins and their prices may be obtained from local United States Department of Commerce field offices or by writing to: Bureau of the Census, Washington 25, D. C.)

The 1954 Census of Manufactures is the 26th such census of the United States since 1809. For 1954, it was conducted jointly with the Censuses of Business (Wholesale, Retail, and Services) and Mineral Industries, covering continental United States, Alaska, and Hawaii. Present legislation provides for a Census of Manufactures every 5 years, with the next one scheduled to cover 1958. In addition, the law authorizes annual sample surveys to be conducted in interim years.

TABLE 1.—General statistics for the scientific instruments industry, in the United States, 1954 and 1947 (Standard Industrial Classification Code 3811)

Item	Unit of measure	1954	1947 <sup>1</sup>	Percent change 1947-54
Establishments.....	Number.....	367	215	+71
All employees:				
Number.....	Thousands.....	43.9	18.4	+139
Payroll.....	Million dollars.....	210.5	56.0	+276
Production workers:				
Number.....	Thousands.....	29.7	13.5	+120
Man-hours.....	Millions.....	61.5	27.2	+126
Wages.....	Million dollars.....	129.4	37.7	+243
Value added by manufacture <sup>2</sup> .....	do.....	341.6	75.9	+350
Cost of materials, fuel, electricity, and contract work <sup>3</sup> .....	do.....	220.5	41.4	+433
Value of shipments <sup>4</sup> .....	do.....	562.1	117.3	+379
Capital expenditures, new.....	do.....	8.6	4.5	+91

<sup>1</sup> Revised.

<sup>2</sup> Value of shipments less cost of materials, supplies, fuel, electric energy, and contract work.

<sup>3</sup> Excludes cost of products bought and resold in the same condition.

<sup>4</sup> Includes, for all establishments classified in this industry, not only (a) their value of products "primary" to the industry, but also (b) their value of "secondary" products, which are primary to other industries, and (c) their "miscellaneous receipts" for repair work, sales of scrap, installation of own products, etc. Excludes sales of products bought and resold in the same condition.

TABLE 2.—General statistics for the scientific instruments industry (S. I. C. Code 3811), by region and selected States: 1954 and 1947

Region and State	1954										1947 <sup>a</sup>	
	Establishments (number)	All employees		Production workers			Value added by manufacture <sup>2</sup>	Cost of materials, etc. <sup>3</sup>	Value of shipments <sup>4</sup>	Capital expenditures, new	All employees (number)	Value added by manufacture <sup>2</sup>
		Number	Payroll	Number	Man-hours	Wages						
United States, total <sup>5</sup> .....	367	43,933	Thou- sands \$210,530	29,707	Thou- sands \$61,472	Thou- sands \$129,360	Thou- sands \$341,559	Thou- sands \$220,532	Thou- sands \$562,119	Thou- sands \$8,599	18,419	Thou- sands \$75,922
New England.....	36	3,559	14,941	2,423	4,965	8,677	26,785	11,233	38,048	1,119	585	2,766
Massachusetts.....	23	2,387	10,294	1,693	3,367	6,168	16,514	6,705	23,219	807	549	2,652
Middle Atlantic.....	113	19,019	96,412	12,856	26,343	59,770	138,156	100,508	238,664	3,981	12,056	49,076
New York.....	54	5,403	28,515	3,637	7,470	17,279	36,524	17,206	53,731	903	5,294	22,611
New Jersey.....	33	11,133	57,544	7,379	14,898	34,943	80,548	69,034	149,583	2,758	5,959	24,035
Pennsylvania.....	26	2,481	10,351	1,840	3,974	7,547	21,082	14,266	35,349	319	803	2,430
East North Central.....	68	8,402	40,436	5,809	12,759	26,417	71,671	61,168	132,840	1,216	2,823	11,972
Illinois.....	30	2,118	9,522	1,421	3,121	5,821	14,104	8,568	22,672	624	2,256	9,483
West North Central.....	15	6,947	31,306	4,269	8,751	17,233	57,961	24,319	82,281	812	1,177	801
South.....	51	2,563	11,172	1,755	3,580	6,698	17,769	9,361	27,131	598	1,327	5,224
Maryland.....	12	1,079	4,511	715	1,406	2,664	6,774	4,431	11,206	71	846	3,138
Mountain.....	9	72	336	62	122	270	508	482	991	16	.....	.....
Pacific.....	75	3,374	15,924	2,529	4,949	10,292	28,705	13,457	42,163	853	1,451	6,083
California.....	70	3,154	15,157	2,344	4,645	9,720	27,261	12,901	40,162	818	(?)	(?)

<sup>1</sup> Each producing State not shown separately has been withheld either (a) to avoid disclosing figures for individual companies; or (b) because the State had less than 1,000 employees in the industry. (Additional publishable detail will appear in the final census bulletin for this industry.)

<sup>2</sup> Value of shipments less cost of materials, supplies, fuel, electric energy, and contract work.

<sup>3</sup> Includes cost of materials, fuel, electricity, and contract work; excludes cost of products bought and resold in the same condition.

<sup>4</sup> Includes, for all establishments classified in this industry, not only (a) their value of products primary to the industry, but also (b) their value of secondary products, which are primary to other industries, and (c) their miscellaneous receipts for repair work, sales of scrap, installation of own products, etc. Excludes sales of products bought and resold in the same condition.

<sup>5</sup> Revised.

<sup>6</sup> Sum of regional figures may not equal United States total, due to independent rounding.

<sup>7</sup> Withheld to avoid disclosing figures for individual companies.

TABLE 3.—Value of scientific instruments shipped by all producers in the United States, 1954 and 1947 (includes value of those products reported both by establishments classified in the scientific instruments industry and by those establishments making these items as secondary products in other industries)

Product code	Product	Total value of shipments including interplant transfers	
		1954	1947
3811.....	Scientific instruments, total.....	Thousands 1 \$620,427	Thousands 2 \$107,445
38111.....	Aircraft and nautical instruments, except aircraft engine instruments.....	515,834	(*)
3811111.....	Aircraft flight instruments and automatic pilots.....	378,897	20,478
3811198.....	Other aircraft, nautical, and navigational instruments.....	136,935	(*)
3811211.....	Surveying and drafting instruments and apparatus.....	17,998	3 19,658
3811311.....	Other scientific instruments and laboratory apparatus (excluding electrical quantity measuring instruments, and industrial process instruments).	86,594	4 67,309

<sup>1</sup> Of this total 64 percent was shipped by plants classified in the scientific instruments industry; the remainder was shipped as secondary products by plants classified in other industries.

<sup>2</sup> Revised.

<sup>3</sup> Not available.

<sup>4</sup> Data for other aircraft, nautical and navigational instruments for 1947 are included with "Other Scientific Instruments and Laboratory Apparatus" (code 3811311).

[From the Advance Report 1954 Census of Manufactures, April 1956, Series MC-38-1.2]

#### OPTICAL INSTRUMENTS AND LENSES INDUSTRY

(S. I. C. Code 3831)

During 1954, manufacturers in the optical instruments and lenses industry shipped products valued at \$118 million, an increase of 160 percent over 1947, according to preliminary results obtained from the 1954 census of manufactures conducted by the Bureau of the Census, Department of Commerce. Average employment in this industry has increased 49 percent since 1947 (when the last census of manufactures was taken) to a total of 12,700 employees in 1954. Value added by manufacture in the industry amounted to \$86 million in 1954, an increase of 153 percent over 1947. "Value added" is derived by subtracting the cost of materials, etc., from the value of shipments. It avoids, therefore, the duplication in the value of shipments which results from the use of products of some establishments as materials by others, and is the best measure available for comparing the relative economic importance of manufacturing among industries and geographic areas. Changes between the 2 census years for other key measures of activity for the industry are shown in table 1. No adjustments have been made for changes in price levels between the 2 years. All figures in this report are preliminary and, therefore, subject to revision in the final industry bulletin.

The optical instruments and lenses industry represents manufacturing establishments engaged primarily in grinding optical lenses and prisms and in manufacturing microscopes, telescopes, field and opera glasses, and related optical equipment, such as refractometers, spectrometers, spectroscopes, colorimeters, polariscopes, and optical measuring instruments. (Establishments primarily manufacturing optical glass blanks are classified in Industry 3211, Flat glass; the grinding of eyeglass lenses and the manufacture of other ophthalmic goods,

such as frames or fittings, are classified in Industry 3851. Ophthalmic goods; and those engaged in manufacturing sighting and fire-control instruments but not engaged in manufacturing optical components are in industry 1941, sighting and fire-control equipment.) The industry classification for optical instruments and lenses used in the 1954 census of manufactures is based on the Standard Industrial Classification Manual, volume I, Manufacturing Industries, 1945 edition.

The value of shipments, as reported by establishments classified in the optical instruments and lenses industry, consisted not only of products described above as primary to the industry, but also included the value of secondary products (which are primary to other industries). In tables 1 and 2, the \$118 million total value of shipments reported by establishments classified in Industry 3831, Optical instruments and lenses, consisted of \$113 million manufactured products and \$5 million miscellaneous receipts for contract work, repair work, sales of scrap, etc. The \$113 million product shipments were accounted for by \$93 million of optical instruments and lenses and \$20 million of products primary to other industries (e. g., photographic equipment and scientific instruments). Thus, the industry's shipments of optical instruments and lenses represented 82 percent of its total manufactured product shipments (primary and secondary). This figure describes the "primary products specialization ratio," that is, the extent to which plants classified in an industry "specialize" in making products regarded as primary to the industry. The 1947 primary product specialization ratio for the industry was 93. This change of 11 percent reflects the increased production of photographic equipment and parts by establishments in Industry 3831.

The industry's total value of shipments should be clearly distinguished from the total value of primary products of the industry shipped by all producers. The latter figure, appearing in table 3, indicates that \$122 million value of optical instruments and lenses were shipped by all producers. Of this total 76 percent was shipped by plants classified in Industry 3831, while the remainder was shipped as secondary products by plants classified in other industries. The figure 76 percent is known as the coverage ratio, that is, it measures the extent to which all shipments of primary products of an industry are covered by plants classified in that industry, as distinguished from secondary producers elsewhere.

The general statistics (employment, payrolls, cost of materials, value of shipments, etc.) are reported for each establishment as a whole. Aggregates of such data for an industry reflect not only the primary activities of the establishments in that industry, but also their activities in the manufacture of secondary products and receipts for their other activities (contract work on materials owned by others, repair work, etc.). This fact should be taken into account in comparing industry statistics (tables 1 and 2) with product statistics (table 3) which show the shipments by all producers of the primary products of the industry.

More detailed figures for this industry will appear later in the Census Bulletin, MC-38A, Instruments; Surgical, Dental, and Ophthalmic Goods, which will be published and offered for sale at a later date by the Superintendent of Documents, United States Government Printing Office. Also, in this bulletin, there will be a comprehensive discussion of such concepts as industry, establishment, secondary

production, as well as the various statistical items such as employment, value added, etc. Similar advance reports and final bulletins will be issued for other industries during the coming months. A summary of preliminary United States totals for each manufacturing industry and totals for each State will also be issued in the next few months. Advance reports for individual States will appear in May and June of 1956, to be followed later in the year by the detailed State bulletins. (Order blanks which list these reports and bulletins and their prices may be obtained from local U. S. Department of Commerce field offices or by writing to: Bureau of the Census, Washington 25, D. C.)

The 1954 census of manufactures is the 26th such census of the United States since 1809. For 1954, it was conducted jointly with the censuses of business (wholesale, retail, and services) and mineral industries, covering continental United States, Alaska, and Hawaii. Present legislation provides for a census of manufactures every 5 years, with the next one scheduled to cover 1958. In addition, the law authorizes annual sample surveys to be conducted in interim years.

TABLE 1.—General statistics for the optical instruments and lenses industry in the United States, 1954 and 1947 (Standard Industrial Classification Code 3831)

Item	Unit of measure	1954	1947 <sup>1</sup>	Percent change 1947-54
Establishments.....	Number.....	205	115	+78
All employees:				
Number.....	Thousands.....	12.7	8.5	+49
Payroll.....	Million dollars.....	58.2	24.7	+136
Production workers:				
Number.....	Thousands.....	9.4	6.7	+40
Man-hours.....	Millions.....	18.6	13.6	+37
Wages.....	Million dollars.....	38.2	18.0	+112
Value added by manufacture <sup>1</sup> .....	do.....	86.4	34.1	+153
Cost of materials, fuel, electricity, and contract work <sup>2</sup> .....	do.....	31.3	11.3	+178
Value of shipments <sup>3</sup> .....	do.....	117.6	45.3	+160
Capital expenditures, new.....	do.....	4.6	1.5	+207

<sup>1</sup> Value of shipments less cost of materials, supplies, fuel, electric energy, and contract work.

<sup>2</sup> Excludes cost of products bought and resold in the same condition.

<sup>3</sup> Includes, for all establishments classified in this industry, not only (a) their value of products "primary" to the industry, but also (b) their value of "secondary" products, which are primary to other industries, and (c) their "miscellaneous receipts" for repair work, sales of scrap, installation of own products, etc. Excludes sales of products bought and resold in the same condition.

TABLE 2.—General statistics for the optical instruments and lenses industry (Standard Industrial Classification Code 3831), by regions and States: 1954 and 1947

Region and State <sup>1</sup>	1954										1947	
	Establishments (number)	All employees		Production workers			Value added by manufacture <sup>2</sup>	Cost of materials, etc. <sup>3</sup>	Value of shipments <sup>4</sup>	Capital expenditures, new	All employees (number)	Value added by manufacture <sup>2</sup>
		Number	Payroll	Number	Man-hours	Wages						
United States, total <sup>5</sup> .....	205	12,658	Thou- sands \$58,175	9,447	Thou- sands 18,555	Thou- sands \$38,256	Thou- sands \$86,379	Thou- sands \$31,268	Thou- sands \$117,648	Thou- sands \$4,554	8,478	Thou- sands \$34,090
New England.....	26	1,501	7,013	1,016	2,221	4,170	11,871	5,182	17,054	339	596	2,344
Middle Atlantic.....	93	7,972	37,588	5,903	11,146	24,584	53,044	15,756	68,800	2,301	6,605	26,261
New York.....	68	7,611	36,245	5,601	10,535	23,603	51,283	14,859	66,144	2,243	6,342	25,261
North Central.....	40	1,247	5,044	1,015	2,107	3,684	7,271	2,983	10,254	261	( <sup>6</sup> )	( <sup>6</sup> )
South.....	10	521	1,833	444	888	1,298	4,116	1,012	5,129	44	( <sup>6</sup> )	( <sup>6</sup> )
Pacific.....	36	1,414	6,697	1,066	2,190	4,510	10,075	6,334	16,410	1,605	185	( <sup>6</sup> )
California.....	33	1,372	6,517	1,035	2,128	4,380	9,728	6,173	15,901	1,578	185	( <sup>6</sup> )

<sup>1</sup> Each producing State not shown separately has been withheld either (a) to avoid disclosing figures for individual companies; or (b) because the State had less than 1,000 employees in the industry. (Additional publishable detail will appear in the final census bulletin for this industry.)

<sup>2</sup> Value of shipments less cost of materials, supplies, fuel, electric energy, and contract work.

<sup>3</sup> Includes cost of materials, fuel, electricity, and contract work; excludes cost of products bought and resold in the same condition.

<sup>4</sup> Includes, for all establishments classified in this industry, not only (a) their value of products primary to the industry, but also (b) their value of secondary products, which are primary to other industries, and (c) their miscellaneous receipts for repair work, sales of scrap, installation of own products, etc. Excludes sales of products bought and resold in the same condition.

<sup>5</sup> Sum of regional figures may not equal United States total, due to independent rounding.

<sup>6</sup> Withheld to avoid disclosing figures for individual companies.

TABLE 3.—Value of optical instruments and lenses shipped by all producers in the United States, 1954 and 1947 (includes value of those products reported both by establishments classified in the optical instruments and lenses industry and by those establishments in other industries making these items as "secondary" products)

Product code	Product	Value of shipments including interplant transfers	
		1954	1947
3531.....	Optical instruments and lenses, total.....	Thousands \$121,814	Thousands \$55,194
3531011.....	Photographic and projection lenses and prisms, for sale separately.	31,178	21,087
3531031.....	Field glasses, prismatic and nonprismatic; terrestrial and celestial telescope.	9,741	4,293
3531051.....	Microprojectors, and photomicrographic equipment.....	977	} 29,754
3531053.....	Microscopes.....	6,854	
3531071.....	Optical measuring instruments (refractometers, colorimeters, spectrometers, spectrographs, spectrophotometers, polariscopes, contour projectors, metallographic equipment, etc.).	20,719	
3531098.....	Other and not specified optical instrument, lenses, parts and accessories.	52,345	

<sup>1</sup> Of this total, 76 percent was shipped by plants classified in the optical instruments and lenses industry.

<sup>2</sup> Revised.

[From the Advance Report, 1954 Census of Manufactures, April 1956, Series MC-38-1.4]

#### MECHANICAL MEASURING INSTRUMENTS INDUSTRY

(S. I. C. Code 3821)

During 1954, manufacturers in the mechanical measuring instruments industry shipped products valued at \$792 million, an increase of 87 percent over 1947, according to preliminary results obtained from the 1954 Census of Manufactures conducted by the Bureau of the Census, Department of Commerce. Average employment in this industry has increased 13 percent since 1947 (when the last Census of Manufactures was taken) to a total of 68.5 thousand employees in 1954. Value added by manufacture in the industry amounted to \$534 million in 1954, an increase of 90 percent over 1947. "Value added" is derived by subtracting the cost of materials, etc., from the value of shipments. It avoids, therefore, the duplication in the value of shipments which results from the use of products of some establishments as materials by others and is the best measure available for comparing the relative economic importance of manufacturing among industries and geographic areas. Changes between the two census years for other key measures of activity for the industry are shown in table 1. No adjustments have been made for changes in price levels between the 2 years. All figures in this report are preliminary and, therefore, subject to revision in the final industry bulletin.

The mechanical measuring instruments industry represents manufacturing establishments engaged primarily in the manufacturing of mechanical instruments for indicating, recording, measuring, and controlling temperature, pressure, mechanical motion, rotation, flow, liquid level, humidity, density, acidity, alkalinity, and combustion; dial pressure gages; physical-property testing apparatus such as hardness, tension, compression, torsion, ductility, and elasticity testing apparatus; and instruments for household and office use such as thermometers, barometers, and grain gages. Establishments primarily manufacturing instruments for indicating, measuring, and recording electrical quantities and characteristics are classified in industry 3613, electrical measuring instruments; watches and clocks in industry 3871, watches and clocks; and measuring and dispensing pumps in industry 3586, measuring and dispensing pumps. The industry classification for mechanical measuring instruments used in the 1954 Census of Manufactures is based on the Standard Industrial Classification Manual, volume I, Manufacturing Industries, 1945 edition.



The value of shipments, as reported by establishments classified in the mechanical measuring instruments industry, consisted not only of products described above as primary to the industry, but also included the value of secondary products (which are primary to other industries). In tables 1 and 2, the \$792 million total value of shipments reported by establishments classified in industry 3821, Mechanical Measuring Instruments, consisted of \$764 million manufactured products and \$28 million miscellaneous receipts for contract work, repair work, sales of scrap, etc. The \$764 million product shipments were accounted for by \$667 million of mechanical measuring instruments and \$97 million of products primary to other industries (e. g., ordnance, valves, and fittings, scientific instruments). Thus, the industry's shipments of mechanical measuring instruments represented 87 percent of its total manufactured product shipments (primary and secondary). This figure describes the "primary product specialization ratio," that is, the extent to which plants classified in an industry "specialize" in making products regarded as primary to the industry. The 1947 primary product specialization ratio for the industry was 83.

The industry's total value of shipments should be clearly distinguished from the total value of primary products of the industry shipped by all producers. The latter figure, appearing in table 3, indicates that \$845 million value of mechanical measuring instruments and other products primary to industry 3821 were shipped by all producers. Of this total, 79 percent was shipped by plants classified in industry 3821, while the remainder was shipped as secondary products by plants classified in other industries. The figure 79 percent is known as the "coverage ratio," that is, it measures the extent to which all shipments of primary products of an industry are "covered" by plants classified in that industry, as distinguished from secondary producers elsewhere.

The general statistics (employment, payrolls, cost of materials, value of shipments, etc.) are reported for each establishment as a whole. Aggregates of such data for an industry reflect not only the primary activities of the establishments in that industry, but also their activities in the manufacture of secondary products and receipts for their other activities (contract work on materials owned by others, repair work, etc.). This fact should be taken into account in comparing industry statistics (tables 1 and 2) with product statistics (table 3) which show the shipments by all producers of the primary products of the industry.

More detailed figures for this industry will appear later in the Census Bulletin, MC-38A, Instruments; Surgical, Dental, and Ophthalmic Goods, which will be published and offered for sale at a later date by the Superintendent of Documents, United States Government Printing Office. Also, in this bulletin, there will be a comprehensive discussion of such concepts as "industry," "establishment," "secondary production," as well as the various statistical items such as "employment," "value added," etc. Similar advance reports and final bulletins will be issued for other industries during the coming months. A summary of pre-

liminary United States totals for each manufacturing industry and totals for each State will also be issued in the next few months. Advance reports for individual States will appear in May and June of 1956, to be followed later in the year by the detailed State bulletins. (Order blanks which list these reports and bulletins and their prices may be obtained from local United States Department of Commerce field offices or by writing to: Bureau of the Census, Washington 25, D. C.)

The 1954 Census of Manufactures is the 20th such census of the United States since 1809. For 1954, it was conducted jointly with the Censuses of Business (Wholesale, Retail, and Services) and Mineral Industries, covering continental United States, Alaska, and Hawaii. Present legislation provides for a Census of Manufactures every 5 years, with the next one scheduled to cover 1958. In addition, the law authorizes annual sample surveys to be conducted in interim years.

TABLE 1.—General statistics for the mechanical measuring instruments industry, in the United States, 1954 and 1947 (Standard Industrial Classification Code 3821)

Item	Unit of measure	1954	1947	Percent change 1947-54
Establishments.....	Number.....	609	466	+31
All employees:				
Number.....	Thousands.....	68.5	60.5	+13
Payroll.....	Million dollars.....	298.1	173.9	+71
Production workers:				
Number.....	Thousands.....	47.7	46.7	+2
Man-hours.....	Millions.....	96.6	93.1	+4
Wages.....	Million dollars.....	187.7	122.4	+53
Value added by manufacture <sup>1</sup> .....	do.....	534.2	281.5	+80
Cost of materials, fuel, electricity, and contract work <sup>2</sup> .....	do.....	256.4	141.9	+81
Value of shipments <sup>3</sup> .....	do.....	792.2	423.4	+87
Capital expenditures, new.....	do.....	21.4	8.8	+143

<sup>1</sup> Value of shipments less cost of materials, supplies, fuel, electric energy, and contract work.

<sup>2</sup> Excludes cost of products bought and resold in the same condition.

<sup>3</sup> Includes, for all establishments classified in this industry, not only (a) their value of products "primary" to the industry, but also (b) their value of "secondary" products, which are primary to other industries, and (c) their "miscellaneous receipts" for repair work, sales of scrap, installation of own products, etc. Excludes sales of products bought and resold in the same condition.

TABLE 2.—General statistics for the mechanical measuring instruments industry (Standard Industrial Classification Code 3821), by region and selected States: 1954 and 1947

Region and State <sup>1</sup>	1954										1947	
	Establishments (number)	All employees		Production workers			Value added by manu- facture <sup>2</sup>	Cost of materials, etc. <sup>3</sup>	Value of ship- ments <sup>4</sup>	Capital ex- pendi- tures, new	All em- ployees (number)	Value added by manu- facture <sup>2</sup>
		Number	Payroll	Number	Man- hours	Wages						
United States, total <sup>5</sup> .....	609	68,458	\$298,144	47,679	96,633	\$187,676	\$534,240	\$256,384	\$792,198	\$21,424	60,481	\$281,482
New England.....	74	9,723	41,614	6,698	13,745	25,290	77,419	32,547	111,539	3,347	8,481	42,172
Massachusetts.....	37	5,319	21,956	3,672	7,582	13,189	39,516	17,833	57,350	1,306	2,963	( <sup>6</sup> )
Connecticut.....	32	4,326	19,340	2,976	6,071	11,945	37,393	14,486	53,453	2,032	5,319	26,722
Middle Atlantic.....	213	22,114	96,965	15,575	30,431	62,260	165,043	80,693	245,737	4,587	21,362	99,328
New York.....	127	6,852	28,380	5,473	10,537	20,754	54,273	22,429	76,703	981	10,310	46,557
New Jersey.....	39	1,863	7,835	1,442	2,803	5,248	14,069	7,989	22,060	723	1,596	6,412
Pennsylvania.....	47	13,397	60,749	8,659	17,090	36,255	96,698	50,272	146,972	2,882	9,456	46,359
East North Central.....	153	19,653	85,530	13,490	28,365	53,241	150,305	85,729	236,034	5,017	17,323	( <sup>6</sup> )
Ohio.....	53	5,681	24,127	3,423	8,270	14,527	37,384	19,225	56,610	1,772	3,897	18,154
Indiana.....	8	1,642	6,303	1,321	2,669	4,532	14,865	6,246	21,111	636	1,558	( <sup>6</sup> )
Illinois.....	55	6,820	30,597	4,608	9,302	17,912	57,964	26,695	84,659	1,395	6,694	30,529
Michigan.....	25	3,275	14,895	2,489	4,862	9,724	23,336	24,013	47,349	448	2,174	7,971
Wisconsin.....	12	2,235	9,607	1,647	3,361	6,544	16,755	9,549	26,304	766	3,000	( <sup>6</sup> )
West North Central.....	26	7,867	33,675	5,349	10,974	19,688	68,977	21,294	90,271	2,565	( <sup>6</sup> )	( <sup>6</sup> )
Missouri.....	10	1,598	7,576	959	1,938	3,935	15,165	6,238	21,407	261	1,431	( <sup>6</sup> )
South.....	63	2,900	11,610	2,278	4,489	8,358	20,514	9,995	30,509	1,151	2,198	10,636
Mountain.....	8	61	214	43	82	128	263	381	645	38	( <sup>6</sup> )	( <sup>6</sup> )
Pacific.....	72	6,135	28,533	4,242	8,643	18,708	51,717	25,742	77,460	4,714	( <sup>6</sup> )	( <sup>6</sup> )
California.....	66	6,021	28,027	4,160	8,381	18,407	50,777	25,275	76,053	4,653	3,173	13,167

<sup>1</sup> Each producing State not shown separately has been withheld either (a) to avoid disclosing figures for individual companies; or (b) because the State had less than 1,000 employees in the industry. (Additional publishable detail will appear in the final census bulletin for this industry.)

<sup>2</sup> Value of shipments less cost of materials, supplies, fuel, electric energy, and contract work.

<sup>3</sup> Includes cost of materials, fuel, electricity, and contract work; excludes cost of products bought and resold in the same condition.

<sup>4</sup> Includes, for all establishments classified in this industry, not only (a) their value of products primary to the industry, but also (b) their value of secondary products, which are primary to other industries, and (c) their miscellaneous receipts for repair work, sales of scrap, installation of own products, etc. Excludes sales of products bought and resold in the same condition.

<sup>5</sup> Sum of regional figures may not equal United States total, due to independent rounding.

<sup>6</sup> Withheld to avoid disclosing figures for individual companies.

TABLE 3.—Quantity and value of mechanical measuring instruments shipped by all producers in the United States, 1954 and 1947 (includes quantity and value of those products reported both by establishments classified in the mechanical measuring instruments industry and by those establishments making these items as secondary products in other industries)

Product code	Product	Total shipments including interplant transfers			
		1954		1947	
		Quantity (1,000 units)	Value	Quantity (1,000 units)	Value
3821.....	Mechanical measuring instruments, total.....	(1)	<sup>2</sup> \$845,342	(1)	<sup>2</sup> \$425,277
3821111.....	Aircraft engine instruments.....	(1)	80,257	(1)	4,992
38212.....	Integrating meters, nonelectrical type.....	(1)	106,174	(1)	63,262
3821211.....	Gasimeters.....	1,609	37,840	1,335	22,459
3821231.....	Watermeters.....	1,352	37,298	1,338	23,246
3821298.....	Other liquid meters (except electric), including gasoline dispensing <sup>3</sup> .....	(1)	31,036	(1)	17,557
38213.....	Industrial process instruments, including indicating, recording, and controlling instruments (excluding aircraft, nautical, navigational, electrical quantity measuring and automotive types).....	(1)	271,518	(1)	<sup>4</sup> 168,369
	Temperature thermometers (glass stem and bimetal):.....				
3821311.....	Industrial and laboratory.....	(1)	11,347	(1)	12,549
3821313.....	Clinical.....	10,789	6,320	9,296	5,360
3821315.....	Household.....	13,642	6,808	13,494	4,051
3821321.....	Temperature instruments, other than thermometers.....	(1)	55,268	(1)	<sup>4</sup> 44,120
3821331.....	Pressure and vacuum.....	(1)	44,901	(1)	27,535
3821341.....	Fluid flow and liquid level.....	(1)	39,927	(1)	19,211
3821351.....	Physical properties testing and inspection equipment, including hardness, strength of materials, wear, abrasion, and similar testers.....	(1)	19,472	(1)	<sup>4</sup> 13,402
3821398.....	Other industrial process instruments.....	(1)	87,475	(1)	<sup>4</sup> 42,141
38214.....	Motor-vehicle instruments.....	(1)	76,401	(1)	39,495
3821411.....	Speedometer for motor vehicles <sup>5</sup> .....	8,585	28,774	(6)	11,433
3821498.....	Other motor vehicle indicating instruments, except electric (fuel level, oil pressure, etc.).....	(1)	47,627	(1)	28,062
3821511.....	Automatic temperature controls, activated by pressure, temperature, level, flow, time, or humidity (including pneumatic controls) of the type principally used as components of air-conditioning, refrigeration, and comfort heating or as components of major household appliances.....	(1)	259,970	(1)	<sup>4</sup> 100,640
3821611.....	Other and not specified mechanical measuring instruments.....	(1)	51,022	(1)	48,519

<sup>1</sup> Not applicable.

<sup>2</sup> Of this total, 79 percent was shipped by plants classified in the mechanical measuring instruments industry; the remainder was shipped as secondary products by plants classified in other industries.

<sup>3</sup> Includes some gas and water meters shipped unassembled from the factory.

<sup>4</sup> Revised.

<sup>5</sup> Excludes some speedometers produced by plants of motor vehicle companies for incorporation into automobiles and trucks of their own assembly.

<sup>6</sup> Not available.

[From the Advance Report, 1954 Census of Manufacturers, June 1956, Series MC-36-1.3]

#### ELECTRICAL MEASURING INSTRUMENTS INDUSTRY

(S. I. C. Code 3613)

During 1954, manufacturers in the electrical measuring instruments industry shipped products valued at \$358 million, an increase of 134 percent over 1947, according to preliminary results obtained from the 1954 Census of Manufactures conducted by the Bureau of the Census, Department of Commerce. Average employment in this industry has increased 58 percent since 1947 (when the last Census of Manufactures was taken) to a total of 33,000 employees in 1954. Value added by manufacture in the industry amounted to \$248 million in 1954, an increase of 138 percent over 1947. Valued added is derived by subtracting the

cost of materials, etc., from the value of shipments. It avoids, therefore, the duplication in the value of shipments which results from the use of products of some establishments as materials by others and is the best value measure available for comparing the relative economic importance of manufacturing among industries and geographic areas. Changes between the 2 census years for other key measures of activity for the industry are shown in table 1. No adjustments have been made for changes in price levels between the 2 years. All figures in this report are preliminary and, therefore, subject to revision in the final industry bulletin.

The electrical measuring instruments industry represents manufacturing establishments engaged primarily in the manufacture of pocket, portable, panelboard, and graphic recording instruments for measuring electricity, such as voltmeters, ammeters, watt meters, watt-hour meters, demand meters, and other meters and indicating instruments. Also included are establishments primarily manufacturing meter transformers and analyzers for testing the electrical characteristics of internal-combustion engines, radio apparatus, etc., and instruments for indicating, measuring, and recording electrical quantities and characteristics. Establishments primarily manufacturing mechanical instruments for indicating, recording, measuring, and controlling temperature, pressure, mechanical motion, rotation, flow, liquid level, humidity, etc., are included in industry 3821, mechanical measuring instruments. The industry classification for the electrical measuring instruments industry used in the 1954 Census of Manufactures is based on the standard industrial classification.

The value of shipments, as reported by establishments classified in the electrical measuring instruments industry, consisted not only of products described above as primary to the industry, but also included the value of secondary products (which are primary to other industries). In tables 1 and 2, the \$358 million total value of shipments reported by establishments classified in industry 3613, electrical measuring instruments, consisted of 349 million manufactured products and \$9 million miscellaneous receipts for contract work, repair work, sales of scrap, etc. The \$349 million product shipments were accounted for by \$263 million of electrical measuring instruments and other products primary to the industry, and \$86 million of products primary to other industries (e. g., aircraft engine and other mechanical measuring instruments, aircraft flight instruments, and electrical distribution and control apparatus). Thus, the industry's shipments of electrical measuring instruments represented 75 percent of its total manufactured product shipments (primary and secondary). This figure describes the "primary product specialization ratio," that is, the extent to which plants classified in an industry "specialize" in making products regarded as primary to the industry. The 1947 primary product specialization ratio for the industry was 84. This change of 9 percent reflects the increased production, since 1947, of aircraft engine and flight instruments by establishments in this industry.

The industry's total value of shipments should be clearly distinguished from the total value of primary products of the industry shipped by all producers. The latter figure, appearing in table 3, indicates that \$345 million value of electrical measuring instruments and other products primary to industry 3613 was shipped by all producers. Of this total, 76 percent was shipped by plants classified in industry 3613, while the remainder was shipped as secondary products by plants classified in other industries. The figure 76 percent is known as the coverage ratio, that is, it measures the extent to which all shipments of primary products of an industry are covered by plants classified in that industry, as distinguished from secondary producers elsewhere.

The general statistics (employment, payrolls, cost of materials, value of shipments, etc.) are reported for each establishment as a whole. Aggregates of such data for an industry reflect not only the primary activities of the establishments in that industry, but also their activities in the manufacture of secondary products and receipts for their other activities (contract work on materials owned by others, repair work, etc.). This fact should be taken into account in comparing industry statistics (tables 1 and 2) with product statistics (table 3) which show the shipments by all producers of the primary products of the industry.

More detailed figures for this industry will appear in the Census Bulletin, MC-36A, Electrical Industrial Apparatus, which will be published and offered for sale at a later date by the Superintendent of Documents, United States Government Printing Office. Also, in this bulletin, there will be a comprehensive discussion of such concepts as industry, establishment, secondary production, as well as the various statistical items such as employment, value added, etc. Similar advance reports and final bulletins will be issued for other industries during the coming months. A summary of preliminary United States totals for general statistics with separate figures for most individual manufacturing industries is now available. Advance reports for individual States are now being published, to be followed later in the year by the detailed State bulletins. (Order blanks which list these reports and bulletins and their prices may be obtained from local United States Department of Commerce field offices or by writing to: Bureau of the Census, Washington 25, D. C.)

The 1954 Census of Manufactures is the 26th such census of the United States since 1809. For 1954, it was conducted jointly with the Censuses of Business (wholesale, retail, and services) and mineral industries, covering continental United States, Alaska, and Hawaii. Present legislation provides for a Census of Manufactures every 5 years, with the next one scheduled to cover 1958. In addition, the law authorizes annual sample surveys to be conducted in interim years.

TABLE 1.—General statistics for the electrical measuring instruments industry, in the United States, 1954 and 1947 (Standard Industrial Classification Code 3613)

Item	Unit of measure	1954	1947	Percent change 1947-54
Establishments.....	Number.....	302	154	+96
All employees:				
Number.....	Thousands.....	33.0	20.9	+58
Payroll.....	Million dollars.....	144.9	60.7	+139
Production workers:				
Number.....	Thousands.....	24.2	16.1	+50
Man-hours.....	Millions.....	47.6	32.6	+46
Wages.....	Million dollars.....	90.7	42.3	+114
Value added by manufacture <sup>1</sup> .....	do.....	247.7	103.9	+138
Cost of materials, fuel, electricity, and contract work <sup>2</sup> .....	do.....	110.7	49.4	+124
Value of shipments <sup>3</sup> .....	do.....	358.4	153.4	+134
Capital expenditures, new.....	do.....	16.1	4.3	+274

<sup>1</sup> Value of shipments less cost of materials; supplies, fuel, electric energy, and contract work.

<sup>2</sup> Excludes cost of products bought and resold in the same condition.

<sup>3</sup> Includes, for all establishments classified in this industry, not only (a) their value of products "primary" to the industry, but also (b) their value of "secondary" products, which are primary to other industries, and (c) their "miscellaneous receipts" for repair work, sales of scrap, installation of own products, etc. Excludes sales of products bought and resold in the same condition.

TABLE 2.—General statistics for the electrical measuring instruments industry (S. I. C. Code 3613), by regions and selected States: 1954 and 1947

Region and State <sup>1</sup>	1954										1947	
	Establishments (number)	All employees		Production workers			Value added by manufacture <sup>2</sup>	Cost of materials, etc. <sup>3</sup>	Value of shipments <sup>4</sup>	Capital expenditures, new	All employees (number)	Value added by manufacture <sup>5</sup>
		Number	Payroll	Number	Man-hours	Wages						
United States, total <sup>6</sup> .....	302	32,991	Thousands \$144,926	24,175	Thousands 47,588	Thousands \$90,694	Thousands 247,670	Thousands \$110,714	Thousands \$358,386	Thousands \$16,132	20,926	Thousands \$103,946
New England.....	36	8,725	37,636	5,932	11,762	21,464	72,703	25,563	98,267	1,925	6,068	( <sup>6</sup> )
New Hampshire.....	5	2,274	8,403	1,796	3,574	5,919	21,727	8,479	30,206	( <sup>6</sup> )	319	( <sup>6</sup> )
Massachusetts.....	19	5,938	27,378	3,783	7,506	14,502	47,845	15,284	63,131	1,140	5,490	( <sup>6</sup> )
Middle Atlantic.....	128	11,973	53,928	9,036	17,896	35,220	86,071	41,217	127,290	2,114	7,480	( <sup>6</sup> )
New York.....	61	2,888	13,383	2,032	3,916	7,850	21,798	17,272	39,072	551	480	( <sup>6</sup> )
New Jersey.....	43	7,795	35,596	6,031	12,159	24,428	57,785	20,269	78,055	1,342	6,100	32,649
Pennsylvania.....	24	1,289	4,948	972	1,820	2,941	6,487	3,675	10,163	221	900	3,065
East North Central.....	56	7,705	32,282	5,776	11,178	20,275	55,614	24,418	80,033	1,918	6,646	29,740
Ohio.....	16	1,600	5,639	1,272	2,369	3,744	9,195	6,421	15,617	110	1,429	4,345
Illinois.....	22	4,711	19,994	3,467	6,713	12,666	33,194	12,924	46,118	1,537	4,039	18,452
West North Central.....	12	331	1,081	269	555	745	1,613	917	2,531	( <sup>6</sup> )	202	564
South.....	13	712	2,474	525	1,050	1,520	2,500	3,190	5,691	( <sup>6</sup> )	( <sup>6</sup> )	( <sup>6</sup> )
West.....	57	3,542	17,522	2,634	5,143	11,467	29,165	15,405	44,571	( <sup>6</sup> )	( <sup>6</sup> )	( <sup>6</sup> )
California.....	52	3,010	14,817	2,269	4,420	9,776	22,619	13,677	36,297	1,481	267	1,748

<sup>1</sup> Each producing State not shown separately has been withheld either (a) to avoid disclosing figures for individual companies; or (b) because the State had less than 1,000 employees in the industry. (Additional publishable detail will appear in the final census bulletin for this industry.)

<sup>2</sup> Value of shipments less cost of materials, supplies, fuel, electric energy, and contract work.

<sup>3</sup> Includes cost of materials, fuel, electricity, and contract work; excludes cost of products bought and resold in the same condition.

<sup>4</sup> Includes, for all establishments classified in this industry, not only (a) their value of products primary to the industry, but also (b) their value of secondary products, which are primary to other industries, and (c) their miscellaneous receipts for repair work, sales of scrap, installation of own products, etc. Excludes sales of products bought and resold in the same condition.

<sup>5</sup> Sum of regional figures may not equal United States total, due to independent rounding.

<sup>6</sup> Withheld to avoid disclosing figures for individual companies.

TABLE 3.—Quantity and value of electrical measuring instruments shipped by all producers in the United States, 1954 and 1947 (includes quantity and value of these products reported both by establishments classified in the electrical measuring instruments industry, and those establishments making these items as secondary products in other industries)

Product code	Product	Total shipments including interplant transfers			
		1954		1947	
		Quantity (1,000 units)	Value	Quantity (1,000 units)	Value
613.....	Electrical measuring instruments, total.....	(1)	<i>Thousands</i> \$345,389	(1)	<i>Thousands</i> \$157,453
36131.....	Integrating instruments, electrical.....	(1)	73,090	(1)	63,650
	A. c. watt-hour meters:				
3613111.....	Single phase.....	2,880	36,938	3,277	44,967
3613115.....	Polyphase.....	167	6,491	211	5,096
3613121.....	Combined watt-hour and time-switch meters.....	126	3,807	(1)	( <sup>9</sup> )
	Combined watt-hour and demand meters:				
3613131.....	Single phase.....	26	1,141	(1)	6,862
3613135.....	Polyphase.....				
3613141.....	Demand meters (including kilowatt and kilovolt-ampere).....	126	8,900	(1)	
3613151.....	Other electrical integrating meters including d. c. watt-hour meters, ampere-hour meters, and other miscellaneous integrating instruments not included in the above classifications.....	(1)	2,930	(1)	* 2,121
3613161.....	Parts for integrating meters, electrical type (including meter mounting and test equipment), sold separately.....	(1)	12,883	(1)	4,604
36132.....	Test equipment for testing electrical, radio, and communication circuits and motors.....	(1)	188,115	(1)	54,805
3613211.....	Oscilloscopes, high-frequency types, designed primarily for radio testing.....	(1)	7,051	(1)	766
3613215.....	Other types of oscilloscopes and oscillographs.....	(1)	16,475	(1)	4,048
3613221.....	Volt-ohm-milliammeters.....	(1)	4,460	(1)	2,535
3613227.....	Electronic volt-ohm-milliammeters.....	(1)	3,624	(1)	723
3613233.....	Resistor, capacitor, and inductor measuring equipment.....	(1)	3,209	(1)	1,653
3613239.....	Analyzers for testing characteristics of internal combustion engines and auxiliary equipment.....	(1)	23,189	(1)	15,193
3613245.....	Tube characteristic measuring instruments for receiving tubes.....	(1)	5,805	(1)	2,058
3613251.....	Microwave test equipment.....	(1)	8,488	(1)	2,512
3613257.....	Signal generators.....	(1)	15,155	(1)	3,774
3613263.....	Broadcast transmitter test equipment.....	(1)	1,622	(1)	( <sup>9</sup> )
3613269.....	Radio frequency measuring equipment.....	(1)	13,790	(1)	1,812
3613281.....	Parts for test equipment sold separately.....	(1)	11,389	(1)	481
3613288.....	Other test equipment.....	(1)	68,179	(1)	* 9,992
3613290.....	Test equipment for testing electrical, radio, and communication circuits and motors, not specified by kind.....	(1)	5,679	(1)	9,257
36133.....	Other electrical measuring instruments.....	(1)	84,184	(1)	38,998
	Electrical instruments which are designed fundamentally to indicate, measure, or record electrical quantities, but whose scales may be marked in other than electrical quantities:				
	Indicating and recording instruments:				
	Indicating instruments:				
3613311.....	Panel-type instruments, nominal size 4½ inches and smaller. Initial accuracy within ±2 percent of full-scale deflection for all types except rectifier types which shall be within ±13 percent. Excluding instruments for use on motor vehicles and aircraft.....	2,037	19,011	1,039	8,369

See footnotes at end of table.



TABLE 3.—Quantity and value of electrical measuring instruments shipped by all producers in the United States, 1954 and 1957 (includes quantity and value of these products reported both by establishments classified in the electrical measuring instruments industry, and those establishments making these items as secondary products in other industries)—Continued

Product code	Product	Total shipments including interplant transfers			
		1954		1947	
		Quantity (1,000 units)	Value	Quantity (1,000 units)	Value
3613313	Electrical measuring instruments—Con. Other electrical measuring instruments—Con. Indicating and recording—Con. Indicating instruments—Con. Panel-type instruments, nominal size larger than 4½ inches including all exploded types. Initial accuracy within ±2 percent of full-scale deflection for all except rectifier types which shall be within ±5 percent. Excluding instruments for use on motor vehicles and aircraft.	40	\$2,217	108	\$2,155
3613315	Panel types for use on aircraft only (for measurement of electrical quantities only including ammeters, voltmeters, volt-ammeters, watt-varmeters, frequency meters, phase sequence indicators, etc.	55	2,848	43	408
3613321	Switchboard-type instruments 4½ inches nominal size and larger with accuracy within ±1 percent of full scale.	130	71,57	115	3,111
3613331	Industrial portable ammeters, voltmeters, watt-varmeters, etc., including hook-on and split core current measuring types.	108	4,223	68	1,659
3613335	Laboratory portable instruments—with accuracies within ±1 percent, up to ¼ percent of full scale and better, all case sizes.	33	3,461	44	2,317
3613345	Other indicating instruments, except motor vehicle and test equipment.	(1)	3,332	(1)	(9)
3613351	Instrument relays—all types.....	45	2,098	40	899
3613361	Recording instruments, not including control types.	(1)	10,191	(1)	1,911
3613371	Parts for indicating and recording instruments.	(1)	5,985	(1)	3,468
3613381	Instrument, meter, and tripping transformers (current and potential).	298	17,649	278	10,628
3613385	Ammeters and voltmeters for motor vehicles.	2,503	1,590	(4)	* 2,502
3613300	Other electrical measuring equipment, not specified by kind.	(1)	4,422	(1)	1,571

<sup>1</sup> Not applicable.

<sup>2</sup> Of this total, 76 percent was shipped by plants classified in the electrical measuring instruments industry; the remainder was shipped as secondary products by plants classified in other industries.

<sup>3</sup> In 1947, shipments of combined watt-hour and time switch meters (code 3613121) included with other integrating meters (code 3613151).

<sup>4</sup> Not available.

<sup>5</sup> In 1947, shipments of broadcast transmitter test equipment (code 3613263) included with other test equipment (code 3613298).

<sup>6</sup> In 1947, shipments of ammeters and voltmeters for motor vehicles (code 3613385) included with other indicating instruments (code 3613345).

## APPENDIX A-2

[From Control Engineering Around the Loop, May 1955, New York, N. Y.]

## REPORTS POINT UP DYNAMIC CONTROL EXPANSION

Anyone doubting that the control market has entered an era of dynamic expansion can stand a brush-up on two authoritative reports issued by McGraw-Hill's department of economics.

One report is a long, hard look at what the American economy will be like in 1960, a summary of the Twentieth Century Fund's study of America's Needs and Resources.

"The economy is being remolded by titanic forces of a technological nature, with almost bewildering prospects of rapid change," the summary says. If our society can absorb a rapid rate of technological change, the prospects are "absolutely glowing." The technology must grow progressively more efficient, the report adds, to provide for a population which has been increasing at a much more rapid rate than anyone could foresee from past experience.

How is industry reacting to the "titanic forces" of change? Its plans for capital spending give valuable insight into the control market's potential as industry meets the new industrial revolution.

A second McGraw-Hill report describes those capital spending plans. It's titled "Business' Plans for New Plants and Equipment 1955-58."

"United States business as a whole," the report says, "plans to spend more for new plants and equipment in 1955 than in any previous year." And, on the basis of present planning, there is every indication that the uptrend in capital spending will continue well into the future. In 1953, manufacturing industries plan to spend \$9.2 billion for new plants and equipment, about 3 percent more than in 1954.

## EXPANDING MARKETS FOR CONTROL

Standouts among major control users are chemical processing and textiles. Chemical processing companies plan a 7 percent increase in capital spending this year over last. Textile companies expect a 5 percent rise. Over the period 1955-58, the chemical industry foresees a 22 percent increase in manufacturing capacity.

Since last fall, practically every manufacturing industry has raised its sights on capital spending. Papermakers, figuring last year on a drop of 6 percent, now expect an increase of 10 percent in 1955.

## SALES TIE IN WITH SPENDING PLANS

Manufacturers' capital investment plans, of course, tie in closely with their sales expectations. In 1955, manufacturers as a group look for an average 7 percent sales increase over last year. By 1958 they expect a sales gain of 21 percent.

*How manufacturers are expanding capacity*

	Percent 1954-55	Increase 1955-58
Primary metals.....	3	8
Iron and steel.....	2	7
Nonferrous.....	4	12
Metalworking.....	6	12
Machinery.....	6	13
Electrical machinery.....	7	15
Autos.....	4	10
Transportation equipment (including aircraft).....	8	11
Other metalworking.....	6	12
Chemical processing.....	6	16
Chemicals.....	7	22
Paper.....	7	16
Rubber.....	5	10
Stone, clay, and glass.....	5	14
Petroleum refining.....	1	4
Food and beverages.....	5	9
All manufacturing.....	5	11

The part control can be expected to play in the development of specific industries can be inferred from the table above. McGraw-Hill research points out

that experience with previous surveys shows that plans for years ahead are always lower than plans for current periods. Thus, actual expansion in the 1955-58 period may well exceed the estimates shown.

Automatic control is the bond of common interest linking two huge fall engineering meetings separated widely by geography.

The production engineering show, Chicago, September 6 to 16, is aimed at the men who direct, design, and apply the methods and mechanisms of industrial production. It is planned to help them achieve the goals of automatic production and processing in their plants.

The ISA Instrument-Automation Conference and exhibit, Los Angeles, September 12-16, will offer business and industry the newest components, instruments, computers, devices, and systems needed in control development.

Marking these vital control events, the September issue of Control Engineering will present close to 80 pages of new, practical ideas for the control of automatic processes and production machinery. Editorial material will cover the mutual control interests of production engineering men and process instrumentation men.

#### 80 PAGES OF NEW IDEAS

Because September will be Control Engineering's first anniversary issue, its editors have gone all-out to make it a truly outstanding issue for both subscribers and advertisers.

The production engineering show is new this year, so no figures are available for breakdown of previous years' attendance. ISA, however, has supplied an audit of the first International Instrument Exposition held last year in Philadelphia. From it (in the box at right) we have derived figures on attendance which should be of interest and value to anyone planning to attend or exhibit in Chicago or Los Angeles this year.

In September, 150,000 production men will attend production engineering show in Chicago, 25,000 process instrumentation men will gather for ISA show in Los Angeles, and, control will dominate both shows.

#### BREAKDOWN OF 1954 INSTRUMENT SHOW ATTENDANCE

A total of 21,363 people attended the First International Instrument Show last year; 31 industrial and business groups were represented by men in 47 general job classifications.

A total of 568 sales and advertising managers were at the show, along with 1,317 sales engineers and 1,076 salesmen. These groups made up 14 percent of attendance.

Industrial and business groups with more than 1,000 attending included: Instrument manufacturers, 6,871; electrical manufacturers, 2,269; chemical and allied products, 2,087; National, State, city government, 1,899; service industry and supply houses, 1,807.

Men with "engineer" in their titles—39 percent or 8,278 of total—included: Engineers, miscellaneous consulting, 3,235; chief engineers, 806; research engineers and associates, 731; development engineers, 710; instrument engineers, 527; design engineers, 508; electrical engineers, 469; mechanical engineers, 319; chemical engineers, 285; test engineers, 128; product superintendent and engineers, 125; maintenance superintendent and engineers, 115; production managers and engineers, 107; plant engineers, 100; material engineers, 64; gas superintendent, combustion, power, heat and fuel engineers, 49.

Groups having 500 to 1,000 attendance included: Iron and steel industries, 886; educational institutions, 814; research and analytical laboratories, 721; petroleum products, 606; machinery manufacturers, 573; consulting engineers, 514.

Management and allied titles comprised 22 percent or 4,641 of attendance. Research, laboratory, testing, chemist and medical made up 8 percent or 1,667.

Geology, geophysicists, scientists, mathematicians, metallurgists made up 3 percent, or, 688.

Inspectors, electricians, mechanics, instrument men, draftsmen, architects, 7 percent or 1,435.

Four hundred professors attended—about 2 percent; 251 students, about 1 percent.

The instrument manufacturing people comprised the largest group with 32 percent of attendance; 1,583 or 23 percent of their total were sales and advertising managers, sales engineers, and salesmen.

Smaller groups with high percentages of sales personnel included: Iron and

steel industries, 18 percent; forest and paper products, 17 percent; machinery manufacturers, 20 percent; nonferrous metals industries, 30 percent.

[From Control Engineering Around the Loop, September 1955, New York, N. Y.]

#### CONTROL ENGINEERS IN INDUSTRIAL OR MILITARY WORK ARE SAME KIND OF PEOPLE

Engineers have hairy ears, the ballad tells us, distinguishing them from lesser citizens.

Beyond that, what's the difference between a control engineer in an industrial setup, and a control engineer doing military or defense work?

There is none. Knowing quite a few of both binds, we've been reasonably sure of it for some time.

We thought it might be well, though, to give the notion some scientific verification, by testing it across our subscription list. A reasonable number of subscriber cards were pulled out at random and this sampling was polled.

We can announce, with a hint of smugness, that the inquiry bore out our own observations.

Among the respondents, 46 percent were involved in industrial control engineering; 34 percent in military control engineering; 20 percent were doing both.

We found that a ratio of 4-to-1 respondents in military control engineering foresaw important industrial applications for their present military work. The sampling disclosed also that the areas in which military control work would have industrial applications was almost evenly divided between process control, machine control and production control.

#### ENGINEERS WELCOME CHANGE OF PACE

Inherent noisiness impelled us to inquire in our questionnaire, what engineering media these subscribers worked in. Inherent politeness impelled them to answer, permitting us to observe that 66 percent work in electrical; 67 percent in mechanical, pneumatic, and electronic; 13 percent optical.

These percentages do not add up to a neat 100 because all respondents indicated they work with more than one engineering medium. Few will quarrel with our conclusion that these control engineers welcome a varied editorial cuisine covering varied interests and occupations. Since its first issue, Control Engineering has been written on that basis.

Based on the number of years these subscribers said they had been working for their present companies, we concluded that their median age is roughly 32 to 39, youthful enough to bang away hard at building careers, sharpening skills, acquiring knowledge. For the most part they have solid academic backgrounds and don't wince at math—differential equations, transforms and such like.

#### COMPLETE REPORT WILL GIVE DETAILS

Sometime soon, when summer has simmered away, we'll have the information from the questionnaires processed into presentable form, with a more generous helping of specific than offered here. We will supply a breakdown on job titles for those who are fascinated by such information. If you'd like to see a complete report on this study call one of our district managers. But give us a month or so, m-m-m?

In the realm of product research, we are (with the collaboration of McG-Hill's erudite research department) developing some specific information from the control field on the application of pneumatic and hydraulic components and relays. We hope to have this material available to you in about 2 months. Orders taken now for the complete report. Flag a district manager or write us here in New York. If this report is as incisive and illuminating as our recent vacuum study, your postage will be well rewarded.

The September issue marks Control Engineering's first birthday, and we feel entitled to cover the occasion with a brief, dignified statement, quote: We're happy about the way subscribers have responded to this new editorial service, glad of the evidence the magazine is slotted to their needs. We're gratified too, at the reaction of advertisers with the perspicacity to use Control Engineering as a means of marketing their products. The record shows: September 1954 issue circulation, 15,235 net paid; September 1955 issue circulation, 24,412 net paid; September 1954 advertising pages, 71; September 1955 advertising pages, 115.

## MANUFACTURERS REPS AND SALES PERSONNEL NEEDED

"Where can we hire, hypnotize or abduct a good manufacturers' rep?" More and more of these plaintive inquiries are drifting our way, for reps, sales engineers, and advertising managers. At this point we can't give a straight-out answer—a condition we're in the process of correcting.

We take the enlightened attitude that for advertising in Control Engineering to have greatest effectiveness, our advertisers must have adequate sales representation. We've begun compiling a manufacturers' rep file.

We are requesting from manufacturers' representatives confidential information concerning the companies whose lines they handle, products they sell, territories they cover, their abilities to provide engineering services.

## FILE WILL BE CONFIDENTIAL

Because this information is necessarily of a confidential nature, we will retain this file in our office in New York. We will, however, be glad to provide manufacturers with names of competent representatives in various parts of the country, after we get the file set up and rolling.

We would appreciate some help from manufacturers, too. If you have a list of representatives, send us their names and addresses. We will, in turn, send them questionnaires to be returned for our file.

If you need representation, let us know where it's needed, and general characteristics you're looking for in your man. We will send the information along just as soon as the file builds up to a point of usefulness.

Let us emphasize that we will use scrupulous care to insure that the passing along of information will serve only to supplement lines handled, not duplicate them.

Representatives to sell delay lines, magnetic storage elements, and pulse transformers. Well established highly technical reps who will be looking for orders above \$50,000. All territories open.

Sales reps: Not just catalog sellers, but reps who can give technical service. Must have thorough experience in sale of complete systems for automation, remote control, or telemetering. Can bird-dog leads, get facts for action into reports. Salary and territory open.

Sales engineer, for sales and engineering application, to handle a new line of industrial electronic measuring and control instruments. Applicant to work from factory in New England. Job involves travel, training field representatives and contacting major prospects. Experience in industrial instrumentation required. Salary open and commensurate with experience.

Representatives: Standard electronics reps, preferably handling computer components, servo components and/or systems. To contact aircraft, guided missile and control systems manufacturing companies. Areas to be covered: New England, Middle Atlantic, Midwest, Southwest, west coast, Canada.

[From Control Engineering, Around the Loop, October 1955, New York, N. Y.]

## BIG INDUSTRIAL SHOWS GAVE PANORAMA OF NEW CONTROL DEVELOPMENTS

Two great shows in September gave control engineers a chance to evaluate new control developments across the span of industry.

In Chicago the machine tool show corraled the industrial mastodons, the first such roundup since 1947. A tangent of the tool show was the production engineering show, also in Chicago.

In Los Angeles, the Instrument Society of America's conference and exhibit displayed a year's progress in industrial control.

First stop in Chicago for control engineers was the production engineering show at the Navy pier. While the bulk of equipment consisted of machine shop accessories (or what the trade knows as automation, transfer devices and the like) perhaps a dozen booths featured equipment familiar to the closed loop: dynamic motor-control arrangements, tape-servo director system for machines, liquid state devices.

An oasis for the feedback minded was the cooperative exhibit by eight universities of control innovations originated by the schools. Around the loop described these in a previous issue.

Machine tool behemoths rumbled and clunked at the tool show out near the stockyards. To the naked eye there was little direct evidence of closed-loop applications among the 500 new machines shown.

Primary considerations were speed, and the ability to cut metal, reflected in the size of machine frames and the size of drive motors. The general impression was not one of automatic control gadgetry but absence of it. But control hardware was there, somewhat in the background. For example, numerically programed machines having closed-loop systems were present, but not actively promoted.

There are undoubtedly good reasons for the lack of emphasis on automatic controls, for example, reluctance on the part of manufacturers to believe their markets are ready to launch into the control era.

A Control Engineering editor supplies an analysis of machines employing control techniques displayed at the tool show: positioning servos—which drive the carriage holding the workpiece or tool an amount proportional to a control signal—were seen on 18 new contour tracing machines. Fifteen of these were hydraulic, only three electric. About one-half of the tracing actuators were developed by the tool maker. The remainder were subsystems supplied by an outside control manufacturer.

One of the most avidly discussed control techniques, numerical programing, was noticeable at the show for its scarcity. Only seven tape-controlled machines were observed. Three were developed by the manufacturer, four were supplied by outsiders.

Variable speed drives, replacing or augmenting gear changing, were more common. Electric, pneumatic or hydraulic clutches were utilized when gear changing was required.

More than 50 machines featured automatic transfer, loading and assembly, pointing up the prime interest of manufacturers in automation. And bearing out the reluctance of manufacturers to stress feedback, the major interest of machine users was in watching the chips fly—speed of transfer and loading and the volume of metal cut.

So on close look, machine-tool makers are starting to spend money in interesting quantities on control refinements. For people in the control field, the machine-tool industry looms as an area of enormous opportunity.

#### CONTROL ENGINEERS RULED ROOST AT INSTRUMENT SHOW

At the instrument show in Los Angeles there was no question of where the emphasis lay. Control was the big concern, and engineers skilled in control are well integrated into the process field.

The big trends noted were the emergence of a great many data handling and logging devices, and electrohydraulic process control valve positioners. The large companies are now talking systems engineering. An ardent interest was demonstrated in electronic instruments by people who have been exclusively pneumatic in outlook.

The products of 300 companies were displayed across 3 floors. While older, well-established firms were well represented, newer systems firms from the west coast occupied large booths and displayed an intriguing array of new control developments.

Exhibits could be roughly classified into those groups:

Transducers and measuring.....	42
Control component hardware (relays, switches, timers, etc.).....	41
Testing equipment.....	38
Process control systems.....	34
Services for control.....	22
Analytical instruments.....	18
Data processing.....	18
Servo-type equipment.....	12
Computing and counting.....	10
Telemetering.....	8
Unclassified.....	22

The technical sessions indicated the control-dedicated nature of the occasion. There were 7 original studies in the dynamic analysis of elementary process control; 4 special sessions, 16 papers, on plant product analysis techniques; symposia on data handling, transportation, and nuclear instrumentation; daily clinics for engineers on computers and analytical measurements.

Few products exhibited stood out as individual developments. They seemed rather to be grouped to fill specific control needs. There were: At least 5 newly developed electrohydraulic valve actuators—to meet the need to match valves to fast electronic controllers; 5 major entries in data processing systems—indi-

cating an eagerness of companies to join the competition: several new analytical instruments for in-stream use—in response to demands by advanced process engineers; 4 new flow computing devices—to provide linear analog and even direct digital output from nonlinear “workhorse” flow sensors.

Among developments having unique design features and promising futures were: A new ultrasonic type flowmeter by Fischer & Porter; Perkin-Elmer's new vapor fractometer; Honeywell's and Bristol's new high-speed strip chart recorders.

---

#### APPENDIX A-3

(Not available for inclusion as an appendix, but used as a reference, The General-Purpose Electronics Test Instrument Industry, an industrial mobilization and defense planning study by the Scientific, Motion Picture, and Photographic Products Division, Business and Defense Services Administration, United States Department of Commerce, July 1, 1956, available in subcommittee files.)

---

#### APPENDIX B

ISA expands its program of education and research activities. For several years the society has been working, through its education, and structure and planning committees, on the development of a comprehensive plan for improved society programs and activities with respect to instrument education and research. This work has been predicated on the fact that the society serves primarily as an educational medium and a stimulating agency for the benefit of its individual members and the instrument using and manufacturing industries.

The society's education committee, under the chairmanship of Robert J. Jeffries, prepared the first program proposals in 1953. The society's executive board at that time agreed with the necessity of such a program and referred the matter to the society structure and planning committee. This committee considered the content of the proposals and in September 1955, under the chairmanship of Phil Sprague, recommended to the executive board a broad program of activities in the areas of education and research, essentially as originally proposed by the education committee, but taking into account the possible administrative and financial growth of the society. The program was accepted, and, as recommended, a special presidential development commission was established to bring forth an organization, a specific program, and means of financing.

The first meeting of this commission was held at St. Petersburg, Fla., on February 28, with Robert Jeffries as temporary chairman. The success of this meeting is of great significance to every individual member of ISA and the industry in general. The progress of this commission and its “plan for action” means a new and positive approach to the single biggest problem facing the instrument and automatic control field—education and research.

#### CONSIDERING TODAY'S PROBLEMS IN INSTRUMENTATION

(By Dr. Robert J. Jeffries, technical planning adviser, Schlumberger Instrument Co., Ridgefield, Conn.)

(Condensation of the introductory address by Dr. Jeffries before the first meeting of the ISA Education Foundation Development Commission, St. Petersburg, Fla., on February 28, 1956.)

The purpose of my remarks is to provide a common vocabulary and basis for consideration of the problems and opportunities inherent to the task before the ISA Education Foundation Development Commission. I would also hope to provide, in some measure, a perspective on the scope and depth of the concerns of the society with respect to educational and research activities in the field of instrumentation.

This is a development commission. It is our job to give consideration to the many existing and anticipated problems relating to instrumentation, and ultimately, to focus upon those situations and the possibilities which, in our opinion, represent a practical compromise between what is most urgently needed—and what is most probable of accomplishment.

For our purposes, instrumentation research is meant to include: “The search for and quantization of fundamental phenomena which will make possible instrumentation techniques and equipments plus investigation of potential uses of instruments and systems.”

Recognition of instrumentation as a science is belated and still far from universal. Lord Kelvin may be considered the father of the field as a result of his vision and perception as to the fundamental importance of measurement, but it wasn't until the 1940's that important attention was drawn to a broad view. Gradually and grudgingly has developed the appreciation of the existence of this new field which has yet to be universally defined. About 1942, the American Association for the Advancement of Science organized a committee to define

the term. It brought back approximately 39 different definitions. In more recent years, educators, publishers, even organized labor, have adopted the word—pairing it first with feed-back control, then systems engineering, and most recently, automation, in an effort to imply in some measure the breadth of concern and scope of activities. Instrumentation today, in its broad sense, is fundamentally concerned with the development and application of instruments and instrument systems for purposes of measurement, computation and control.

Instruments and instrument systems exist fundamentally because of the desire for measurement. This desire for measurement is usually born out of necessity. When one is curious, in a scientific way, concerning a phenomenon or a condition, his curiosity is manifest in his desire to express quantitatively the factors involved. Science is measured knowledge. A fact is not a scientific fact unless it can be quantized in concept, form, or relation. In order for any science to advance, there is the continued pressure, the necessity for better measurement technique and equipments. It is this necessity, first in the sciences, then in engineering activities, and now in production activities, which has fostered the conception and evolution of our modern research and production instruments and instrument systems.

Fundamental to the conception or application of an instrumentation technique or equipment is an understanding of the problem. To intelligently conceive a solution to an instrumentation problem, one must acquire a detailed understanding of the circumstances of the situation, the environment, the medium, etc. One must have a thorough understanding of the various alternatives available within instrument technology; one must be able to apply to his solutions the yardsticks of feasibility, probability, performance, economics, and human nature.

Today's process control provides an illustration of the technical and economic problems in instrumentation. Consider a refinery. One may desire to control a temperature at the top of a fractionating column. The problem of the controller is the maintenance of the desired temperature. The problem of today's instrument engineer is to select an appropriate controller, matched to the plant and the process, to effect the desired dynamic performance. Ideally he should know the characteristics of the plant-process complex; he should know the characteristics of various modes of control—proportional, rate, reset, their combinations and interactions—and armed with this understanding, attack his problem with an intelligent first guess. Fortunately, the controller manufacturer permits him a second guess—he can readjust his sights after a near miss—with an empirical adjustment of the control knobs inside the controller case. The controller manufacturers have done a superb job of providing today's instrument engineer with a face-saving, soul-saving, job-saving feature of complete adjustability over ranges of hundreds to one. With this built-in margin, today's instrument engineer can overcome his lack of precise understanding of the dynamic behavior of the process and the plant. However, his plant pays for his ignorance. To provide this wide range of adjustability, the controller is not optimum for any given condition. It is an easily demonstrated fact that for a given control problem, a specific nonlinear type controller can be made to have a performance superior to any of the existing commercial linear-type controllers. The second, and perhaps more important penalty is improper plant design, which is the result of the instrument engineer's lack of understanding with respect to dynamics of integrated systems back when the plant and the process were in the planning stage. Because of this, plant designers are excessive and costly.

Understanding is, then, an important technical factor in instrumentation.

The second technical problem facing the instrument engineer, and of direct concern to the process designer and operations manager, is what should be the prescribed point about which control action is to take place. Out of experience, out of pilot-plant operations, out of balance-sheet analyses, there gradually emerges a preferred combination of operating set points which result in a salable product, manufactured hopefully at a profit, in a way which permits continual operation. The prescription of optimum controller set points is a static problem, mathematically speaking. Knowing the capabilities of the plant-process-controller complex, one could mathematically derive, either with paper and pencil or with the aid of computers, the optimum set points. To my knowledge, this has just been attempted by a few plants. The need is demonstrated by a familiar situation which exists today in most plants—every new shift of operators changes the set points of the process as they report for work, even though all shifts are making the same product from the same raw materials with the same plant and process.

The outstanding economic problem of the processing industry is the most effective employment of the plant, with its product-making characteristics, in



relation to a dynamic market and raw materials situation, so as to maximize the dollar profit derived from the overall operation. This adds two more degrees of complexity to the problem of establishing optimum controller settings to produce a given product. It adds the question "what product," and the complicated factor of a variable input. A refinery exemplifies this problem. Its input is a continuously varying crude; its output must be tailored in type and quantity, from aviation gasoline to road oil, to meet an ever-changing market. The operations manager—perhaps a vice president—must, in essence, tell the operator what his controller set points should be—for it is these set points which determine the fractionating or cracking of the crude into salable products. There are techniques just now emerging in the field of operations research which promise to be directly applicable to processing problems of this type.

Why doesn't the process designer—the plant designer—the instrument engineer—the operations manager—know the facts required to select the best controller, the best set point, the best production schedule? The simple answer is that the necessary information isn't available to them. And yet, techniques and technology exist to furnish them with the information they would require. One of the greatest problems in instrumentation today is the necessity for communicating the advances in technique and technology as they are made to those who need them in a way in which they can be assimilated.

The mathematical and physical concepts necessary to predict exactly the type of controller to employ for any specified desired dynamic performance of a controlled system have been known for at least 40 years. Our chemical, mechanical, and instrument engineers have not, until just recently, been analytically and dynamically oriented. It is to be expected that "long hair" mathematics will be slow in filtering down from the ivory towers into the work-for-profit world. But this alone isn't sufficient justification for the high level of ignorance which prevails today. There are experimental, empirical techniques available which any instrument engineer could employ to get the information necessary to perform intelligent dynamic instrument engineering. The knowledge of these must be communicated.

Only within recent years has there been any practical revelation of the techniques and applications of experimental frequency response methods for the analysis of the dynamic characteristics of physical systems. Production plants and controller manufacturers have very few engineers competent in the technique. To my knowledge, few of the big consultant-construction companies—firms designing and building processing plants all over the world—have engineers who actually know how to use frequency response data to deduce the dynamic characteristics of a system.

This is an appalling fact since all of the necessary information has been available in literature since the early thirties. It has been taught in electrical engineering curriculums since the early forties. The mechanical engineers have just discovered it within the past 5 years.

Closely tied with the need for communication is the need for manpower efficiency. It is a criminal waste of time and talent for every research worker in medicine, biology, agriculture, in any of the sciences, to be forced to start from the bottom, so to speak, with respect to the instrumentation of his problems. It is still true that literally hundreds of physiologists, psychologists, medical doctors, geologists, chemists, and even physicists, struggle with DC amplifiers, slide-wire position transmitters, cathode-ray photography, while their own problems wait.

Practical, efficient means must be found to provide researchers in all fields with the necessary instrumentation equipments and skills—and this must be preceded, paralleled, and followed by a communication and understanding as to the availability and characteristics of modern instrumentation.

Let us now consider the roles of the instrument manufacturers and users in the evolution of techniques, products, information, etc.

With respect to instrument manufacturers, the situation is fairly clear—their efforts are directed toward the development of equipments which, in their opinion, will be profitable. They expend great amounts of time and money to ascertain potential markets for new developments. By and large, their research is rather product development. They will do little basic research, except insofar as it can be related to a potential financial return, particularly through achievement of a unique competitive position. Profit margins in the instrument business simply do not permit extensive basic research. I am sure that our marketed items are far ahead of our basic understanding of the how and why they work and their limitations. There is much room for catching up in a systematic, inquisitive way.

Instrument users, in general, might be categorized in several ways.

(a) *Instrument purchasers—with no inherent internal instrument interests.*—This group includes the bulk of the dollar-volume of instrument sales today, which buys and operates instruments as tools. They tend to follow instrument technology, buying what is offered, rather than leading in demanding new things or finding new applications.

(b) *Instrument purchasers—with internal instruments interests.*—This group includes major instrument-user industries, such as chemical, petroleum, missile manufacturers, and Government agencies. They attempt to meet these needs through instrument development within their own organization, through contractual relationship, and through legitimate pressure on instrument manufacturers for improved products. It is this group, by and large, which accounts for most of the new developments in instrumentation today. It is noteworthy that medical and biological interests are virtually unrepresented in this group. Military spending frequently provides money to undertake developments which could not be justified in a commercial sense. Large user groups such as chemical producing plants can afford and must develop new instruments concurrent with new products. Their developments usually prove to be relatively expensive equipments in which the value of the improved product justified the cost. It is an important and significant trend that most new analytical-type industrial instruments, such as recording refractometers, vapor-phase chromatographs, etc., are being born in users' laboratories, and then adopted by instrument manufacturers, who become, in effect, packagers and entrepreneurs.

(c) *"Would-be" instrument purchasers.*—This group includes individuals and organizations, principally engaged in research, such as usually are found in the biological sciences, whose immediate interests are in noncommercial areas in which they encounter situations which require new or modified instrumentation. Since their primary interests are usually not in instrumentation, they are either incapable or extremely inefficient in their approach to solution of their problem. They would, ideally, like to purchase a solution to their problem.

My final thought concerns the fierce struggle in the world today to capture the minds of men. The world is divided into two economic and political camps. Our hopes for survival and our ultimate hope for success in establishing our concepts of individual dignity and opportunity, lie chiefly in our prosperity and example. This requires that we have more better trained engineers to conceive and design more machines which incorporate the latest products of instrument technology. It requires that we establish a supply of highly skilled technicians to operate and maintain this equipment. It requires that we continually upgrade existing personnel to enable them to take advantage of, and keep pace with, instrument technology. Russia is turning out perhaps as many as 60,000 trained technicians a year, and between 40,000 and 50,000 engineers a year. In contrast, we may graduate this year 1,000 to 2,000 technicians and 20,000 to 25,000 engineers.

As businessmen experienced in the management of technical operations, I leave it to you—what are the inevitable technological results to be anticipated?

#### RESULTS OF THIS FIRST MEETING

At the conclusion of Dr. Jeffries' opening remarks Mr. Rex Bristol, vice president and treasurer of the Foxboro Co., was elected chairman of the commission.

Then followed much discussion concerning the objectives and plans for the commission. In the deliberations there was considerable sentiment expressed in favor of establishing some type of permanent ISA planning and coordinative group which would serve as a catalytic agent in bringing together those who have problems and the means for effecting solution to these problems. It was recognized that the ISA cannot possibly finance all the activities which might desirably be undertaken with respect to instrumentation education and research. It appeared, however, from the initial considerations of the commission, that the ISA could function very effectively as the stimulant and mechanism for channeling the efforts of several groups toward the common goals of affording increased educational opportunities for individuals at all levels, improved communication and translation of technical knowledge into forms practical for assimilation and utilization in the working world by working people, and an increasing attention to research and development of improved instruments, instrument techniques, and practices.

Under Mr. Bristol's direction the commission will arrive at conclusions and recommendations with respect to:

(a) What specific activities in instrumentation education and research the society should undertake, and in what order.

- (b) How these activities shall be organized and administered, and  
 (c) How these activities shall be financed.

It is anticipated that the commission will submit its report to the executive board by June 1. The work of this commission will undoubtedly have a direct bearing on the value of the ISA to every one of its members and its many supporters and friends in the years to come. The ISA Journal will carry a complete coverage of the work and recommendations of this development commission.

ISA EDUCATION FOUNDATION DEVELOPMENT COMMISSION

- Rex Bristol, Chairman of Commission, vice president-treasurer, Foxboro Co., 58 Neponset Avenue Foxboro, Mass.  
 E. J. Albert, president, Thwing-Albert Instrument Co., Penn Street and Pulaski Avenue, Philadelphia, Pa.  
 Dr. Arnold O. Beckman, president, Beckman Instruments, Inc., 2500 Fullerton Road, Fullerton, Calif.  
 Warren H. Brand, vice president of eng., Conoflow Corp., 2100 Arch Street, Philadelphia, Pa.  
 Wm. J. Caldwell, director, research, Taylor Instrument Co., 95 Ames Street, Rochester, N. Y.  
 Hugh F. Colvin, vice president and general manager, Consolidated Electro-dynamics, 1025 East Green Street, Pasadena, Calif.  
 Porter Hart, director of instrumentation, Dow Chemical Co., Freeport, Tex.  
 Dr. Robert J. Jeffries, technical planning adviser, Schlumberger Instrument Co., Ridgefield, Conn.  
 Barton Jones, president, Barton Instrument Corp., 1429 South Eastern Avenue, Los Angeles, Calif.  
 Thomas Roy Jones, chairman of board, Daystrom, Inc., 200 Elmira Avenue, Elizabeth, N. J.  
 Prof. Carl F. Kayan, head, department mechanical engineering Columbia University, New York, N. Y.  
 Dr. J. H. Lampe, dean, School of Engineering, North Carolina State College, Raleigh, N. C.  
 Edwin E. Parker, general manager, instrument department, General Electric Co. West Lynn, Mass.  
 Dr. J. Wayne Reitz, president, University of Florida, Gainesville, Fla.  
 Dr. John Ryder, dean of engineering, Michigan State University, East Lansing, Mich.  
 Prof. Earl J. Serfass, head, chemistry department, Lehigh University, Bethlehem, Pa.  
 Albert J. Sperry, president, Panellit, Inc., 7401 North Hamlin Avenue, Skokie, Ill.  
 Dean Joseph Well, University of Florida, Gainesville, Fla.  
 J. T. Vollbrecht, president, Energy Control Co., 5 Beekman Street, New York, N. Y.  
 Wm. A. Wildhack, Chief, Office of Basic Instrumentation, National Bureau of Standards, Washington, D. C., ISA education committee liaison  
 Prof. B. P. McKay, University of Tennessee, 62 South Dunlap Street, Memphis, Tenn.

APPENDIX C

EXCERPTS FROM A CHALLENGE AND AN ANSWER, A BROCHURE PREPARED TO JUSTIFY AND EXPLAIN THE NATURE OF THE FOUNDATION FOR INSTRUMENTATION, EDUCATION, AND RESEARCH OF THE INSTRUMENT SOCIETY OF AMERICA

THE CHALLENGE

The increasing productivity of American industry per man-hour is due in large part to the greater automaticity of modern production process. The continuing progress of science on all fronts is possible because of more advanced measuring apparatus and techniques. \* \* \*

\* \* \* These technical accomplishments are the product of man's technical training and ingenuity. Their effective use requires man's perception of need and intelligent application. America is currently experiencing a slowdown in its conception, development, and application of instrumentation equipment because of a shortage of approximately trained personnel at all levels of design and application in all areas of industry and science. This shortage presents a real

threat to an increasing standard of living and our national security, and its resolution constitutes a challenge to the best minds and resources of the Nation.

#### THE PROBLEM

To understand clearly the nature of the challenge which our evolving technology poses one must identify problems which exist.

Top management of manufacturing and processing industries do not, in many instances, understand sufficiently well, the fundamental characteristics and potentialities of modern instrumentation, to take full advantage of its capabilities.

Production layout and process design engineers do not understand sufficiently well, the dynamics of their problems to intelligently specify appropriate instrumentation.

Instrument design engineers do not understand sufficiently well, the more sophisticated theories and engineering data available, to effectively incorporate the latest knowledge in their designs.

Educators in our colleges and universities do not have the equipment nor the experience, in most cases, to incorporate modern instrumentation techniques and concerns into their curricula and student experiences.

Technical institutes and vocational high schools either are not aware, or do not have the facilities or staff to train the great host of subprofessional instrumentation personnel required to assist in research and man the highly instrumented plants of today and tomorrow.

The great quantities of instrumentation information and experience being acquired, that being published, and that available for the asking, is largely being lost for all practical purposes, for want of an efficient and effective system for storage and retrieval.

Scientists in all disciplines are functioning at only fractional efficiency because of their unmet needs for competent instrumentation services. \* \* \*

#### ISA'S ANSWER

\* \* \* The Instrument Society of America is an association of freemen in a free society, banded together for their mutual education and benefit. Their backgrounds include virtually all the traditional scientific disciplines—physics, chemistry, mathematics, medicine, all branches of engineering, science, business management, and education. It is the only technical society in America devoted exclusively and completely to the interests and problems of instrumentation and automation. \* \* \*

\* \* \* Through established machinery within the society, various groups of this Nation's outstanding men in instrumentation, industry, Government, and education have defined specific needs and outlined methods of meeting their needs. It is their considered judgment that the desirable objectives can be most effectively and efficiently realized through the mechanism of a nonprofit foundation under the guidance of leaders from various areas of our society, supported by funds from those whom it serves, and oriented specifically to solve the solution of the instrumentation problems of our time. \* \* \*

Chairman PATMAN. Thank you very much, Mr. Jones.

I was very much impressed by your statement, and I state flatly at this moment that automation is being held back and our national security is being jeopardized by the existence of lack of solution of these problems.

The problems you presented are similar to the problems presented by Mr. Sheen.

Mr. JONES. Well, we are in the same industry.

Chairman PATMAN. Yes, sir; you are in the same industry. And we cannot emphasize the solution of these problems too much.

On page 7 you talked about middle-sized business. In practice and effect, the Small Business Committees of the House and Senate assume jurisdiction over middle-sized business. In other words, every business that is not big, according to definitions that are generally accepted, is "small," including the middle-sized businesses.

We are not opposed to big business, those of us on Small Business Committees, but we just feel like the big businesses have good representation before the different committees, and their interests are looked after pretty well by people employed by big business for that purpose. They have lots of representatives here in Washington, and they are not frowned upon, they are welcomed in the office of any Member of the Congress that I know of. I know I welcome them, because I can invariably get information that I would not get any other way, and I know that they are very helpful to Members of Congress.

So, we are not against big business, we just feel like the little man is always represented here in the same way and manner as the big-business man is.

Mr. JONES. Isn't the little man usually defined as one who employs less than 500 people?

Chairman PATMAN. That is some arbitrary definition that some agencies have established. I don't think it is a correct definition at all. The term "small business" is a relative one, the way I view it. It depends upon the industry, sometimes. You take, for instance, Studebaker-Packard, that is a small business in comparison with General Motors and Ford and Chrysler. You take a steel company that is employing four or five thousand people and producing approximately a million tons of steel a year, although in itself it is a big operation it is small business in comparison to United States Steel or Bethlehem.

So I think the term "small business" is a relative one that cannot be disposed of by number of employees. You take 500 employees in the needle industry, or many other industries you could name, would be the biggest business in the industry.

Mr. JONES. Well, of course, my point is not that; it is that small business gets to a certain point, especially in this instrumentation, automation, and general technological field, and they run out of finances and they run out of management able to handle the larger problems, and they need to go somewhere to get under an umbrella.

My point was that if Congress sets up roadblocks to these avenues of escape for these small businesses, it not only injures those people who are owners of the small businesses but it injures the economy.

Chairman PATMAN. Yes, sir; I agree with you.

Now, on page 9 you have an interesting statement:

This country's educational system simply is not geared at present to producing the numbers of people required with technological training to absorb and apply and develop the automation equipments which are possible, which are desirable, and which in many instances are basically necessary to our modern economy.

And you added there, you ad libbed: "The situation is frightening." And I agree with you. You also made a statement that has been brought up by Mr. Sheen which I think is very important, in which you said:

I have been shocked at the amount of time spent in unnecessary manual labor, or even in doing nothing at all, by men of superior technical possibilities—  
in the Army.

Mr. JONES. That is correct.

Chairman PATMAN. And that is where Russia has been getting ahead of us. You see, they have been using their men like you and Mr. Sheen have suggested. Russia has been doing that. So Russia has been outthinking us and outdoing us.

Mr. JONES. But the amazing part is that these services are the ones who require these men with the technical training.

Chairman PATMAN. Yes, sir. We can utilize the military service for that purpose, and it will be not only helpful to the country, it will be helpful to the men themselves.

Mr. JONES. Yes, indeed.

Chairman PATMAN. And you state here:

An appalling lack of scientific instruction of any kind exists in our high schools—

and I believe you added:

most of our high schools—

and I believe if you had left it pretty well like you had it, it would have been all right. But that is exactly the problem.

Your testimony is very much appreciated.

Dr. Moore, would you like to ask some questions?

Mr. MOORE. Do you have in your industry much in-service training in the industrial plants?

Mr. JONES. Yes, indeed.

We are doing that in my own company very extensively. We have a man in the top group, in the staff group, who inspires and leads the subsidiaries and branches in doing that very thing, and we will be setting up central schools for that in self-defense, in our own selfish interest.

Mr. MOORE. The industry of electronics and instrumentation seems to me to be characterized by the survival of a lot of small businesses—or perhaps they should be called middle-sized businesses. The big corporations are of course in the electronics business, but at the machine tool show and the instrumentation exhibition I was surprised to find how many virile, active small companies that there seem to be. Would you agree with that?

Mr. JONES. That is a very true observation.

Mr. MOORE. To what would you attribute that? Is it the newness or the immaturity of the industry?

Mr. JONES. It is newness. A group of young engineers who get bright, new ideas, maybe two or three or four of them, will start a business, and it will grow and flourish. Most of them, I must say, do run up against managerial and financial troubles after they get, say, to a million and a half or \$2 million of sales, and come running to some other company, such as my own, for an umbrella. It is quite frightening sometimes. They come in almost every day.

Mr. MOORE. They have the ideas, but not the money of their own to push them through, and so they are forced to borrow?

Mr. JONES. Well, management is almost as much of a science as engineering. And an engineer coming out of school is not necessarily prepared for management.

Chairman PATMAN. Thank you very much, Mr. Jones.

We will stand in recess until 2 o'clock this afternoon here.

(Whereupon, at 11:45 a. m., a recess was taken until 2 p. m., of the same day.)

#### AFTERNOON SESSION

Chairman PATMAN. The Committee will come to order.

As our first witness this afternoon we have Dr. Howard L. Bevis, Chairman of the National Committee for the Development of Scien-

tists and Engineers, president emeritus of Ohio State University, Columbus, Ohio.

We are delighted to have you, sir. And you may proceed in any way that you desire. You have a prepared statement, I believe.

**STATEMENT OF DR. HOWARD L. BEVIS, CHAIRMAN OF THE NATIONAL COMMITTEE FOR THE DEVELOPMENT OF SCIENTISTS AND ENGINEERS, PRESIDENT EMERITUS OF OHIO STATE UNIVERSITY, COLUMBUS, OHIO**

Mr. BEVIS. I have a prepared statement. If I may, I will just read it. And, then, if you have any questions afterward I will try to answer them.

My name is Howard L. Bevis. For 16½ years I was president of Ohio State University. On the 1st of August I retired and I am now emeritus.

I appear here today as Chairman of the President's National Committee for the Development of Scientists and Engineers.

The creation of this Committee was due, I believe, in part, to the work of your subcommittee which last year held extended hearings on the general subject of automation and technological change, and, in part, to the interest of the Price Subcommittee on Research and Development Needs, with respect to scientists and engineers.

The President appointed the Committee—that is, our Committee—to improve our situation with regard to the education and utilization of highly qualified scientists and engineers.

The President recognized that, although the Government—that is, the United States Government—has a responsibility for increasing the supply and improving the quality of our technological personnel, the chief responsibility for solution of the problem, and this is the President's language, lies in the concerted action of citizens and citizens' groups.

To show the variety of groups represented on our Committee, I shall name them: American Society for Engineering Education; American Council on Education; American Association of Land-Grant Colleges and State Universities; Engineers Joint Council; National Education Association; National Science Teachers Association; National Association of Secondary School Principals; National Association of Manufacturers; United States Chamber of Commerce; A. F. of L.—CIO; Governor's Conference, Council of State Governments; United States Conference of Mayors; Council of Chief State School Officers; Social Science Research Council; American Council of Learned Societies; American Association for the Advancement of Science; and National Academy of Sciences.

Each group is represented on our Committee through its president or other chief officer.

I might say, in passing, that if the term of one such officer ends, his successor becomes a member of our Committee.

In order to maintain continuity, we have tried to keep the first man in some sort of touch with us, but membership in the Committee consists of the heads of the organizations for the time being.

I understand that your committee is to review developments in the general area of automation and technological change which have occurred since hearings on this subject were held a year ago.

Dr. Detlev W. Bronk, who is president of the National Academy of Sciences and in that capacity a member of our Committee, is to testify, I understand, tomorrow on the need for trained scientists as research workers.

In view of this, I shall only briefly mention the problem of need. Primarily, I want to indicate who we are, and what we are trying to do, and how much progress we have made so far in trying doing it.

The role of engineers and scientists in our economy is well recognized. Technology plays an all-important role in maintaining a rising standard of living for our country and in our efforts to remain strong in terms of national security.

Because of this role of scientists and engineers, we believe the work of the National Committee to be of prime importance.

Expanding technology and an expanding economy are constantly producing increasing demands for highly qualified scientists and engineers. It is not enough to plan for presently estimated needs, for the demand for scientists and engineers will accelerate as new discoveries open up new areas for further exploration and application.

The supply of many types of scientists and engineers is insufficient to meet current needs and future requirements, both civilian and military. In America, the indispensable combination of qualitatively superior military and civilian technology can come only through free, voluntary research.

Such research requires men and women possessing highly developed professional skills with the opportunity and incentive to use those skills.

In approaching the task given us by the President we are faced with a number of basic facts.

Because of low birth rates during the depression, the number of college age youth has been for a number of years past at a low ebb. We are now in a period where college enrollments are rising because of the higher ratio of eligibles that go to college, but we shall soon be in a period where the total number of college age young people will increase. So we will have the higher ratio applied to a larger base, beginning about 1960.

The number of teachers is still being adversely affected by this period of low birth rates. They were born during the period of low birth rates.

Chairman PATMAN. What do you consider the low birth era, about 1929 to 1942?

Mr. BEVIS. 1930, shall we say, to about 1941.

Chairman PATMAN. 1930 to 1941? Roughly about 10 years.

Mr. BEVIS. Roughly during the decade of the thirties.

Chairman PATMAN. That is right, yes, sir.

Mr. BEVIS. We must wait for those now in college to graduate before we can count on a real increase in the number of teachers.

That is a very real factor in our problem, how to find enough qualified teachers to take care of the increased numbers of students.

The rise in college enrollments is due not only to the fact that we are leaving the period when enrollments were being held down by low birth rates, but, also, because a higher proportion of young persons desire a college education. And increased family income enables more to go to college than in the preceding decade.



Added enrollments in the years ahead will put more strain on existing teacher shortages. In many schools, faculties and facilities already are inadequate for handling present enrollments.

Of course, we expect the enrollments to go up.

This committee is specifically charged with the responsibility for increasing the supply of engineers and scientists. Nevertheless it is, I want to register this note, important to increase the supply of highly qualified persons in all fields. We do not want to create an imbalance in education.

Sometimes there has been a suggestion that we are trying to raid other disciplines to get more scientists and engineers. That is not what we want to do. We want more scientists and engineers, but we also need more economists, more Government people, more philosophers, perhaps more poets.

The President in creating our Committee stated that it was an action group. He asked specifically that we do four things:

1. Assist the Federal Government in identifying the problems associated with the development of more highly qualified scientists and engineers.

2. Enlist the cooperation of all interested individuals and groups in analyzing the problem and developing programs to deal with it, and to take the lead in coordination of interested organizations outside the Federal Government.

3. Make available to all interested organizations information on effective ways of overcoming the obstacles to the training of more qualified scientists and engineers.

4. Publicize the problem and possible solutions in order to stimulate widespread public understanding and support.

Our first job was to identify the scope and character of our problems. It quickly became apparent that the problems were too many, and too diverse, for us to approach them all simultaneously. We had to set some priorities.

We have tried to stimulate action by local private groups. I have already pointed out the wide representation on our Committee. Because of this membership, we have been able to get help—effective help, very quickly.

In addition, because of the national interest in our problems, many local, State, and National groups have voluntarily offered their assistance. This has been invaluable.

Some groups, for example, have helped to publicize our problems and our efforts. One valuable form of cooperation has been for specific groups to lend us highly qualified persons for a short time.

It is in the area of local action that we believe we can make the most significant contributions. There are at present a number of efforts at the State and local levels that show what can be done when local groups—educators, industry, labor, government—attack a problem.

A notable example is found in Oklahoma. In this State a Foundation has been established, called Frontiers of Science, to raise the level of scientific knowledge and to increase the supply of competent scientific personnel.

I met with this group recently and was impressed by the wide scope and the effectiveness of their program. Other areas getting started along similar lines include some in North Carolina, New Jersey, De-

troit, Cleveland, New Orleans, Pittsburg, Boston, and Milwaukee and other places.

The problems being attacked by these local groups include:

1. Improving facilities for teaching.
2. Providing more science and mathematics teachers.
3. Improving the technical training of such teachers.
4. Providing summer employment to enable teachers to acquire additional experience and at the same time increased earnings.
5. Upgrading teachers.
6. Improving teaching methods.
7. Stimulating student interest in science and mathematics.
8. Counseling students.
9. Improving curricula.

Stimulating State and local groups in getting started is a significant part of the work we are doing.

Such local-action groups need help—particularly in the form of ideas and organizational guidance. We are documenting experiences and ideas that have proved locally effective. These we are passing on to other local groups and organizations. We are formulating a general plan of attack.

As the Committee has come to grips with its problems, it has become apparent that we need to know more about the occupations and areas where shortages now exist and about the future outlook.

In cooperation with the Department of Labor and the National Science Foundation, programs are now going forward that will provide on a continuing basis the kind of labor market data that we need.

A representative of the Department of Labor recently met with the national Committee to present an appraisal of the existing situation and of anticipated future developments.

This material will be available in printed form in a few days. If this subcommittee so desires, I should be pleased to submit it as soon as it is ready.

It takes time to train an engineer or a scientist. About the only way to do something constructive immediately to ease existing shortages is to make more effective use of what we have.

One of our Committee's first acts was to appoint a task force to study the fuller use of technical aids to scientists and engineers.

This group, after careful study and analysis, has developed a program to assist industry in utilizing technical aids. As a result of this work we now have another task force working on the problem of improving the curriculums of technical schools.

Similar efforts are now being directed toward two other problems:

1. The adequacy of salary levels for scientists and engineers; and
2. The improved utilization of scientists and engineers.

In both of these cases the work is exploratory—designed primarily to ascertain whether it might be fruitful to setup task forces.

We also have a task force on the problem of improving science and mathematical education in elementary and secondary schools.

A proposed program of action has been developed. Primarily, action must come from the States and communities, but the program developed by this task force will be helpful to them.

A fundamental requirement for the Committee's success is the achievement of public understanding. Support and cooperation are

necessary from industry, labor, scientists, and engineers, teachers, parents, and students, as well as from the general public.

Efforts to secure this support through publicizing our programs is being directed to the individual citizen through his local organizations.

Direct participation of individual citizens and local organizations will generate local news and community interest. The Committee's function in this area, we believe, is to supply the basic information with which others can carry out the major publicizing activity through established facilities and channels.

I hope that this brief statement will give you some idea of our problems and how we are approaching them.

I want to express my appreciation to this subcommittee for giving me the opportunity to tell you about the National Committee and the work that we are trying to do. I shall, of course, be glad to respond to any questions.

Chairman PATMAN. I would like to ask you, Dr. Bevis, what is the relationship of the National Committee for the Development of Scientists and Engineers, to the National Science Foundation?

Mr. BEVIS. Well, the National Science Foundation is very broad in scope. It is primarily concerned with the development of a national policy for the promotion of basic research and education in the sciences. It is, too, I take it, a contributing body of indefinite duration.

Our committee has as its objective the development of scientists and engineers, a very much narrower point of attack. The National Science Foundation cooperates with us in our work, particularly by providing us with staff assistance and assists us in dealing with Federal agencies. And while we have no terminal date, I take it that it is obvious that our committee is not supposed to go on forever.

We will try to do our job in a reasonable length of time. And presumably, we will go out of existence. The National Committee is the focal point for developing action programs and for getting these programs working through organizations of private individuals.

But our point of attack is a small sector of the ground that is covered by the Science Foundation.

Chairman PATMAN. What is the relationship of your committee to the President's Committee on Education Beyond the High School?

Mr. BEVIS. Well, the President's Committee on Education Beyond the High School has a twofold function: first, to stimulate informed public discussion that will lead to action and, second, to make useful recommendations to guide citizens' action in cooperation with institutions and governments to reduce some of the major educational problems beyond high school. The President's Committee is concerned with educational problems of all persons after high school, whereas our National Committee is specifically charged with increasing the supply of scientists and engineers. Many of our efforts, for example, are directed at problems of the secondary and even the primary school level.

Chairman PATMAN. Would you comment on the success of Russia in the training of scientists, engineers, and technicians, Dr. Bevis?

Mr. BEVIS. Well, I think we have to recognize that the Russians have laid out for themselves a very significant program. They did it a good while ago, maybe thirty or more years.

They set up a vast apparatus for training technological people. The leaders of Russia, have grasped the significance of technological

production. They are no longer depending on the geographical frontier. They are also looking toward the scientific technological frontier.

And so they set up a system of schools for technological training. From the ages of 14 to 17 all students devote about 40 percent of their time to physics, chemistry and mathematics. In addition they have taken measures to make science and engineering vocationally attractive. The living standards for both the teachers and the graduates in these fields are better than those of most people, relatively better in fact, than our engineers enjoy, I do not think their living standards are as good as ours, but theirs is higher than the rest of the Russian people; relatively higher than the living standards of our scientists and engineers compared with the rest of the people.

We know a few things about the Russians. They are apparently turning out now more technical graduates than we are. We do not know too much about how good those graduates are.

And I do not think we know, either, too much about how relatively efficient in the production process, a given number of Russian engineers may be.

But we do know this, they are putting out some pretty good ships, some pretty good planes. They have nuclear apparatus.

I do not think we can afford to sit by and assume that we shall continue to be better. I think we are better than they are now, but if we do not move ahead there is a possibility that they may pass us.

There is one more thing I would like to say about Russia. I believe they have passed the stage where they need to rely on foreign help. I think there was a time when they needed German scientists and German engineers. I believe they have reached the stage now where they can go on their own without such help.

Chairman PATMAN. Dr. Bevis, I believe that we all feel that President Eisenhower should be commended for setting up this Committee. I certainly feel that way about it.

And if you think it is all right, I would like to have inserted in the record at this point the President's charge to the Committee, which is addressed to you.

Mr. BEVIS. Yes, sir.

Chairman PATMAN. From the White House of April 3d.

Mr. BEVIS. I will be very happy to have you do that.

Chairman PATMAN. I will insert it in the record at this point. (The President's charge is as follows:)

#### THE PRESIDENT'S CHARGE TO THE COMMITTEE

THE WHITE HOUSE,  
April 3, 1956.

DEAR DR. BEVIS: For the last several years there has been a growing awareness within the Government and among private citizens in general that as a result of our continuing shortages of highly qualified scientists and engineers we are running the danger of losing the position of technological preeminence we have long held in the world.

Because of my own concern with this situation, I established some time ago a special interdepartmental committee to make an intensive study of the situation. This committee has now made recommendations to me on actions which might appropriately be taken by the Federal Government to improve our relative position.

At the same time, the special committee pointed out that the problem of increasing our supply of qualified scientists and engineers cannot be solved by Government alone. The committee wisely recognized that the problem re-

quired for its solution the powerful and concerted action of citizens and citizens' groups organized to act effectively.

As its major recommendations, therefore, the special committee urged that I establish a National Committee for the Development of Scientists and Engineers. They proposed that this be an action group, representative of major citizens organizations concerned with the education, training, and utilization of scientific and engineering personnel. This group would consider ways of fostering the further development of scientists and engineers and would in all appropriate ways take action to promote a substantial growth in the supply of scientific and technological manpower.

I have accepted the recommendation of the special committee and I am establishing the National Committee which has been proposed.

It is my hope that the Committee will—

1. Assist the Federal Government in identifying the problems associated with the development of more highly qualified scientists and engineers.
2. Enlist the cooperation of all interested individuals and groups in analyzing the problem and developing programs to deal with it, and to take the lead in coordination of interested organizations outside the Federal Government.
3. Make available to all interested organizations information on effective ways of overcoming the obstacles to the training of more qualified scientists and engineers.
4. Publicize the problem and possible solutions in order to stimulate widespread public understanding and support.
5. Provide me, from time to time, with a report of progress.

It gives me a great deal of satisfaction to appoint you Chairman of this Committee. Under your leadership, I am convinced that this group can make a major and timely contribution to the economic and social welfare of the Nation and to the national security as well.

Sincerely,

DWIGHT D. EISENHOWER.

Dr. HOWARD LANDIS BEVIS,  
*President, Ohio State University, Columbus, Ohio.*

Chairman PATMAN. Thank you again very much, Doctor Bevis.

Mr. BEVIS. Thank you, sir.

Chairman PATMAN. Dr. Moore, suppose you read into the record an introduction for our next witness.

Mr. MOORE. Dr. John J. Grebe has been a member of the Dow organization since 1924, where he served as director of the physical research laboratories since 1949. He holds more than 50 patents in electrochemistry, power generation, synthesis of organic compounds, and air conditioning, and is the author of numerous articles in scientific journals. He was a consultant in the Office of the Rubber Director during World War I and civilian observer at the Bikini tests. From 1948 to 1949 he served as chief technical adviser to the Chief of the Army Chemical Corps. In 1953 he was appointed to the position of director of nuclear and basic research department of the Dow Chemical Co. This department is currently engaged in a very diversified program in research. Dr. Grebe.

Chairman PATMAN. We are very glad to have you, sir. And you may proceed in your own way.

**STATEMENT OF DR. JOHN GREBE, DIRECTOR, RESEARCH AND NUCLEAR DEVELOPMENT, DOW CHEMICAL CO., MIDLAND, MICH.**

Mr. GREBE. Thank you very much, Mr. Chairman.

This subject of automation is one dear to my heart, for back in the 1920's a group of my associates and I devised some of the first automation instruments to be applied to the chemical industry.

I well remember the struggles we went through to design the instruments and to test them and eventually to find the manufacturers who

would and could build them for us. We are still working hard on new and vital instrumentation research.

May I digress for one moment to say your work so far, the Report of the Joint Committee on the Economic Report to the Congress of the United States of January 5, 1956, is a wonderfully sound statement of the problems to be solved. It emphasizes that education, the development of our human resources, is the most important single problem facing us as a nation.

May I explain what automation means to me? We have had automatic machines for many years, particularly in hydraulic turbine speed control. These machines did a job automatically which in former times a man would do manually.

Now the difference is that complete automation replaces the operator of the automatic machine with a device that observes or feels the variants to be controlled and makes the proper adjustments so that the automatic machine regularly operates in proper balance.

This eliminates much human error. I do not mean that it creates unemployment, for, as I later point out, it is quite the reverse, but it does make it possible to do with machines what human beings could not do quickly and accurately enough, nor continuously.

The chemical and the petroleum industries are outstanding examples of the application of instruments and controls to increase productivity and to maintain product quality.

You will forgive a reference to my own company as an example, but my company is typical, I believe, of a very diversified chemical operation. To this degree it can serve as a good cross section or example of chemical industry methods of manufacture and automatic control.

Our chief chemical raw materials are water, salt, oil and coal. Water is brought a distance of 75 miles, from Lake Huron. The salt, as a brine, is pumped from deep wells. Coal, as the energy source, is transformed by boilers and condensing turbines into electrical energy and process heat.

Power and chemical people well understand that water is not a simple substance, but rather  $H_2O$  complicated by a vast complex of impurities. Even the term "pure water" has a meaning dependent on the application.

The elaborate plant installed to treat the process and powerplant water at Midland cost over \$1 million. Mechanically, it is a complex aggregate of tanks, pipes, valves, and pumps.

Operationally, it is almost completely automatic. A central control room receives signals of measured quantities from all parts of the system. Changes in all the important variables such as impurities, flow rates, et cetera, are transmitted and recorded automatically.

The control instruments then send back orders to servomechanisms which open and close valves, adjust weights, pressures, temperatures, and so on.

Practically no brawn is required in a plant of this sort, only complex mechanism and enough brains to run it. A single operator, backed up by maintenance crews, keeps the production on the beam.

In the powerplant we find another complex assemblage of instruments and controls. These measure temperatures and the chemical constituents of the stack gas, temperature of water fed to boiler,

pressure and temperature of the steam produced, the precise speed of the turbine, et cetera.

They control and allocate loads on the various machines, watch bearings for overheating, check condensers for leaks, and so on.

All this is only a start. Let us look at an average chemical plant. To a large degree it consists of fluid transportation—liquids and gases—flowing through a system of piping and tanks. At hundreds of points, instrumentation must measure and adjust pressure, temperature, flow rate, and composition.

Some of the more complex processes require controls that will replace and improve on human judgment. The central brain receives signals from many instruments and meters. It studies their relative values and tests them against prescribed criteria built into the machine.

From these it reaches decisions on what's to be done, sends out electronically the orders to servomechanisms, which execute these orders.

Finally, another device, known as feedback, reports the extent to which the ordered action failed to create the effect desired. The central brain then sends out corrective reorders.

This feedback is the mechanical equivalent of what one does in driving a car around a curve. As one enters the curve, he turns the wheel an estimated amount. This is never exactly right. His eye notes the car edging toward the shoulder or toward the center and feeds back, or relays, this information to the brain which then estimates the required correction and signals the steering arm to turn the wheel slightly left or right.

Thus, in industrial apparatus, fluid chemical systems, or aggregates of pipes, tanks, valves and pumps, the direct sensing and controlling elements are connected to meters, valves, and pump motor controls on pumps, to produce the desired changes.

With these examples in mind we can then proceed to look into the additional operations existing in a chemical plant. We can find instrumentation for recording and controlling such basic operations as crushing, grinding, filtering, precipitating, distilling, evaporating, crystallizing, et cetera, which result in a more uniform product, a reduction in product cost, and an increase in product quality.

A large and constantly growing percentage of the money spent on new plants of many chemical companies go for advanced instrumentation. This year there will be spent many millions of dollars on instruments of all types, including the highest percentage ever for automatic control components.

The importance of instruments to today's plant is shown by the fact that a moderately sized manufacturing plant in the chemical industry will use from 5 up to 20 percent of its cost for instrumentation.

In addition to our outside purchases of instruments that meet our normal demand and needs, we spend a substantial part of our research dollar on the engineering, design, and fabrication of special purpose instruments.

About one-third of the work at testing and engineering laboratories is devoted to research on automatic control components.

The chemical industry, as a whole, is more dependent on automatic control than any other large industry. We won our spurs in our industry by doing things automatically that could not be done otherwise.

It might be of interest to enlarge on this point, but time would not permit.

Keeping track of hundreds of variables and making necessary process adjustments in time and with safety, is a job which can be handled only by automatic control. In the long run, automatic control, like every other technological improvement, will stimulate employment.

The whole field of nucleonics is a special case of an industry entirely dependent upon instrumentation. Except for the discovery at the University of Michigan that the water spider somehow senses and knows enough to dodge gamma radiations, we know of no living organism that is directly sensitive to nuclear radiations, unless the rays are intense enough to produce "sensible heat," or obvious physical damage.

Indirect sensing through instruments, however, has made possible an extension into qualitative and quantitative analysis that was undreamed of before the invention of the Geiger counter.

It, and its many counterparts and improvements, is capable of telling us things about a few atoms out of the  $10^{24}$ —that is millions of millions of millions of millions, beyond comprehension—(10 with 23 ciphers behind it) number of atoms in an ounce of water.

The growth of this industry will continue to follow the lead of automation, particularly the segment consisting of instrumentation, because it is difficult to depend on human beings to do the right thing when they cannot directly see, hear, feel, taste or smell any of the things that are going on behind the necessary shielding.

So when you go to see a nuclear development anywhere, you can recognize without instrumentation it could not be. It is just that positive.

For a concrete example in productivity, let's look at the experience of one chemical company.

In the past 10 years, its total employment has doubled, but the physical output has increased more than fourfold.

Year	Employment	Output as reported	Output at 1946 values
1946.....	13,500 men.....	\$101,000,000	\$101,000,000
1956.....	28,072 men.....	565,000,000	420,000,000

Even figuring in 1946 values the output has more than increased 4 times in 10 years with roughly double the number of men.

These same 10 years have seen increasing use of instrumentation. During this period, automatic control equipment was used on a large percentage of its manufacturing processes.

This resulted in a reduction in the amount of direct operating labor. This was not all net gain in efficiency, however.

It required skilled workers to make and install the control instruments and other highly skilled maintenance men. Many of the former operators have been upgraded to these maintenance jobs.

In the chemical industry, the instrument groups search the world for the best instruments they can find, and they are encouraged to use vision in planning for the future. They are also encouraged to develop new special instruments not on the market. The total of men employed in this field is large indeed, running surely into the thousands.



There is one additional subject that is most difficult to present. It is bound to be misunderstood and raise hard feelings.

We have been speaking about productivity in our industrial output. We have been thankful that our engineers and scientists have made it possible for our nation to increase its material conversion by a factor of two, every 25 years, but on the effort of converting human resources we have had no similar increase in efficiency. Some even say a decline.

This is well presented by one of our colleagues in instrumentation, Dr. Arnold O. Beckman, in U. S. News and World Report, November 30, 1956. I think it was referred to this morning.

There are, however, many examples of the very best in educational methods and facilities that have reduced the man-hours required to accomplish definite objectives in educating, training, and broadening individuals.

The newest methods and facilities have in common the objective of making higher paid teachers free to be a friend and inspiration to the students, leaving all formal presentations to what the best lecturers can do with films; and the giving of tests, grading, and bookkeeping to machines and student assistants and other nonprofessional people.

The full utilization of such technology would greatly increase the flexibility of our educational systems, making it possible to keep all students challenged sufficiently to maintain keen interest without overtaxing and discouraging them.

Much of the new and better is being introduced by private and corporate sponsorships. Examples of this type can be found all the way from Ding Dong School, Mr. Wizard, Our Mr. Sun, and other TV programs, as well as interesting church, and Boy and Girl Scout activities, little leagues, on-the-job-training, contest, camps, civic activities, on through the methods of graduate schools.

Graduate schools give an excellent example of what is needed.

Movies, educational toys, models, and hobby shops accomplish wonders. Museums, like the Rosenwald Museum of Science and Industry at Chicago, are most important. The really great developments in these fields, however, are still to be made.

We have not started yet.

The best example of what has been, and should be done, is given by our Armed Forces. The military services improved on old practices in selecting men by a factor of two during World War I; again, they doubled the efficiency of utilization of the men in World War II.

Now we need another doubling to make the 2 years of service the most worthwhile, the most broadening and educational, in the lives of our youths. It is being done by the military in spots.

The S. P. P. program, which uses specialized professional personnel in the armed service at the level and on the jobs that fit the training the men have had, is of tremendous value. They apply the experience they have had, and extend their training by research and development, in badly needed fields of activity.

For example, some of the most highly specialized work in the services is being carried out by draftees in the United States Army Chemical Corps, at its various installations. Seminars are held by the men to broaden their interests and education. Their physical training and buildup is also much appreciated.

An inventory of the capabilities of a person before and after military service could, and should, show a rounding out of personality and experience that cannot be attained in any other organization.

Measuring this effort and accomplishment alone would lead to new demands being supplied and balanced out in new ways to meet the needs of the complete man.

It is an automatic control technology using instruments that may not yet have become a part of the recognized field of instrumentation and automation.

I have talked to many men who were proud of the way the services used them, and thankful for the training. This can and must become the rule for all service men and women, if we are to keep up with the pace set in many specific instances by the rest of the world.

On the other hand, there may be many sergeants, who would say with the Scotsman, philosophizing: "If it gives you pleasure, it's a sin."

Next, we need better motivation for human advancement that will reach more people. The living standard of the average American is on a par with that of the upper fraction in most other countries.

Hence there is less incentive for the average individual to try to improve himself. The young Russian shift workers who work at night and study college texts in the library during the day have two incentives that we do not have. They must make more of themselves, in order to rise above, in freedom and self-expression, the lot of a serf, and second, to gain the differential in pay and privileges accorded for increased responsibilities.

We have all but lost differential pay incentive in our country, and are thankful that the hunger for freedom is so strange to us that it is hard for us to understand.

And so three-fourths of our young people quit school too early, to reap the benefits produced by the other fourth, who develop themselves further.

Finding and thoroughly establishing a good method of human motivation, and better methods of education, can be the key to the success of attaining our needs in the development of our human resources.

One possibility is to develop a movie presentation of the growth of man, showing how from early youth an individual gradually fills out great fields of knowledge and capabilities in reflexes, thought, and feeling in all the lines of human abilities.

One first develops physically, extending coordination, muscular strength and endurance, in this wide plane of possible applications. It is the first tier of a great pyramid that one builds of himself.

Next, there is communication in many ways, including speech, vocabulary, languages, and the like. Finally, one broadens into many other fields, such as music, mathematics, art science, religion, and the many specialized fields of human activity and employment.

At best, a person is "well-rounded," much like a Christmas tree that grew uniformly and completely.

However, no one can possibly extend his background, training, and abilities in any one plane without sacrificing somewhere else. When the going gets tough in one direction on one plane, there are all the other tiers to work on.

Of the total range of human capabilities, one could not hope to attain more than a few percent. Having a clear picture at any age,

of what one has attained and some inkling also of what one might attain currently, would help all of us appreciate one another more—and also, to understand our own limitations.

Growing tall and rounding out and bearing much fruit on specific branches could become a greater motivation for self-improvement than any other inducement that we have left.

A beautiful illustration of the national need for this was presented by Dr. de Bordenave, at the celebration of the 250th birthday anniversary of Benjamin Franklin.

I am sure Walt Disney and Cecil B. De Mille would not shy from this job, even if it had to be done in 10 stages to be understood by all the different levels of maturity.

Here is a copy, if you should care to refer to it further.

(The document is as follows:)

[Reprinted from Journal of the Franklin Institute, January 1956]

#### OUR POLITICAL CRISIS—AND FAITH

(By the Reverend Ernest A. de Bordenave,<sup>1</sup> Christ Church)

##### FOREWORD

"Benjamin Franklin was a religious man who practiced his religion through tolerance, unselfish service, and love of his fellowman. Since he attended Christ Church and is buried in its grounds, we hope that you, the present rector of Christ Church, will prepare a paper on religion for our Franklin issue. The title, 'Faith—the Crystallization of Our Hopes' is listed on the attached plan, but this is only a suggested title and you are free to change it at will. We visualize this paper not so much a record of Franklin's religious beliefs as a history of the changing practices of religion during the past 250 years."

This is one paragraph of the letter from the editor of the Journal of The Franklin Institute, Dr. Henry B. Allen, inviting me to write this article and indicating its nature.

According to the invitation, and I hope, in the spirit of Benjamin Franklin, the title has been changed and the content of the paper attempts to deal with the deepest problem facing man today—himself and his political behavior.

Direct quotations, footnotes, appendixes, and bibliography have been purposely omitted in the hope that this paper may be read by others than scholars, who do not need such.

Although my indebtedness to the works of others is much greater than can be listed, it is hereby humbly and gratefully acknowledged. There is a special indebtedness to a series of lectures entitled "Christianity and the Crisis of Secularism," given by the Reverend A. T. Mollegen, S. T. M., D. D., in the Washington Cathedral Library in 1950 and 1951.

It is a privilege and honor to have this participation in the 250th anniversary of Franklin's birth, especially so since I am no longer the rector of Christ Church in Philadelphia. For this privilege and honor I thank Dr. Allen and the Franklin Institute.

E. A. DE BORDENAVE.

MIDDLEBURG, VA., *May 1955.*

The political crisis of our time is the split between the so-called free nations and those nations that are dominated by Soviet Russia. This crisis is so acute that at best it will keep us living under the threat of war for years to come. At worst it will plunge us into an armed conflict that will threaten the survival of man's civilization, if not the existence of man himself in many parts of the world. Our thinking and writing cannot but be aimed at a resolution of this conflict, assuming a resolution is possible. If history proves a resolution not to have been possible, then our thinking and writing should have helped to prepare us to stand fast when the deluge comes. This paper, therefore, has as its purpose to help us understand the crisis of our time and to help us meet it, no matter how it confronts us.

<sup>1</sup> Rector of Christ Church, Philadelphia, Pa., 1950-55.

A first thing to note about our political crisis is that the split is not between East and West. It is a split within western civilization itself. Secondly, it is not a crisis that was created in our time, rather it roots deeply in the development of western civilization. Its origins can be traced back 250 years to Benjamin Franklin's time—and back further still. In fact, the political crisis with which Franklin wrestled was only one phase in the development of the crisis with which we wrestle. Our crisis began with what is commonly called the modern period of the West. It cannot be understood with any profundity except as it is understood in its context of the developing modern period of western civilization.

Therefore, our first task is to try to trace out the rise of our political crisis. Only after we have done that can we talk with relevance about faith and about the relevance of faith to the political crisis of our day.

The simplest way to trace this development is in terms of the major ideas that have marked the turning points. If anyone objects that ideas are too abstract a route to pursue, he needs only to be reminded of how seriously the ideas of one man, Karl Marx, have affected the life of all of us, and Marx has been dead only 73 years. Ideas furnish us as good an understanding of what has happened as can be had from any other source.

### I

We must begin with the Middle Ages.

For a long time man's thinking about himself and his world had been dominated by concepts that had come into the Christian Church from Greek philosophy. These emphasized a great and unbridgeable contrast between good and evil and between the spiritual and the material. That which is good was identified with that which is spiritual. That which is evil was identified with that which is material or physical.

Since man is both spiritual and physical, hence both good and evil, he was confronted by a serious problem: how to be free from evil? This problem could be solved only by his getting away from the physical, even from the physical which was a part of himself. This would happen to him finally at death but in the meantime he was told that he could get partly away from the physical and its concomitant evil by losing himself in contemplation, meditation, prayer, and other mystical practices.

Man's attitude toward the physical, material, universe was determined by this dualistic understanding of the universe. He felt that anything physical or material was his foe. It was something alien to his true being, which was good. Man felt that physical nature was his enemy, something to be escaped from or to be delivered from. His only interest in the material world was to get away from it. This attitude toward the material and physical world is always characteristic of all people whose culture is informed by a mystical religion.

In the West, however, a change had begun to take place by the beginning of the 13th century. St. Francis of Assisi (1182-1226) affords us a good example of this change. The material world had ceased to be man's foe. For St. Francis all of nature was his friend; it was not to be shunned but to be courted and loved. The birds and bees, the flowers and trees, the sun and the moon—all of these were objects of St. Francis' affection.

This was a new attitude toward nature. It was the result of the Hebraic-Christian idea of creation overcoming the Greek idea of an irreconcilable dualism. A few men began to assert that God had created all things, therefore they must be good—these include material things, which are essentially good and not evil. Nature is to be taken unto man, because it is God's nature. It is not alien to man. It is a part of God's creation and man is a part of nature and all of it is God's.

This victory of the Biblical idea of nature over the Greek idea was of the utmost importance to the development of western civilization. No longer was it necessary for man to flee from nature; now he could turn his face toward nature. He could ask questions about it. Indeed, he should ask questions about it, because it was God's nature.

It should be noted that this was not the position of those who governed the church at Rome. This attitude arose primarily among the Franciscans, but St. Francis had trouble with the authorities at Rome. It made no difference, however, because these new ideas were abroad in the church and they could not be stopped.

Here was an important turning point in the development of western civilization: when the Biblical idea of creation emerged victorious over the Greek idea. It was this victory of the Biblical attitude toward nature which made possible

the whole development of empirical science. It is no accident that science as we know it did not develop in any other culture. It could develop only in the West where the influence of the Hebraic-Christian attitude toward the material universe became the dominant one. This was the first turning point of western civilization into its modern period.

## II

Nicholas Copernicus (1473-1543) was a canon of the Cathedral in Frauenburg, in East Prussia. He also practiced medicine and speculated about astronomy. He reduced his theories to writing in a treatise entitled "De revolutionibus orbium coelestium" and stated therein his conviction that the sun is the center of a great system of heavenly bodies, and the earth is only one of several planets that revolve around the sun.

This treatise was probably finished by the year 1530. But the church officially frowned on any idea that intimated that the earth is not the center of the universe, hence Copernicus would not publish his treatise. It was not finally published until 1543 when he lay on his deathbed. Nevertheless, this new idea of Copernicus became the foundation upon which modern astronomy has been built.

Galileo (1564-1642) attempted to demonstrate the truth of the theories of Copernicus and had some success. It was Galileo's persistent investigations of the laws of nature that laid the foundation for modern experimental science. Like Copernicus, Galileo was called on the carpet by the authorities of the church at Rome. He assured those authorities that there was no intention on his part to undermine or contradict the teachings of the church. He was confident in his own mind that truth discovered by experimental science was God's truth, which man could accept with confidence. It was truth about God's creation. So, in spite of the church's pressure upon him to desist from his researches, Galileo continued his experimental investigations until his death.

One of the most significant results of Galileo's work was his distinguishing between those properties of matter which can be reduced to mathematical formulas and those properties which are known through the senses. He argued that the properties such as weight, volume, size, and speed of physical nature could be reduced to mathematical formulas and thus be known by man in a precise way. These facts could be discovered by patient, scientific inquiry and be known exactly. On the other hand, the taste, smell, color sound or feel of physical objects, which are perceived through man's senses, cannot be reduced to mathematical formulas and this means that knowledge of these properties of physical nature cannot be exact knowledge. The sun, for instance, appears to man's sense to move across the sky each day but this could be demonstrated not to be the case.

Galileo thus created a distrust of knowledge that is known through the senses and which cannot be reduced to mathematical formulas. He also established a new kind of cleavage between the knowing subject and the known object; and he opened the way for the doubt that the knowing subject can really know the object. Thus, he opened the way for doubts and questionings about all knowledge.

Needless to say, the procedure of gaining knowledge by applying doubts and questionings was not acceptable to the Church but it could not be stopped. The procedure of doubting and questioning was adopted as the new path to new discoveries, and it was indeed a fruitful path. The more serious the doubt and the more rigorous the questioning, the more sound the answers, it was thought.

René Descartes (1596-1650) was a brilliant man who breathed this atmosphere. Although he was a mathematician he was also a philosopher who applied the principle of doubt and questioning to everything. He rigorously doubted that anything existed. He wrestled with the implications of this complete doubt and concluded that he had to grant that the doubt itself existed, and if the doubt existed, then the existence of the one who doubted had to be admitted. Thus he came to his famous statement, "cogito ergo sum"—I think therefore I am.

That which is primary to all existence therefore became the human mind, the rational faculty, man's power of reason. Human reason is basic and is the bar before which all other existences must be tried. Nothing could be accepted as having existence unless and until it so confronted human reason that it had to be accepted by that reason. God so confronts human reason, said Descartes, hence God has existence. God is to be trusted, He will not fool people. The outside world, the physical universe which appears to exist, therefore can be accepted as actually existing. So, Descartes gives us the knowing mind, God, and the physical universe, as having existence.

Here we come to the second great turning point as western civilization moved into its modern period and form. It occurred when Descartes made human mind, human reason, the basis of everything that exists. The human mind takes precedence over God. In fact, it decides whether or not God exists. Human reason becomes the final arbiter, the primary existence.

Although Descartes, like Galileo, had no intentions of upsetting the faith of historic Christianity, he did in fact turn it upside down and it has not yet wholly succeeded in righting itself. The God of the Hebrew-Christian faith is the ground of all being. He is the Creator and judge, the beginning and the end, of all existence. His existence makes possible man's existence and the existence of man's reason itself, which is part of man's being. Man is related to God whether he likes it or not and whether he knows it or not. God is Being itself.

Descartes changed all this. Man's mind became the basis of all existence. Man put his final trust in human reason and its judgment. Man's reason is trusted to determine even God's existence. Here, man's reason becomes God, in the sense that man places his final trust in it. Man's faith has a new object. It is no longer the God of the Hebrew-Christian tradition, the God who is Being itself. Man's faith is in a new God, human reason. Reason is trusted in all things and trusted ultimately.

This new kind of ultimate faith in human reason began with Descartes. Although it is thus not more than 300 years old, its influence in the succeeding centuries of western civilization cannot be overstated. Had one been able to have foreseen in Descartes' day how great this influence would have been, such a one could have foretold the present political split in the West, which is the crisis of our time. That split roots in Western man putting ultimate faith in human reason. One side of the split puts its ultimate faith in collective human reason. The other side has put its ultimate faith in individual human reason. In both sides, however, it is ultimate faith in something less than God, therefore both sides are putting ultimate faith in a false god. And false gods always betray those who worship them.

### III

Descartes was a century ahead of Benjamin Franklin, whose life was contemporaneous with the early settlements in the American colonies. The citizens of those colonies had few books and little time for reading. They had the task of conquering the trials and hardships of a wild frontier. They were laying foundations upon which a new society would be constructed. Not many Americans of the 17th century ever heard of Descartes, but his influence was working itself out in Europe. It is, for instance, in the materialism of Thomas Hobbes (1588-1679) and in the reaction to him of the Cambridge Platonists. It was affecting the intellectuals of Europe even though it had little influence in America before the 18th century.

John Locke (1632-1704) was the person of the 17th century who probably had more influence on the century of Franklin than any other one person. Locke was the apostle of "common sense." He seems to have taken the position that any problem which could not be solved by common sense was not worth worrying about.

By the use of common sense Locke proved the existence of God. He observed that everything that happens in nature is caused by something that preceded it and caused it. The chain of effects and their causes cannot be endless as one traces them back. There had to be a "First Cause," and this was God.

So God became the "First Cause" who set in motion the endless chains of causes and effects, and who has nothing more to do with the processes of nature. Locke recognized that this God had disclosed Himself by revelation but this was only for the illiterate masses of men. Those whose common sense was mature, like Locke's, did not need revelation. In fact, they had to use their reason to decide whether revelation was true or not. The subject to be studied was nature and this would reveal to man's reason the processes begun by nature's God.

Thus John Locke is the turning point into the 18th century when nature was relied on so heavily. Locke died just 2 years before Franklin was born.

David Hume (1711-76) took seriously the empiricism of Descartes and Locke. They had insisted that the only true knowledge of external reality was gained through empirical science and was expressible in mathematical formulas. Hume analyzed the knowledge thus gained and raised the doubt that there was any necessary correlation between the "knowledge" thus accepted by human reason and the external objects that are thus known. Hume says Descartes only

proved that there is an idea of a self that experiences unknown and probably unknowable reality. Thus Hume shatters Descartes' assurance of the existence of the self, and any assurance of the existence of God and the physical world.

Immanuel Kant (1724-1804) was shocked by Hume's work, though he had to admit the validity of his arguments. He recognized the impossibility of arriving at knowledge through pure reason which was consciously or unconsciously presupposing the existence of a God who is knowable by man's reason. Kant said that this is not the way man knows God. Instead of knowing God by reason, Kant says that man knows God by the sense of obligation to do the right which is implanted in every man. The right is whatever a man would agree is right for every other man to do in the same situation. Man can know what is the right and therefore it can be asserted that since man can know the right, he also can do the right. And there is implanted in every man the sense that he ought to do the right. It is this sense of "ought" where God is known. God is the author of man's sense of "ought to do the right." God is the author of man's rule of behavior and the Rewarder of the men who obey His rules.

Thus with Kant, not only does God degenerate into a giver-of-rules of conduct but Christianity itself ceases to be an intellectual matter. It is now a moral matter, a matter of enunciating rules of behavior and living by them, in the assurance that God rewards those who do this.

Locke and Kant together give us the religious atmosphere that dominated the 18th century. The God who was the "First Cause," who began the processes of nature, cannot be known by man, nor does man need to know Him. Man studies nature, which is the resulting cause and effect sequences flowing from the First Cause. But this remote God is not absolutely indifferent to man. He makes man have a sense of ought-to-do-the-right and has somehow ordered causes and effects so that men who do the right are rewarded. It remained for man to work out his codes of conduct and live according to them. Deeds were more important than creeds.

This was the 18th century "faith" for intellectuals—and Benjamin Franklin was foremost among intellectuals!

#### IV

The emphasis on nature of the 18th century was spurred on by man's steadily increasing control over it. As man learned more and more of nature's secrets it seemed to open up ever new promises for man's future. Man had a profound trust in nature and in human reason's capacity to know nature and to align itself with nature's meaning and the harmonies inherent within it. "Nature" for the 18th century intellectual meant the objective universe. It was a universe that had within itself a meaning, and this meaning included a knowledge of God and of morality. Human reason applied to nature could discover, codify, and obey rules of behavior sufficiently to guide men into political, economic, and social organizations which in turn reflect the harmony in nature itself.

In spite of this kind of thinking, however, there were deep political splits during the 18th century. Those splits were not only between the great and powerful nations of the world; there were also splits within those nations. There were splits between those nations and their colonies and also between the colonies themselves. In short, the "harmony" so faithfully trusted had not manifested itself in political relationships.

Jean Jaques Rousseau (1712-78) was a French philosopher who was profoundly disturbed by the political problems of his day. He was not just a philosopher but was also a political analyst and theorist. He shared the current faith in human reason and nature and felt that the harmony of nature included man himself. He felt that there was within man a natural friendliness that would have made for good and peaceful societies had it been able to express itself. Rousseau felt, however, that man's structures of civilization and his organizations of society had disrupted the natural harmony; that this disruption had been so complete and in effect so long that the only hope was to break, to overthrow, the social and political structures of society and to discard them. When nature was thus freed from these corrupting influences its harmonies would have a chance to express themselves. The result would be a political and economic harmony that would overcome conflict and would produce liberty and justice.

Rousseau was profoundly aware of the contradiction between the demands of individual liberty and those of order and justice. He was confident, however, that the social and political structures that distort and corrupt the harmony of nature also distort and corrupt the harmony that is within man; that if those structures are overthrown and discarded then the natural harmony within man also would express itself; that this was primarily a natural friendliness, and

this friendliness would overcome the contradictions between personal freedom and social justice.

Thus, liberty (personal freedom), equality (social justice) and fraternity (man's innate spirit of friendliness) became the slogan and the hope of the French Revolution.

Adam Smith (1723-90) shared Rousseau's faith in the harmony of nature and applied this faith to the economic realm. He insisted that every individual should strive for his own self-interest, that each striving would thus act as a check on other men's strivings, and the end result would be harmony in the economic sphere. It needed only that restrictions be removed from individual man's self-seeking to have the perfect economic order manifest itself. Smith felt that the law of supply and demand was a part of the economic harmony of nature and that it worked to restrain and level off the worst effects of individual self-centered actions. He knew nothing of economic situations where monopoly has gained control of supply, nor does he indicate any concern with the fact that demand has to be coupled with purchasing power in order to become effective as an economic factor. But these should not be labored too strongly against Smith. He was concerned primarily to prevent the aristocratic government from using its political power to prevent the rise of the new middle class that was appearing in the western world. His faith was in individual reason, motivated by self-interest, moving in step with the harmony in nature to produce the economic utopia. It would be a society dominated by the then rising middle class of merchants and bankers and other radicals of that day.

## v

At this point it may be helpful to try to illuminate the nature of the contradiction between the demands of freedom and of order. The contradiction can be expressed in many ways: liberty versus equality, or individualism versus justice, but it is the same problem no matter how it is expressed. It is the basic problem with which every society must wrestle.

On the one hand, people are so created that they must possess a certain measure of freedom, liberty, self-determination, individualism, if they are to be persons and not automatons or lower animals. This quality is a prerequisite of human beings. No matter how regimented or how totalitarian a society may be, it has to grant a sufficient measure of this necessary quality at least to an extent that will keep the people from rebelling.

On the other hand, no society can survive unless it establishes and maintains a sufficient measure of order to enable individual persons to live together in relative peace. There have to be rules and regulations and these have to be enforced. The enforcement, however, must be administered fairly to the individuals, and the ultimate measure of fairness is that each be treated equally. This will produce justice for all the members of a society. A society has to achieve at least a sufficient measure of justice to keep the people from rebelling.

The contradiction arises from the fact that as soon as one single rule has been promulgated and enforced in the interest of order, justice and equality then the rights of freedom, individualism and self-determination have been encroached upon. And every exercise of human freedom and liberty that encroaches upon the rights and liberties and freedom of one single other person is an encroachment upon the demands of order, justice and equality. This contradiction is inevitably a part of every society, whether it be the simple unit of a family or whether it be the larger unit of nation or world.

Every society must struggle to overcome this contradiction or at least to ameliorate its worst results. Every political organization of a society promises to do these things. Every society promises to give the greatest measure of personal freedom and the best and most just order. Rousseau and Adam Smith were certain that if individual man applied his reason to the problem, the harmony of nature would be discovered and each reasonable man would bring himself into line with that harmony, thus resolving the contradiction. Rousseau thought that man's inherent friendliness would bridge the gap between Liberty and Equality. Smith thought that man's sympathy—that is, man's ability to put himself in place of the other fellow—would bridge the contradiction. Both of these now appear to have been somewhat naive.

The American Declaration of Independence, framed by a committee that included Benjamin Franklin, recognized the contradiction. It affirms the fact that men are created equal. It affirms the fact that government is necessary to insure that individual men have the right to life and liberty and to pursuit of happiness. The Declaration, however, does not have any factor comparable to Rousseau's



"fraternity" or Smith's "sympathy," which factor might be expected to bridge the gap between the demands that the Declaration so clearly recognized. We can assume from other writings of Thomas Jefferson that he felt that "educated" individual human reason could be trusted to perform this function, although the Declaration itself does not indicate this.

We can be grateful that men with profounder understanding of human frailty and pridefulness wrote the Constitution of the United States. Franklin was also a member of the Constitutional Convention and it is fair to assume that he had grown in wisdom since the Declaration was written. Madison had become the stronger influence from Virginia and John Adams from the regions of New England, which regions were deeply imbued with the Reformation understanding of human nature. Thus the Constitution not only recognizes human egoism and pridefulness but it provides safeguards against the inordinate expression of these by any one branch of government. It does not eliminate the contradiction in society, but it does make possible some reconciliation of the legitimate but opposing demands of freedom and order.

## VI

Every society promises freedom, liberty and personal self-determination on the one hand, and order, justice and equality on the other. This was true in both America and Europe of the 19th century. Man's advances in speculative science had been accompanied by the application of that knowledge to the controlling of nature and bringing it more and more into the service of man. The good society was being produced and being produced by individual man using individual reason. Liberty and justice were assured. The Industrial Revolution was moving swiftly ahead to the benefit of large segments of society. But there was another side.

Karl Marx (1818-83) examined the results of the society that was being produced in Europe and pronounced that the procedure was not producing justice and equality, that individual men were exploiting their fellow-men to their own benefit without the exploited having a chance of enjoying the fruits produced by their labor.

Without going into the details of Marx' thoughts, it can be noted that he was a Jew and as such was familiar with the writings of the Old Testament. Also, he knew Hegel's dialectical theory that spirit expresses itself in history, that this produces its opposite and this in turn produces a synthesis of the two. Marx also knew Rousseau and his theory that it is the structures of civilization which have corrupted history and which should be overthrown so that the natural harmony could assert itself.

Marx took something from each of these sources but changed them. He said that there is the dialectic of history which Hegel had recognized but that it was not spirit actualizing itself. Rather the dialectic was within the materialistic, physical stuff of which the universe is composed. The revolution which Rousseau called for had to be actualized by the victims of the prevailing injustice, which was the working class. The rulers of the capitalistic society would surely be overthrown because of the dialectic of history but it would be the privilege of the working class, the proletariat, to be the instrument through which this would be accomplished. This would be because this was the class that suffered from the injustice of the capitalist structure of society. When capitalism is overthrown and its form cast off it will be succeeded by a dictatorship by the proletariat; this will rule in the new form of society where competition is eliminated; with competition gone, wars will cease because men will no longer have that acquisitiveness which is bred into them by the competitive capitalist form of society.

Working man is the vastly more numerous class of men; it is mass man. Under the dictatorship of the proletariat, mass man will apply collective reason to the solution of man's problems—will use the techniques and implements which science makes available and will bring in still another order of society; this will be a society in which there will be no classes—there will be justice and equality for all. Since there will be no acquisitive instinct among men, and hence no inclination to exploit one's fellows, then the power of the state can "wither away"—it will voluntarily evacuate.

It is true than man yields up his individual freedom, but only for a time and only to achieve an order of justice and equality and peace. When this has been attained, when the classless society has been brought into being, then the rights of individuals to personal freedom and liberty can be granted. This can be done because the individual will have become a new kind of being who can be

trusted not to use his freedom and liberty to exploit his fellow man or to upset the equality and justice that will then prevail.

Two things should be noted in particular about this Marxian picture. First, it promises a society of justice, equality, and peace, with finally the gift of personal freedom. Second, this society is to be achieved by applying collective human reason to the solution of man's problems, and the solution is guaranteed by the dialectic of history.

There is no final difference in the promise made by communism and the promise given by the free nations. There is no final difference in the means by which the two sides of this political split say they will use to achieve this promise. Both plan to do so by applying human reason to the problems of man and history. The only difference is that communism plans to apply collective human reason and the free nations plan to apply individual human reason.

The ultimate faith of both of these is in human reason. Both have their faith in something that is not ultimate: human reason. Not being ultimate, it is an idol, a false god. It is faith in the same false god on both sides of this political split.

Thus both sides of the political split of our time promise the same things, to be achieved by different kinds of use of human reason. For the most part there seems to be no inclination on the part of the majority of Russians to adopt the individual use of reason that the majority of Americans assume to be the best method of achieving the best society. On the other hand, there is no real evidence that the majority of the people of the United States are apt to adopt the Communist method of using collective reason to achieve this end. The political split is not acute insofar as the vast populations of the United States of America and of the United Soviet States of Russia are concerned. Each of them goes their own way without ever meeting. Each assumes that the other is evil and wrong. At least, each seems constantly to be told by press, radio, and other means of communication that the other is wrong. The people seem to accept this as truth, even though the average individual in the masses of either country would perhaps be fairly inarticulate as to reasons for his conclusions.

So if the political problem of our time were only the split between the United States and Russia other people of the world could relax and let these two giants writhe in the disappointment of a stalemate. They could argue at long distance—the one insisting that the way to the "good" society is through collective reason, first binding individual reason until a society of justice and equality is achieved and then giving back to the individual person his right to be a person; the other insisting that the way to the "good" society is by maintaining and protecting the greatest measure of personal liberty, even if it temporarily precludes justice and equality, in the faith that individual human reason will eventually overcome the opposition in man and achieve these social goals.

The political split of our time, therefore, is not between a nation that has faith and one that does not have faith. They both have faith and the only difference is between faith-in-individual-human-reason and faith-in-collective-human-reason. The object of both faiths is the same—human reason—and it is a false god that could come into being only after Descartes.

## VII

The seriousness of the split between these two sides of a false and materialistic ultimate faith in human reason is not, then, in the conflict between the peoples and the geographical units of the United States and the U. S. S. R. These giants, however, live in a finite and limited world that also includes many other peoples and geographical units. The seriousness of the split of our time arises out of the meeting of the promises and influences of the United States and the U. S. S. R. in other countries. They meet in weaker countries, in countries that are underdeveloped, in countries that have been subjected to political domination and economic exploitation by other nations, in countries that have suffered from the ravages of war, no matter whether they were on the side of the victors or the vanquished. The conflict between the two types of struggle for the "good" society, as symbolized by the secular faith of the United States and the U. S. S. R., has taken place and is taking place in these kinds of countries and it is a struggle unto death. Neither will admit defeat finally.

Yet, those of us who cherish the virtues and values of the so-called free nations would be less than candid with ourselves if we did not admit that in this struggle in these countries the U. S. S. R. has been winning since the end of World War II. During this time the people whose lives have come under the dominance of the

faith-in-collective-reason are innumerable. The nations that have been organized and are now controlled by the adherents of this faith are many. The fact is that the faith that is dominant in the U. S. S. R. has been proving more powerful than the faith that is dominant in the United States.

This is the fact that should prove more disturbing to the people of the United States and of the free world than any other single fact. It should be more disturbing because communism has not been victorious due to its possessing more or better guns or ships or planes. The free nations have had more of these. The reason for the communists' successes must be sought in other than its materialistic resources. It must be sought in the realm of the spirit.

The question then becomes: Why is the Communist faith more powerful than the faith of the free nations? The two faiths have the same object—or god—namely: human reason. So it cannot be the god they worship. Its superiority must lie in the difference in their ways of using reason. The one believes in collective reason, the other in individualistic reason. What does this mean?

It means that the Communists say to people: "look at the injustice, the inequalities, the divisions that separate people—a separation that is so deep that it finally ends in war. Give up your individual liberty, your personal self-determination, and cast your lot with us in a great effort to eliminate the injustices, the inequalities, the evil and enmity from among men. Collectively we can do this. Give your life to the group for the betterment of mankind and his lot on earth. We are bound to win this effort because the thrust inherent in the material world is such that it guarantees that this end will be accomplished. You yourself can become a part of this movement of history toward its inevitable and glorious end. Even though you lose your life in the effort, your life will have had significance and meaning. That which you give your life for will be carried on to its successful conclusion by the group of which you are a member. It will collectively apply reason in the best scientific ways to the attainment of the perfect society in which there is no enmity, no classes, no strife. Your life has ultimate significance in the cause of communism and it has comradeship now with kindred people who also are self-committed to this high and noble cause."

On the other hand, the secular faith-in-individual-reason of the free nations says to people, "the ultimate meaning of your life is to be found in the preservation and use of your personal freedom and self-determination. Your right to exercise these is threatened today by communism. You must sacrifice in order to preserve your right to use your individual reason. You may even have to sacrifice your life itself in this cause."

But that would be the end of meaning for the individual! If the ultimate meaning of my life is found in my individual reason, my personal liberty and freedom, than if I give up my life I no longer have these things—my life loses its meaning. So, instead of fighting communism and risking the losing of my life, which would be the end of meaning for me, it would be better for me to avoid that conflict, or at least to give my life to something that will be carried on to a successful conclusion even if I die.

Although perhaps never expressed in these words, this is the choice that seems to confront people in lands where faith-in-collective-reason symbolized by Russia, and faith-in-individual-reason, symbolized by the United States, meet and struggle for acceptance. Faced with only these two alternatives, it should not be surprising that the faith which offers comradeship now and ultimate meaning through the group exhibits a greater power to gain adherents than does the faith which offers a separated individualism whose meaning ends with death—whether that death comes in the mud of a Korea or in the wreckage of a convertible.

Unless and until the free nations have faith in a God that offers more meaning than this, and faith in a God that produces more sacrifice for the achieving of the good society for all men, they are doomed to continue being defeated.

#### VIII

Defeat for the free nations in the realm of faith and its works need not be the fateful result of the political split of our time because ultimate faith-in-individual-reason need not be the faith that determines the decisions and actions of the free nations.

The United States of America is not only the symbol of these nations but it also is the most powerful of them. And the leaders of the political life of the United States give signs of sensing the truth that faith-in-individual-reason is inadequate. There are signs that these political leaders are seeking some other

and more adequate object for their faith. Many indications of this can be cited: no political leader makes a speech without including a "nod to God"; the President not only opens his tenure of office with a prayer but he gets baptized and joins a church; his Sunday golf is delayed until after attendance at worship; Cabinet meetings are opened with prayer; Members of Congress of both parties attend Bible breakfasts and discussion groups; the pledge of allegiance to the flag is altered to read "one nation under God, etc."; the national motto "In God We Trust" is rediscovered and printed on a postage stamp; political meetings are opened with prayer; a room is set aside in the Capitol Building for legislators to use for meditations; and politicians are even found speaking from pulpits.

These signs in our political life can be multiplied. They have their reflections, or are themselves reflections of, a phenomenal interest in religion all across the Nation. People are large seem to sense in some dark and hidden way that the faith upon which they have been depending is inadequate and they seem to be groping toward something more profound. Churches and synagogues are being built at a faster pace than ever before in history, and they are filled with worshippers. Crowds of unprecedented sizes listen to evangelists, who speak in such improbable places as Madison Square Garden and football stadia. Religious articles appear regularly in press and periodicals. Religious programs are popular on radio and television. Religion is the topic of conversation at cocktail parties and all gatherings of intellectuals. In fact, it has become "chic" to be conversant with and interest in religion.

It is hard to access the depth of the new faith to which these signs point, but it may be that this popularity of religion and its assurance that Americans have "faith" is significant for the political crisis of our time. It is doubtful, however, that its significance will be very great unless this new "faith" moves to a deeper level than is yet indicated in either its political or popular manifestations. So far, the theme song of this new development is that Americans have faith in the future because Americans have faith. Americans are no longer so crass as to think that other nations of the free world will follow American leadership just because Americans have greater wealth and power. Now, however, other free nations can follow America's lead because America deserves to be followed—it deserves to be followed because it has faith.

What this is saying finally is that America has now put its faith in faith. The object of faith is no longer reason, neither individual nor collective, nor is it God—the object of faith is faith.

As naive and immature as this religious state may be, it still may represent an advance for western man. At least it reflects a vague and uneasy awareness that there is some power beyond the power of dollars and guns, even atomic ones. It also reflects a vague and uneasy awareness that human reason is really not the ultimate God of the universe. The most respected of scientists are saying that their question "How?" will never enable them to penetrate the mysteries of the meaning of existence. Philosophers, artists, and writers of prose and poetry are admitting that even though they can raise questions about the meaning of existence, the answers to their questions must be religious answers.

All of this means that there has been at least a partial unseating of reason from the throne that belongs only to ultimate Being. Perhaps ultimate Being has not yet been enthroned but at least some sweeping out has been done in the palace!

#### IX

And it may yet be that the God whose self-revelation is recorded in the Bible will move into the vacuum that has been created by faith having no object other than itself. It may yet be that this God will move in quickly enough and with sufficient power to enable us to stand the years of pressure that can be predicted as lying ahead for us if war is averted. It may yet be that this God can give us fidelity and meaning worthy of sacrificing even life itself if war is not averted.

Even though we cannot know Him completely, He has revealed enough of Himself to us to enable us to admit that He alone is the God who is the source of sufficient strength to give us meaning in our crisis and sufficient power to help us emerge victorious. He has revealed that He is the God who created the universe and who created man—who gave man his powers of reason. He not only gave man the power of reason but He gave man a quality of self-transcendence, a capacity to rise above the determination to which all the rest of physical nature is subject. He gave man this quality which separates man from all other animals. It is this quality that enables man to ask questions about himself and

about the meaning of his existence. It is this quality that enables man to know that he is going to die.

This is the capacity that raises man above being just animal but it is also the capacity that makes man protest against the limitedness that he knows he is subjected to—the limitedness that ends with death. In the face of the fact of death, man tries to arrange for himself some kind of immortality. Since man lives in a limited world his arrangements for his own immortality are always at the expense of his fellowman. This is where conflict arises and not from an acquired sense of acquisitiveness. Man's attempts to make arrangements for his own immortality arise out of self-love. But this same self-love is possible only because of the quality that makes man higher than all other animals.

It is this quality that enables man to know God and love—neither of which is known by reasoning processes only. It is this capacity given to man alone of all the animals that enables him to find a ground for his being in a relatedness of love—self-committal to—ultimate Being.

This is the quality in man that finally is free—not determined. It is a freedom given to man that he might be man, in order that he might enjoy the relatedness of love to ultimate Being. But man uses this freedom to love himself instead—he uses it to try to create his own immortality. This creates opposition between man and man—ending in war and rumors of war. But it also creates opposition of man to God because man is making himself God. This is the human situation.

God, however, set Himself to overcome man's opposition and divisions. He set out to do this by means that would not take away from man that freedom by which he is a man. God's method was self-disclosure to man—making Himself known in ways which man could apprehend—and accept or reject.

This was the God who revealed to Moses His demand that men be free from bondage. Moses experienced a demand upon his life that he go back into Egypt and lead the children of Israel out of slavery. It was not a logical demand. Moses did not apprehend the demand through his reason only. In fact, he presented some reasonable arguments why he should not go back to Egypt on this errand. But the demand persisted. It was not backed up by political, economic, or sociological arguments, yet Moses recognized it with his whole being. When he sought the source of the demand he got the answer that it came from the God whose name was "I am that I am"—from the God who is self-existent, ultimate Being, whose very nature demanded that men be free. It was in obedience to this God and His demand that the struggle for human freedom began. It is in obedience to this God and His demand that the struggle continues.

This is the same God whose self-disclosure to man in the fullness of time took the form of a man. Had men been placing their faith in reason, either collective or individual, they could have measured this God-man in every way known to science and yet not have known him any more than a man can know the love of his wife by scientific measurements. But the men of that day were not yet rationalists. Their weakness was only that they were interested in building for themselves an immortality through obedience to religious laws. The God-man, Jesus, told them they could not do this for themselves—neither by obedience to laws nor by any other way—because death mocked their every self-centered effort. They retaliated by inflicting on Him the worst death they could devise.

And He willingly bore it—loving them.

He bore the worst that they could do rather than overrule the freedom by which they were doing it—that same freedom which makes man man. God bears the worst we can do rather than make us cease to be people. He wants men, not automatons.

His bearing of the worst that men could do—His bearing it and still loving men—elicited from some men the acknowledgment that only God could love like that. This was a freely given response—and it carried with it a self-commitment to Him as the source of meaning for life, the measure of value in human affairs, and Ultimate Being in human form.

This is faith in God.

It may be that this same God—the God of Abraham, Isaac, and Jacob, the God who acted for man in Christ's death and resurrection, the God whose personal influence operates in the lives of men today—it may be that He will assert Himself as the object of the faith of Americans. It is He that can inspire us and guide us in the meeting of today's political crisis, give us humility to admit our share of guilt, give us courage to accept our share of responsibility, give us steadfastness to do what we must do and wisdom to know what that is, and give us friends who trust us as friends who are trustworthy.

A faith in the God who gives these things is essential to enable us to meet the crisis of our time. The God who would thus become the object of our faith, to whose ways we would commit ourselves, is the God who would rather die on a cross than to overrule that personal, individual liberty and freedom of self-determination with which He has endowed men—that they might be men. Yet, He is also the same God who so ordered creation that man as a distinct, separated individual person cannot exist except in relationship with others. Each person has to be born into a blood-related family. Each person is born into political, economic, and social structures of society and cannot help but be related to other persons in these ways and within these structures. God ordered it this way. It is He who ordained that there be order in society, so that men might live together at all. It is He who so ordered society that justice is necessary for men to live together in peace, and so that equality is finally the standard of justice. He is the God who not only has so ordered life in this world but also He is the God who promises life beyond death to individuals only as members of a fellowship.

In faith commitment to this God we can so value the personal that we give even our life to protect and preserve liberty and freedom. In faith commitment to this God we are freed from the shackles and shibboleths that make us afraid to admit that we recognize the necessity of community, and can admit that we are the best planners and executors of social schemes aiming at justice and equality.

In faith commitment to this God we will constantly admit and reexamine the contradiction between the demands of the personal and the demands of the social. In humility we will admit our weaknesses in resolving it and with high heart set ourselves to achieving a new measure of solutions.

Faith commitment to this God may not enable the free nations of the world to turn the tide of communism and emerge victorious from our present political crisis. Then again, if such faith commitment is in sufficient depth and soon enough, it may.

In either case, God is God—and man and history remain His.

Mr. GREBE. In this direction, the doubling or even tripling of the private and corporate efforts now amount to about \$538 million—as determined by Dr. Killian, president of MIT—would multiply the rate of development of new methods that accomplish more, in less time.

There is no reason to doubt that educational developments can be made by the people who have doubled our instrumentation and automation every 5 years. Tax reductions, to permit these private expenditures currently to be increased, are to be recommended.

There we come to a very unhappy problem. Very few of us like the idea of having any special tax treatment of any one subject or any one field of national or human need.

On the other hand, there are two fields in which one can argue very strongly for them.

The first is in the tax problems of small industry. All of them are under a very severe strain to gain capital. And so long as the money is spent wisely and effectively to produce new developments, new instruments, new apparatus, new devices, new jobs, for carrying on the growth of the Nation it would be a marvelous thing if the suggestion that was made this morning would be practically applied to our industry of exempting, say, the first fifty or one hundred thousand dollars of income that is to be spent on new capital facilities from immediate taxation.

It will all come back in the end. But at least it would carry the rapid writeoff a little bit further for the lower brackets of income or profit.

Chairman PATMAN. In other words, some special allowance like the depletion allowance for oil companies?

Mr. GREBE. That is right, but not exactly—not quite that sort of a thing because after all, that is an expense for rediscovering and developing the oil resources that are being consumed.

However, in this instance, it would be a faster writeoff than is even currently allowed.

And the same thing, I feel, is necessary in this particular field of education and human resources. Many, many thousands of different approaches by different people, who feel strongly enough about this matter to spend their own corporate and private money in these lines of new education and technology are needed. There is a total of around \$500 millions spent by them. Those people should be encouraged to do more of it, because somewhere out of that diverse effort there will come the new developments that will double the effectiveness of education as a whole. That would mean an awful lot, much, much more than we can recognize, because after all the military alone is using up about \$8 billion worth of time of our manpower each year by the draft.

Let us get much more out of it.

Our colleges are using a number of billion dollars worth of time. Let us get more out of it than we are getting.

Of course, our high schools and grade schools could be tremendously improved by such technology.

It costs money, but some place there has to be an incentive to do something new. It cannot be done by the hard-working teachers who are already overburdened with limited funds.

The chemical industry specifically has been the most potent in applying modern technology, in multiplying productivity, in making it possible to increase wages in my 30 years of activity by a factor of 6, while the cost of the products that were being produced in quantity has gone up very little.

In other words, right within my productive lifetime wages have been commercial without modern automation and new instrumental analysis and control.

In other words, right within my production lifetime wages have increased sixfold over the corresponding prices in that industry. It is remarkable.

While the cost of our production plants per dollar output has remained about constant despite inflation, the application of automatic control equipment has multiplied.

Variables have been detected and eliminated that defied analysis only a few years ago. In all of my experience, the upgrading of the manpower working with me has always been the major concern and objective.

Even now, with all that has been done to destroy incentive nationally, our youth has retained the spirit of progress.

Notwithstanding the lack of dire necessity as an incentive, 80 percent of our basic research group—the most prolific inventors—are taking part in advanced training programs, currently mostly on their own time. Operators, helpers, as well as engineers and scientists take part.

Each man knows he has no external limitation to keep him from getting up to a doctor's degree with continuous pay, even during the "in residence" period at a university.

But all this is still not enough. We are continually limited by the lack of able men in our objectives for doing new things and making new products for new uses to create new human values and new employment. The perpetual relay race is on. We enjoy it. We need more and better men to carry the torch.

Chairman PATMAN. Thank you. We appreciate your testimony.

Let me see if I did not make some notes.

In your operation on Lake Huron, I do not suppose you have any salt water?

Mr. GREBE. We get our salt water from below the ground. At the 1,200-foot depth we get a salt brine. And at about a mile depth we get solid salt, which we can dissolve out.

Chairman PATMAN. I certainly agree with what you said about the improving of military training. I think that is a point that we should continue to advocate.

Thank you very much, sir.

Mr. GREBE. Thank you, we appreciate it.

Chairman PATMAN. We will place in the record the document that you gave us a while ago.

Mr. GREBE. Thank you very much.

Chairman PATMAN. Professor Easton, we are glad to have you here.

Mr. EASTON. Thank you.

Chairman PATMAN. You have a prepared statement, I understand. You may proceed in your own way, sir.

#### STATEMENT OF ELMER C. EASTON, DEAN, COLLEGE OF ENGINEERING, RUTGERS UNIVERSITY

Mr. EASTON. My name is Elmer Charles Easton. I am dean of the College of Engineering at Rutgers University, the State University of New Jersey. I am speaking today, as an individual, on the subject of engineering education for the American economy.

My knowledge of the subject has been gained through 22 years of experience as an engineering educator. At present I am privileged to serve as chairman of the engineering division of the American Association of Land-Grant Colleges and State Universities, as a member of the executive committee of the Engineering College Administrative Council, as chairman for region I of the education and accreditation committee of the Engineers' Council for Professional Development, as a member of the Council of the American Association for the Advancement of Science, and as a member of the general council of the American Society for Engineering Education.

I am a member of the American Institute of Electrical Engineers, a member of the National Society of Professional Engineers, and a registered professional engineer.

My remarks do not necessarily reflect the opinions of my university or of any of the organizations of which I am a member.

I should like to present my testimony in three stages: first, to show that it is necessary for the United States to have greatly increased industrial productivity; second, to consider the factors which control productivity; and third, to study the educational problems involved in developing those factors favorably. I will conclude with several suggestions for possible action by the Federal Government.



For the next decade, largely because of the low birthrate during the depression years, the population of the United States will grow in such a way that there will be a relatively large percentage of elderly retired persons, a relatively large percentage of children, and a relatively small percentage of workers.

Chairman PATMAN. Do you agree with the preceding witness that the period you speak of, the depression years, so far as the birthrate, was from 1929 to 1942?

Mr. EASTON. That is correct. I was listening to that, and I agreed with him when he said it.

As a result of this unusual distribution of age groups, it will be necessary for each worker to support many nonproductive people. The productivity of every worker must increase if we are to improve or even maintain the present standard of living. In the event of a war which would draw men from the working force, greatly increased productivity of the few remaining workers would be essential for survival itself.

The number of elderly people in this country seems destined to increase for some time. However, the rising birthrate since World War II indicates that we shall gradually assume a more normal balance between children and workers.

At the same time, it is to be hoped that world tension will subside and the men now under arms will return to civilian pursuits. Hence the impending shortage of workers will be reduced.

If we increase the productivity of each worker in the next few years so that we can support vast numbers of unproductive children, elderly people, and military personnel, it is apparent that we shall face problems of adjustment when the shortage of workers comes to an end.

How shall we employ the men who are now supplying the military needs of the Armed Forces when these forces are greatly reduced? How shall we employ the men released from military duty? How shall we employ the increasing fraction of youngsters who reach working age?

We cannot put them all to work producing the normal goods presently available for nonmilitary needs because the workers already in those fields will be able to meet most of the demand. The ability to solve this problem by shortening the workweek is very limited.

Suppose, for example, that we were to try to employ twice as many men to produce our present civilian goods and services by cutting the workweek in half. Obviously, there could be no reduction in salary for any of the workers, for then they would be unable to buy the products of the system. Thus the labor cost for all items would double, and the prices for all items would have to be greatly increased. However, the increased cost might put most items out of the reach of the workers, and hence the system would collapse.

As I see it, there is only one way to absorb the increasing percentage of workers without upsetting the economy; and that is to employ them on new products and new services for which a demand has been created.

A new worker producing a new product or service poses no threat to an old worker producing an old product. On the contrary, such a new worker becomes a customer of the old worker. A shorter workweek for all then becomes possible as each worker becomes more productive.

The problem, then, is a changing one. First we must increase the productivity of every worker to supply normal consumer demands and military needs during the years when there will be a relatively small percentage of workers in relation to elderly persons and children. Later we must increase our productivity of entirely new products and services in order to maintain full employment when the percentage of the population in the labor force increases.

Let us consider now the factors which influence productivity. The most obvious factor is machinery. The more automatic machinery a worker has at his disposal, and the greater his skill in using it, the more he can produce.

If we are to increase productivity, we must have more machinery and more integration of this machinery through automation.

Given the machines, we must have energy to drive them. We need coal, oil, gas, nuclear fuels, and solar energy.

Given the machines and the energy to run them, we must have materials with which to produce useful goods. If we secure adequate supplies of these elements, and if we educate our people to use them, we shall be in a position to increase our productivity for normal needs and for defense in the years when the labor force is relatively small.

Now, what is the outlook for obtaining these elements?

The President's Materials Policy Commission reported in 1952 that with regard to many basic materials the United States is rapidly becoming a have-not nation. According to the Commission, in 1950 this country produced 9 percent less materials—other than food and gold—than it consumed.

It is estimated that by 1975 this deficit may be 20 percent. The time will come when we shall have to develop substitutes for many of the materials which we consider essential today. Furthermore, we must develop completely new materials with new properties to meet the demands of such advances as supersonic flight and nuclear power.

I say that we must "develop" these things. Obviously, they do not exist in nature. They must be compounded out of abundant ingredients which do occur naturally. This compounding cannot be done by some uneducated person mixing batches of material at random. It can only be accomplished through the systematic and persistent application of all of the known laws of physics, chemistry, biology, and mathematics.

Progress will depend on the development of these sciences and on the number and competence of the people who are familiar with them.

In the last 50 years mankind has consumed as much fuel as was consumed in all previous time. Half of that fuel was used in the United States.

At the rate we are going, I estimate we shall consume all of the coal, oil, and gas in the world in about 1,000 years. Some responsible engineers believe that for all practical purposes the supply will be depleted in 300 years. Long before the fossil fuels are gone, the cost of producing them from low-grade sources will become very great.

The very existence of civilization as we know it depends on the development of new fuels and means of using them. The most promising sources are the energy from the fission and fusion of atomic nuclei and from the radiation which we receive from the sun.

Think of the difference between the obvious procedure of burning coal to produce power in a steam engine, and the process of obtaining energy from an atomic pile. The idea of obtaining energy from the fission or fusion of atomic nuclei was not obvious and was not conceived by man until he had learned to use the most advanced concepts of physics, mathematics, and chemistry. The concept was predicted theoretically before it was observed in the laboratory.

The development of devices using atomic or solar energy will depend entirely on the quality and quantity of our engineers and scientists.

The nature of the machines which are needed for this age of automation is far different from the equipment which was in general use 15 years ago. Until quite recently, machinery used in production was of a rather obvious type. Each machine might perform a single operation, and do so in a manner which could be readily observed from an examination of its parts.

Today, machines are being interconnected through electronic control systems—through systems of instrumentation and control—so that the operation of any one device will affect in some predetermined way the operation of every other unit of the system.

The design of such automatic systems requires the use of incredibly complex mathematical analysis as well as a thorough knowledge of the basic principles of electronics, mechanics, chemistry, physics, and the other sciences. There is nothing stereotyped about designing for automation. Knowledge of current or past practice is not as important as ability to apply engineering principles to produce novel solutions to new problems.

The development of the new products which will be needed to employ an expanding labor force also depends on the application of very complex mathematical and scientific principles.

As an example of a new and strange product which engineers are now developing to create new jobs, consider the electroluminescent light source. This lamp is in the form of a sheet of material which glows uniformly when electricity is applied. To the casual observer it looks like a simple piece of colored glass. There is no filament, no moving parts, or any apparent source of light. The design of this lamp is not obvious.

Its operation can be understood only by a person thoroughly versed in the most advanced theories of solid state physics and mathematics. This disarming appearance will characterize most of the new products which the next generation will see. The need for competent engineers and scientists to design them will increase.

It should be obvious that the quality of our engineers measured in terms of their ability to create new processes and materials is of paramount importance to the security and economic well-being of our Nation.

It is true that we shall need large numbers of such personnel, but quantity cannot overcome a deficiency of quality. One good engineer with an adequate knowledge of the basic principles involved can design a new product like an electroluminescent lamp or a new system of automation. A thousand poorly prepared engineers could not duplicate the feat.

I am happy to report to you that the Nation's engineering colleges are alert to this need for quality of competence in scientific know-why and are taking positive steps to meet it.

In 1952, the American Society for Engineering Education established a committee on evaluation of engineering education to peer into the future and try to determine the type of education needed to prepare our young people for the tasks which may face them 25 years hence.

This committee, which was composed of educators and practicing engineers, enlisted the aid of many local committees throughout the country. On June 15, 1955, the committee published its report (copies available from Prof. Leighton Collins, secretary, American Society for Engineering Education, University of Illinois, Urbana, Ill.).

Shortly thereafter the education and accreditation committee of the Engineers' Council for Professional Development—this is the group that accredits engineering colleges—adopted many of the recommendations from this report as criteria for the accreditation of engineering curricula.

Since the report appeared, almost every engineering college has reexamined its program of instruction with a view toward raising the competence of future engineers. It is interesting to note that the accrediting agency now, more than ever, encourages experimentation with new educational methods.

No longer is an effort made to restrict engineering curricula to a few major fields. Now an institution may set up any type of engineering program. It will be considered for accreditation only in terms of its ability to impart competence in engineering analysis, design, and systems.

In brief, the present trend is toward more scientifically oriented engineering curricula. For example, the amount of mathematics taught to the average engineer will be increased. In a short time, practically every engineering college will require a knowledge of differential equations for all students, and will require much more advanced mathematics for undergraduates in such fields as electrical and chemical engineering.

There will be increased breadth of coverage of a wide variety of basic and engineering sciences so that an engineer will be able to work with the great diversity of problems such as those which arise in a system of automation.

This trend reflects industry's increasing demand for men who can solve unusual problems and who can design novel equipment and systems. The attitude of industry is indicated by a remark which a corporation president made at a recent meeting of the American Society of Mechanical Engineers. He said, "Teach your students the basic principles which will never change. Don't teach them current engineering practice. If you teach them current practice, the chances are that it will not be the practice of my company, and if it is, the practice will be obsolete before the students can use it."

Today there is a growing awareness on the parts of both industry and the colleges that the complete education of the engineer must be a joint venture. The colleges constitute the best medium for imparting the unchanging scientific principles which have guided the operation of machines and processes in the past and which will forever govern the operation of machines and processes yet to be invented. To acquire knowledge of current practice there is no substitute for industrial experience. There is no way to develop mature engineering judgment other than by growing up in the proper industrial atmosphere.

The engineering profession is learning what the medical profession has learned, that formal education must be supplemented by internship. As an example of this recognition I call your attention to the fact that the Engineers' Council for Professional Development now sponsors programs to direct the young graduate's development during the first 5 years after leaving college. Literature on these programs may be obtained from the Engineers' Council for Professional Development, committee on professional training, room 13-217, 3044 West Grand Boulevard, Detroit 2, Mich.

These postgraduate development programs are conducted by groups of industries and by sections of the professional societies. They involve integration into civic life as well as continued education in social and technical fields. Since this movement started only a short time ago, there are only a few organized programs in operation. There is a real need for widespread adoption of this type of engineering internship so that the young graduate may obtain his practical experience in an organized way from the people best suited to provide it.

On the whole I am encouraged by the prospect of better education for the engineering student who completes his work for the bachelor's degree and who then receives enlightened professional guidance from industry. I am not at all happy about the situation which is developing in the graduate schools of our colleges and universities.

There is great need for increased numbers of engineers who have thorough graduate training through the master's and doctor's degrees. Unfortunately, the present shortage of engineers has prompted many industries to lure students away from the campus as soon as they receive the bachelor's degree. Some companies which are located near universities encourage young engineers to go to work and then take graduate courses during the evening or at odd hours during the day. Other companies entice students away from the universities through promises of graduate instruction provided at the plant by occasional visiting professors.

The result of these practices is that too few American engineers are receiving any kind of graduate training. Furthermore, a growing fraction of those who are studying beyond the bachelor's degree are part-time or off-campus students whose training, while undoubtedly valuable, is not equivalent to that which they could obtain as full-time resident students at a university.

Of additional concern is the fact that the scarcity of graduate students on the campus seriously curtails the programs of basic research through which the universities add to man's knowledge.

So much for the quality of engineering education. Now, what about the quantity? It has been estimated by various sources including the United States Office of Education and the Fund for the Advancement of Education that this country will need approximately 50,000 to 60,000 new engineers annually by 1970.

We produced 25,500 in the accredited engineering colleges in 1956. Let us look into the possibility of expanding our output to meet the anticipated need. Obviously we shall need a large number of qualified applicants from the high schools, a large number of faculty members to teach them, and adequate facilities in which to accommodate them.

Assuming that the distribution of intelligence among the population will remain as it is, we may expect that approximately one-third of the people in the United States will be mentally qualified to study

engineering at least through the bachelor's degree. The number of potential engineers should be sufficient to meet our needs. It remains to give these people the necessary education and then to utilize them efficiently. This education must include the study of science and mathematics in the high schools.

The actual status of mathematics and science in the high schools is the subject of much discussion, and, I might say, very little factual information.

Those who wish to show the picture in its worst light quote figures on the percentage of all high-school students who are studying a particular subject at any given time. Thus, Rear Adm. Hyman G. Rickover, Chief of the Naval Reactors Branch of the United States Atomic Energy Commission, speaking at the Sixth Thomas Alva Edison Foundation Institute in November 1955, said that in 1900, 23 percent of all highschool pupils studied physics, while in 1950 only 4 percent studied this important subject. According to Admiral Rickover, in 1900 chemistry was studied by 10 percent of all high-school pupils, while in 1950 the figure was 7 percent. The figures for algebra are 52 percent in 1900 and 27 percent in 1950. For geometry, 27 percent in 1900 and 13 percent in 1950.

Those who wish to show the picture in its best light quote percentages of various classes rather than percentages of all pupils. Thus, Robert H. Carleton, executive secretary of the National Science Teachers' Association in the April 1956 issue of the Science Teacher reports that in 1954-55, the number of pupils taking physics was equal to 23.5 percent of the 12th grade enrollment, and the number taking chemistry was 31.9 percent of the 11th grade enrollment.

At first glance it seems more encouraging that 23.5 percent of the 12th grade enrollment studied physics in 1954 than that 4 percent of all high-school pupils studied physics in 1950. Actually, these two sets of figures are almost identical, although they do show a slight improvement between 1950 and 1954. In many schools the senior class will be approximately one-fifth of the total enrollment. Thus 23.5 percent of the seniors represents about 4.7 percent of all the pupils.

It has been pointed out that despite the decline in the percentage of students studying mathematics and science, the number of such students has increased greatly. In 1900 only 1 out of every 10 children of high-school age attended high school in the United States. In 1954, almost 8 out of 10 of this age group were in high school. According to figures prepared by Commissioner Raubinger of the New Jersey State Department of Education, 98,000 pupils were enrolled in a high-school course in physics throughout the United States in 1900, whereas 302,800 were enrolled in such a course in 1954.

At first glance this is a most encouraging increase. However, there are two basic reasons why the current situation is not satisfactory. In the first place, even though it may be argued that all high-school pupils may not require instruction in physics it seems reasonable to assume that at least those who go on to college should be so prepared.

Since approximately 700,000 students enter American colleges each year, it is apparent that not half of them study physics in high school.

Secondly, many of the high schools offer such shallow survey-type courses in physics that the preparation is not adequate for college. As a guess, it may be said that not more than one-third of the entering college students have had as much as 1 year of adequate training in

physics in high school. The situation is much the same, although the percentages are different, in the other science areas. It is from this limited group that the engineering students now come. It is from the same limited group that students in all the other scientific fields must come.

Fortunately, during the last few years several influential groups such as the Engineering Manpower Commission, the Edison Foundation, and the American Association for the Advancement of Science have conducted powerful campaigns to improve high-school preparation and to motivate students to enter engineering.

These movements have been successful to an encouraging degree. Although the problem of adequate preparation is far from being solved, there is an increasing awareness of the importance of science and engineering among school boards, PTA's, and high-school faculties.

With regard to stimulating interest in engineering, the campaigns have been remarkably successful. Despite the fact that the college-age population is now at a minimum, the number of applicants to engineering colleges has risen to the point where many institutions are forced to turn boys away. The number of bachelor of science degrees granted by accredited engineering colleges has increased from 19,700 in 1954 to 25,500 in 1956. It is estimated that this figure will rise to 30,500 in 1957.

We have now reached the point where most engineering colleges are operating at maximum capacity. May I emphasize that many colleges are now getting along only by using temporary barracks buildings which were erected to handle the great influx of veterans after World War II. It is obvious that we must utilize every means of making the best use of the limited facilities which we have. In my opinion, we should raise the admission standards so as not to use valuable space and valuable faculty for students who will never graduate. In this way our colleges could produce more engineers without adding significantly to the plant or to the faculty.

However, even though we resort to every possible expedient, I believe that if we are to increase our output of engineers from the present 25,500 per year to the needed 50,000 per year in 1970, and if we are to provide engineering education for the growing college-age population which will increase 66 percent by 1970, we shall have to expand the physical plants of our colleges. In this connection may I point out that if any of the proposed Federal scholarship programs are adopted they will aggravate this already critical space problem.

It should be obvious also that there is a growing need for engineering teachers. Most of our colleges are short of staff now. The general shortage of engineers and the overpowering competition from industry makes the faculty situation the most serious problem now facing the colleges.

Assuming that the colleges will produce the needed number of engineers, every precaution must be taken to utilize these men effectively. Fifty thousand engineering graduates put to work at non-engineering tasks will not meet our needs. Each engineer must be utilized for creative engineering design. He must be adequately supported by technicians who will relieve him from the routine phases of engineering activities. The engineer must be aided by technicians just as the physician is aided by nurses.

It has been estimated that there should be 3 to 5 technicians for every engineer. Although exact information is lacking, it is probable that the average ratio is approximately 1 to 1 in the United States at present. A recent survey of 18 oil and chemical companies conducted by the Engineering Manpower Commission showed an average of 0.9 technician per chemical engineer.

There is a very great need for increased numbers of technical institutes which will provide the 2-year terminal programs for technicians. Unless we get a much greater number of technical institute graduates in the near future, the full effectiveness of our engineers will not be realized. On the other hand, in my opinion, if we had a really adequate supply of competent technicians, we might get along with 40,000 rather than 50,000 new engineers per year by 1970. I recommend that the campaigns which have been so successful in producing interest in engineering now be turned to the technician.

As our machines and processes become more complex we shall need increased vocational training for the people who will operate and maintain them. Furthermore, provision must be made for the continuing education of all workers to enable them to keep up with the rapid changes which will occur. Automatic machinery does not take care of itself. The more automation we have, the more skilled our workers must be.

Now let us summarize the needs which I have mentioned above.

1. The Nation's engineering colleges must obtain additional staff and additional facilities to increase the output from the present 25,500 per year to 50,000 per year by 1970.

2. More engineering students must remain in college for graduate study.

3. More industry-sponsored programs must be established to guide the professional development of young engineering graduates.

4. The number of technical institutes must be increased to provide 2-year terminal instruction for technicians. The present ratio of approximately 1 to 1 should be increased to about 3 technicians per engineer.

5. High-school training should include the mathematics and science necessary to prepare students for further education as scientists, engineers, and technicians.

6. Vocational school training should be made available to more of the young people who will operate and maintain our increasingly complex equipment.

7. Adult education programs must be expanded at all levels to enable all workers to keep abreast of changing conditions.

Finally, permit me to suggest some ways in which the Federal Government might aid in solving our educational problems.

1. Most engineering colleges have ROTC programs, and most of these schools provide the space for this instruction. The Government could construct new and adequate quarters for the ROTC thus freeing the present space for other educational purposes.

2. In order to help colleges provide living quarters for the students, the Government could reduce the interest rate on housing loans.

3. Let me introduce this suggestion by saying that I am very strongly in favor of higher salaries for engineers. I am pleased to see the recent trend toward higher salaries because it reflects the great value of the work which engineers do. The shortage of engineers has



accelerated this trend as companies bid against each other for the services of the limited personnel. This is a natural operation of the law of supply and demand. What I should like to mention is a practice engaged in by relatively few companies in which cost-plus Government contracts are accepted before adequate engineers are available to handle them. In some cases the holder of such a contract will raid a college faculty and will attempt to entice men away from teaching with exceptionally high salaries which can be charged to the Government. I feel that colleges must face the competition of legitimate industrial demands. This is one natural way in which professional salaries can be raised, and I am all for it. However, the practice to which I refer seems somewhat illegitimate. This practice is bad for the taxpayers and bad for the colleges. The Government might investigate the situation.

4. Much basic research of the type which colleges can do well is now being assigned to industrial concerns under Government contract. If more of this research were directed to the colleges, it would constitute an inducement for faculty members to remain on the campus—they like to do this sort of thing—and it would afford part-time income and good educational experience for graduate students on the campus.

5. The utilization of the many engineers now in Government service should be increased by the employment of as many technicians as possible.

6. Wherever the Government employs a large concentration of engineers it might establish a development program for young engineers after the pattern recommended by E.C.P.D.

7. Wherever possible, the training programs of the Armed Forces should be patterned after the 2-year technical institute curricula—or a portion thereof—to add to the supply of technicians.

8. Federal aid could be provided for the adult education of nonagricultural workers in much the same fashion as that already provided for farmers. A bill, S. 4160, intended to achieve this purpose was introduced at the close of the last Congress by Senators Hill, of Alabama, and Smith of New Jersey. This bill, which is supported by the American Association of Land-Grant Colleges and State Universities, will be reintroduced in the new Congress. I recommend its support.

Please note that I have spoken of the needs of the United States with no reference to a possible threat from Russia. I understand that this was discussed at the previous hearing. The best analysis which I have ever seen of the Russian educational system was presented by Dr. C. J. Lapp, Deputy Director of the Office of Scientific Personnel, National Research Council, at a meeting of the American Association of Land-Grant Colleges and State Universities held in Washington, D. C., on November 13, 1956. Dr. Lapp's paper should be required reading for all Americans who are concerned about education.

I have one copy of that paper with me, Mr. Chairman, if you would like to have it left for the record.

Chairman PATMAN. We would like to have it inserted in the record, if you please, Doctor.

(The paper referred to is as follows:)

### LITTLE IVAN GOES TO SCHOOL

(By C. J. Lapp)

#### PRIMARY AND SECONDARY SCHOOLS

My neighbor Johnny Johnson starts to school when he is 5 years old, but his counterpart, little Ivan Ivanovitch, who lives near Moscow, starts to school when he is 7 years old. So do all the other children in the U. S. S. R. Johnny will develop his elementary and secondary education in 12 years, probably divided 6-3-3 and will likely finish senior high school when he is 17 years old. Ivan will develop his elementary and secondary education in a system divided 4-3-3, 10 years in all. His school will be free, coeducational, and compulsory through the seventh grade. He also will graduate when he is 17. During this period his school will offer as much training as he can absorb. He goes to school 6 days a week, receives instruction 33 weeks a year, and is expected to do plenty of homework, which is prescribed as 1.5 hours a day in the second grade, increasing to 3.5 hours a day in the seventh grade. His homework is so heavy that the Soviet Government recently thought it necessary to decree that his teachers must not assign homework to be done on Sunday.

For the first 4 years he will wear a uniform furnished by his parents which will make him look exactly like all the other Ivans and will help him get the idea that education is a mass job controlled by the state and that he cannot expect much preferential treatment. During grades 1-4 inclusive, he will study reading, writing, arithmetic, and social science as part of a curriculum designed and supervised closely by the state. On the morning Ivan goes to class and is instructed in the art of long division, he gets as much comfort as possible from his sure knowledge that at that same hour on this same day of the week all the other Ivans in Russia in his grade will be studying long division.

During the first three grades his teacher will decide if he may pass into the next grade. However, at the end of his primary education in the fourth grade he must pass an examination conducted and supervised by the state. There probably will be three examiners, one of whom will be his teacher. These examiners will conduct both written and oral examinations for all the students in his class. These examinations cover the whole year's work, which will be divided in about 50 parts. For the oral examination, Ivan, along with the other children, will draw a card from a deck. Written on his card will be 2 or 3 questions which may relate to any part of the year's work. Ivan will have 30 minutes to develop the answers which he will give orally before his fellow students and the examiner.

When Ivan enters the intermediate grades (5-7, inclusive), he must choose a foreign language, the study of which he will continue for 6 years. Here he will have some choice; he will have an opportunity to choose the only elective he will have among all the subjects in his secondary education. English, the language of science, is probably the most popular. Homer and Norton Dodge, who in 1955 spent several weeks studying higher education in the Soviet Union, reported no difficulty in finding Russian students who could speak fluent English.

Being now well grounded in reading and writing, Ivan's solid education in background subjects will begin in earnest. Besides a foreign language, beginning with the fifth grade, he will also start the study of history, from ancient history in the fifth grade to history of Russia and the peoples of the U. S. S. R. in grades 9 and 10. An introduction to physical geography starts in grade 5 and continues to world economic geography in grade 10. Biological sciences starts as a survey of nature in grade 4 and continues through botany, zoology, human anatomy, and physiology, principles of Darwinian theory and Soviet genetics, grade 9. Physics starts in the sixth grade; chemistry starts in the seventh grade; mathematics is studied from the first day he enters school until he graduates. His study of algebra will start in the middle of the fifth grade. Before he finishes the 10th grade he will have studied plane and solid geometry and trigonometry with special emphasis on its applications to physics and engineering.

When Ivan is ready to appear before the examining board at the end of the 10th grade, among other things he has had are 6 years of history, 6 years of a foreign language, 5 years of physical and economic geography, 10 years of mathe-

matics including trigonometry, 5 years of natural science and biology, 4 years of chemistry, 5 years of physics, and 1 year of astronomy. From grades 5 to 10, inclusive, 47 percent of his instruction was in science. In a paper read before UNESCO Institute for Education in Hamburg in late October 1956, A. Shibanov, head of the department for polytechnic education in the Institute for Teaching Methods in the Pedagogic Academy, stated that the science content of the curriculum for the 8th, 9th, and 10th grades was being revised upward 15 percent.

Besides the basic work outlined above, Ivan also has some extracurricular duties, required but not considered part of his basic course: singing, the absolute minimum of which is to learn by heart the hymn of the U. S. S. R., drawing, introduction to technical drafting, physical culture, and sports, military training in target practice, map reading, tactics, antiaircraft, and antichemical defense. In this extracurricular work grades are given but do not count toward graduation.

In his primary and secondary education Ivan has had approximately 10,000 class hours of instruction. In Russia an instruction hour is 45 minutes. Putting this in terms of our own system and counting 25 class hours of instruction per week, Johnny Johnson also receives about 10,000 class hours of instruction by the time he graduates from high school. During his first 10 years of education Ivan's average student-teacher ratio as of 1950 was 23. This ratio has been steadily decreasing and as of 1955 is probably less than 20. During his 10 school years in the grades, Ivan's report card carried the numbers 1 to 5. These numbers were of great concern to Ivan's parents because they know from long and bitter experience that education offers the main avenue for advancement to those who do not belong to the tiny minority holding party membership. Ivan hoped the numbers would be 4's or 5's, for if he could maintain grades mostly of 5's he could graduate as a medalist. This would mean that he will have a better chance of passing the rigorous entrance examinations when it is time for him to go to college. A grade of 1 meant failure, while 2's and 3's meant that he might not be permitted to pass his grade. There always was summer school to which he could go to review his work and try another examination just before the beginning of the new school year. If he failed the second time he had to repeat the whole year's work.

Between the seventh and eighth grades is the first major break in the Russian school system, a break corresponding to our break between the eighth grade and high school. At the end of the seventh grade Ivan's examinations are searching, for this is the terminal point for the low 10 percent—in our vernacular those whose IQ is 80 or less. After all, the educational system in the U. S. S. R. is set up to give the training a student can profitably use.

At this point all of the very best students are encouraged to stay in school but some of the others will have an opportunity to leave the grade-school system and enter a technicum—a special type of middle professional educational institution in Russia for which we have no counterpart. These will be described later.

In the Soviet equivalent to our high school—their grades 8, 9, 10—the student plays for keeps and the mortality is high. The prize to be won is the opportunity to go on to college. Since the low 10 percent of the students have all been removed, the tempo of the program can be increased. All students through all three of these years study a foreign language, history, physics, chemistry, mathematics, in addition to several other subjects of 1 or 2 years in length. It is perhaps worth noting that syllabi and textbooks used in the last 2 grades (9 and 10) of the Soviet secondary school in such subjects as physics and chemistry compare favorably with our college freshmen introductory courses in these subjects. In addition to curricular instruction, the pupil's interest in science is further stimulated by all sorts of extracurricular activities, such as science clubs, hobby shops, and so on. All this makes for very early and intense exposure to science, which in turn creates very favorable conditions for the future selection of candidates for higher education in engineering and science fields.

In the United States, according to Dael Wolfe, Director of the Commission on Human Resources and Advanced Training, in its report, *America's Resources of Specialized Talent*, Harper & Bros., 1954, roughly 80 percent of our students enter high school and 60 percent graduate. In the U. S. S. R. about 80 percent enter the upper secondary school but fewer than one-fourth of these who entered 10 years earlier succeed in passing the stiff state examination at the end of the 10th grade. If Ivan is really both bright and lucky and has studied hard enough to receive a straight A, that is "5's" in all subjects, he will receive a gold medal. To do this he must stand in the upper 1 percent of those who graduate. If he has no more than 3 grades of B (4's) he will receive a silver medal. Many finish the 3 last years but fail the final examination. These students are given certificates in which they take great pride. The rest of the group is dropped at the end of the

eighth or ninth year. Some of these find their way into technicums. In 1956 there were about 28 million students in the first 10 grades; 1,100,000 graduated. This indicates that the number attending grade school in the lower grades is increasing rapidly.

#### COLLEGES AND UNIVERSITIES

There are 760 institutions of higher education in the U. S. S. R. that we would call colleges or universities, not counting any of the technicums. Thirty-three of these are full fledged universities. In addition there are 220 specialized institutes giving advanced degree training. The leading university in Russia is the University of Moscow. This university, housed on a new campus, in a huge recently finished building with a 33-story tower is, next to the Kremlin, the most impressive structure in Moscow. Senator Benson reports that the Russians spent 3 billion rubles on the new campus, "more than has been spent on any but a handful of American universities." Unlike our larger universities that may be fragmented into a dozen or more colleges, divisions, and institutions, Soviet higher education is everywhere divided into 5 branches:

1. Engineering-industrial
2. Agricultural
3. Socioeconomical
4. Education
5. Health

These 5 branches are in turn divided into a total of 24 fields which in turn are subdivided into about 300 specialties. Not all of the collegiate institutions have all 5 branches but whatever branches an institution has it will be divided into the same fields and specialties as other institutions.

To illustrate, the engineering-industrial branch, as of 1953-54, is divided into 16 fields as follows: Geology and mining exploration, exploitation of mineral deposits, heat and electrical power, metallurgy, electrical and electronic design and manufacturing, chemical, machine building, food technology, wood processing, light industry, printing, geodesy and cartography, meteorology and hydrology, civil, transportation, communications.

With some minor exception in fields like Soviet law which is a 4-year course, Soviet universities offer a 5-year course with a major in science, based on 5,200 to 5,400 instruction hours of 45 minutes each. In general, such majors as of 1952 have a time allocation of about 6 percent for political and social science, 27 percent for general science, 67 percent for special field science. Although minor adjustments are frequently made, this arrangement has been relatively stable since 1938.

Political and social science subjects consist primarily of indoctrination in the present official version of Marxism; general science subjects include foreign languages, general physics, analytical geometry and calculus, biology, general inorganic chemistry, geology, theoretical and applied mechanics, etc. The subjects in the first two groups are usually taken in the first 2 or 2½ years. Special field instruction occupies most of the last 3 years.

Let us specifically consider chemistry at the University of Moscow. Here Ivan as a chemistry major will receive about 2,700 hours of instruction in chemistry alone. Two-thirds of this will be in basic inorganic, organic, analytical, and physical chemistry. In this basic work he will have on the average 1 hour of class work for each 3 hours of laboratory.

In the one-third time spent on specialized courses, the ratio of classwork to laboratory is smaller. In evaluating Ivan's training in college chemistry it must be recalled that he had 4 years of chemistry before he came to college. Nicholas DeWitt states: "If one compares the training of Soviet chemists with our own, one fact is immediately obvious. As far as instruction time is concerned, the Soviet university chemistry major spends at least one-third more time on chemistry subjects than our own chemistry major in a college with a good department of chemistry. At most, our college chemistry majors during 4 years of study take 10 full courses in chemistry with a probable maximum of some 2,100 instruction hours. As far as the range of subjects goes, there is no radical difference between those which may be, but often are not elected by our own chemistry majors and those which are required of the Soviet student. \* \* \*

"Even when we are admittedly optimistic concerning the scope and quality of our own training of undergraduate chemists, we are faced with the probability that Soviet training is not only comparable, but somewhat more extensive than our own, although as far as the teaching of certain selected topics is concerned there are undoubtedly various reservations. The sheer size of the work-

load, as well as the process of enforcing certain standards in grading and the number of examinations and tests, exercise considerably greater pressure on the Soviet university student majoring in science than they would upon our own college student. Furthermore, aside from the requirement to learn chemistry subjects proper, the Soviet student is required to learn more about other sciences, such as analytical geometry and calculus, physics, thermodynamics, mechanics, strength of materials, etc., all of which are a part of his curriculum \* \* \* Our chemistry majors do not venture extensively into these subjects except at the expense of chemistry courses. This may perhaps be considered an additional element of strength in the Soviet training program.<sup>1</sup>

DeWitt continues: "Soviet university training culminates in state-accrediting oral examinations conducted before a public audience, and given by a special committee of several professors set up for this purpose. The examinations cover the entire course of study in the field of the student's specialty \* \* \* This procedure of requiring final examinations in public of all graduates which cover the entire program of study is unknown in our educational practice as concerns ordinary college degrees."<sup>1</sup>

The training of chemists analyzed briefly above suggests that the Soviet university chemistry major has training probably comparable to, or with some reservations—somewhat more extensive than, our chemistry bachelor of science degree holder. The Soviet university-trained chemist from the larger universities such as Moscow, Leningrad, and Kiev are probably as well trained as our master of science chemist.

Engineering education in Russia follows, in general, the same organizational pattern as in science, except that most science majors come from the universities while most engineers graduate from specialized institutes. The course is 5½ years during which time the student receives about 5,200 to 5,500 instruction hours of 45 minutes each in 35 to 40 individual subjects. This compares favorably with the 3,700 to 4,000 instruction hours and 22 to 25 subjects which is normal in United States practice. Each engineer has political indoctrination, physical training, and military instruction for about 15 percent of his total course work. The rest of the curriculum is in general about equally divided into three parts (1) between a broad training in science, (2) general nonspecialized engineering and (3) narrow specialized engineering. The distribution of engineering students between the various branches is quite different from the distribution in the United States where electrical engineering constitutes the major group. In the Soviet Union mechanical engineers form the largest group.

Specifically, the mechanical engineering curriculum based on the 1946 course of study, the latest complete one available for analysis, is 5 years with 5,054 instructional hours divided about 50-50 between lectures and laboratory practice. The general science background covers foreign language, mathematics, physics, chemistry, descriptive geometry, drawing, and theoretical mechanics. The general engineering consists of physical metallurgy, strength of materials, theory of machines and mechanisms, machine components, metallography, nomography, electrical engineering, fluid mechanics, tolerances and measurements, thermodynamics and heat-power engineering, and study practice. In the specialized engineering, Ivan studies lifting machines, machine tools (general), kinematics of machine tools, design and calculation of machine tools, technology of metal cutting, cutting tools, technology of machine building, welding, machine foundings, drives, cold stamping, structures and their design, machine-shop layout, electric equipment, automatic machine tools, heat treatment (tempering), organization of production, cost accounting and norms, and fire prevention and safety. A study of a recent Soviet engineering curriculum found in Engineering, February 10, 1956, a British publication, indicates that in the past 10 years the curriculum has not changed significantly.

Says DeWitt: "If, for example, Soviet mechanical engineering training with narrow specialization in machine tools is compared with the Massachusetts Institute of Technology's bachelor of science degree in mechanical engineering training with a broad specialization in materials and material processing, it is found that Soviet institutes require about twice as many subjects and over 2,000 more hours of instruction time. In general, the scientific and engineering subjects taught at MIT are included in Soviet curriculums. Most of these subjects cover nonspecialized engineering. Thus, broadly speaking, the range of general subjects in the two programs is quite comparable."<sup>2</sup>

<sup>1</sup> Nicholas DeWitt, *Soviet Professional Manpower* (Washington, D. C.: National Science Foundation, 1955), pp. 111, 112, 113.

<sup>2</sup> *Ibid.*, p. 121.

The American student of mechanical engineering probably spends more time studying general chemistry and physics than Ivan, probably mainly due to the fact that when Ivan entered college he had already studied 4 years of chemistry and 5 years of physics. Judging from Soviet textbooks, there is no outstanding difference in material covered, although perhaps there is more extensive use of calculus in physics in the Soviet case.

Again according to DeWitt: "In higher mathematics the portion of the curriculum in mechanical engineering is substantially greater in the Soviet program (United States, 180; U. S. S. R., 340), but it perhaps covers the same ground as the American program. By the end of the second year, the Soviet student is expected to know analytical geometry, calculus, differential equations, elements of the theory of complex variables, and the fundamentals of vector analysis. Theoretical mechanics covers about the same ground in both programs, but again the time input is greater in Soviet training (United States, 135; U. S. S. R., 204). In theoretical and technical mechanics the Soviet programs of instruction place greater emphasis upon graphic solutions than upon advanced mathematical statistics or operational calculus."<sup>2</sup>

As in the United States there is undoubtedly variation in the quality of engineering training in the Soviet Union. It is an axiom that the quality of training in any curriculum is dependent on factors such as the quality of the teaching staffs, training facilities and equipment, ability of students and the process of selection, etc. It should be noted in summary that the teaching staffs as well as equipment and facilities in Soviet engineering training establishments are usually better than in other fields of Soviet professional education.

"The reason for this is that priorities are given to engineering establishments over other fields of study. As a rule, higher priorities are given to institutions training engineers for key industries, industries directly related to armaments production. Thus, institutes training aviation engineers, communication and electronics engineers, specialists in certain fields of mechanical, chemical, and civil engineering have not only more rigorous training programs, but also enjoy better student-teacher ratios, better facilities and equipment; and they have better opportunities for selecting candidates. These interinstitutional differences account for the fact that there are some engineers with excellent training and some with inferior training. However, in spite of these variations, Soviet engineering training programs are in general substantially sound and are probably not inferior to our undergraduate engineering training."<sup>3</sup>

Each engineer culminates his training with a diploma project which takes his full time from 4 to 6 months. During this time he does not take any courses. "In most cases, the diploma project serves as a test of the student's ability to perform engineering calculations, to execute charts and technical drawings, and to apply existing norms and specifications, designed primarily for production engineers. Generally speaking, the Soviet engineering thesis, though consisting of engineering design and computations, is based primarily upon the use of already existing components, norms, specifications, etc. It therefore fits into one of the basic aims of Soviet engineering education which is to train production engineers."<sup>4</sup>

One of the outstanding characteristics of Soviet engineering education is its intense training in narrow fields of specialization. One may view the excessive stress placed on narrow technological specialization as a hindrance to the development of creative scientific knowledge. However, on the whole the development of Soviet industry in the past 25 years has been based primarily not on original discoveries made within the Soviet Union but largely on discoveries, modifications, and adaptations with occasional improvements upon models, types, and practices developed in social systems outside the Soviet Union with more advanced industrial technologies. Present Soviet Union engineering education seems well adapted to meet the needs of their present industrial development.

Since 1954 the Soviets have been continually introducing limited changes into their engineering programs which tend to reduce the narrow technological specialization and give more theoretical and experimental scientific and engineering courses.

One may wonder how Soviet higher education succeeds in giving more than 1,000 instructional hours per year. Recently the Government decreed that not more than 36 instructional hours might be given per week. About half of these require preparation of 2 to 3 hours each. Thus the workload of a science or engineering student is probably from 70 to 90 hours per week. It is a well-

<sup>2</sup> Ibid., p. 121.

<sup>3</sup> Ibid., p. 125.

established tradition in Russian education to place a heavy burden on the student at every educational level. This burden is readily accepted because both Ivan and his parents know that education offers the one practical avenue for advancement.

At the end of each university semester Ivan must stand stiff examinations, written or oral or both. The examinations are extensive in scope and the consequences for failure are harsh. By Government decree he presently need not stand for more than 10 per year. If Ivan flunks a course he is put on probation which must be promptly removed. The process is rigorous but it serves to select and motivate the able students and to enforce academic standards.

Before leaving the subject it should be stated that when Ivan applies for entrance to a Soviet institution of higher education he specifically identifies the area in which he proposes to specialize. This decision stands. On it Ivan sinks or swims. The Soviets have demonstrated no tolerance for students who would waste both precious classroom space and teaching time by not being able to decide what they wish to do. Under these conditions, out of 100 students who enter higher education, only about 60 succeed in graduating. In 1956 the colleges and universities in the U. S. S. R. graduated 250,000, of which 71,000 were engineers.

#### TECHNICUMS—SEMIPROFESSIONAL SCHOOLS

Last May I had the privilege of addressing a group of engineers and scientists from one of the large military laboratories near Washington. In the discussion period afterward the most persistent question was, "How can we get some good competent assistants—some intelligent people who can help us and thus free our time so that it can be used at our higher levels of training?"

This problem has also plagued the Russians and they have done something about it by establishing middle-grade or semiprofessional schools called technicums which have no exact analog in our educational system. The Russians have about 3,500 of these with a present enrollment (fall 1956) of about 1,900,000. These schools are operated, financed, and maintained by the various individual ministries in charge of the various branches of the Soviet economy, but the curricula, textbooks, and instructions are controlled by the Ministry of Higher Education.

The technicums are a kind of three-way cross between our technical institutes, trade schools, and our on-the-job training programs, and hold a place of major importance in the Soviet program of higher education. These schools offer training in more than 1,000 specialties that serve every phase of the Soviet society.

Students who have graduated from the seventh grade may apply for entrance into a technicum. If at least 75 percent of all Ivan's secondary grades are 5's and the remaining ones are all 4's, Ivan may enter without examination; otherwise, he must pass entrance examinations in three subjects. If Ivan enters from the seventh grade his course is sure to be 4 years in length. If he enters from the 10th grade certain curriculums are less than 4 years. In 1956 about 200,000 entered the technicums from the seventh grade.

There are still a few engineering technicums that can be entered from the seventh grade; however, they are rapidly being abandoned. Hence, if Ivan wishes to enter an engineering technicum, he should plan to finish all 10 of the secondary-school grades.

Let us specifically examine the curriculum in mining engineering at a Soviet technicum. It is 4 years with 6,100 instruction hours, 27 percent of which is class work, 15 percent laboratory and computation, with 58 percent practical work. During the 4 years in this semiprofessional training school Ivan studies:

General courses: History of the U. S. S. R., Russian language and literature, mathematics, physics, chemistry, foreign language.

General technical courses: Drawing, technical mechanics, electrotechnology, machinery, technology of metals.

Special courses: Geology, mining, geodesy and mine surveying, mining machinery, mine transportation, mining mechanics, mining electrotechnology, fundamentals of enriching coal yield, economics and organization of production, calculation (cost accounting), rules for technical exploitation, mine safety, plus some workshop, field work, military training, and physical education.

Upon graduation from a technicum the student is immediately assigned work for a period of 3 years, after which he presumably has somewhat more influence on the place and nature of the work he is to do from then on. The tremendous development of these semiprofessional institutes in Russia is, of course, made possible by the tight control by the state of the educational system and is

motivated by a desire to develop high technical capabilities in the less gifted individuals so as to be able to increase the effectiveness of the fully trained professional worker.

In 1955 industrial technicums training industrial technicians and supporting personnel for industry, construction, communication, and transportation, graduated 122,000. Altogether during the period 1951-55 Soviet industry, transportation, construction, and communication got 462,200 technicians and semi-professional supporting personnel from technicums.

This fall the technicums are reported to have accepted 480,000 new students, of which 60 percent were 10-year graduates.

#### GRADUATE AND ADVANCED DEGREE TRAINING

Soviet advanced degrees may be earned not only at the universities but also at research institutes as well. Russia has a vast complex of research institutes and laboratories under the jurisdiction of the industrial ministries, the Academy of Science of the U. S. S. R., and the various republic academies. About 60 percent of the advanced degrees are awarded by the universities and about 40 percent by the various institutes. The degree "kandidat" corresponds closely to our Ph. D. and is awarded in 18 "fields of knowledge."

Training for this degree may be taken by individuals under 40 years of age who have completed their higher education and who can pass oral entrance examinations in (1) their specialized field, (2) one foreign language, (3) and in the principles of Soviet ideology. Training is organized on the industrial study plan. A ranking professor supervises the study of from 2 to 5 students. At the end of the first year a dissertation must be selected, and at the end of the second year he must pass a battery of qualifying examinations, including two foreign languages.

The entire third year is usually devoted entirely to work on the dissertation, a defense of which is publicly made before the academic council of the sponsoring institution. If the defense is successful, the degree "kandidat" is awarded by the institution and confirmed by the Government.

Soviet sources state that a dissertation for a "kandidat" degree should reveal general theoretical and special knowledge of the topic on which it was written. It should demonstrate the ability to perform independent research and present new scientific findings. These dissertations for an advanced degree are usually an integral part of a larger program centrally supervised. The larger program can be appraised only in terms of the general quality of Soviet work in a given area of science. Consequently, one would expect a wide variation in quality. However, there can be little question but that research in some branches of Russian science is advanced, extensive and of good quality. In 1952 there were about 5,500 "kandidat" degrees granted, not substantially different from our own rate of production of doctorates.

#### GENERAL DISCUSSIONS AND SUMMARY

The present Russian Government has made it abundantly clear that it has a high regard for education as one of its most effective tools to be used in its drive for world domination. Although professing the aims of general education, the Soviet educational system in reality is uniquely geared for the training of specialized manpower. The individual must be educated but the individual's education is to be used to make the state more powerful. The present Government has clearly indicated that it intends to furnish education to each individual commensurate with his potentialities to contribute to the state.

Higher education is entirely tuition free and all successful students receive monthly living allowance stipends, which range from one-third to one-half of the prevailing average industrial wage. In addition, outstanding students receive bonuses. The stipends are differentiated so as to favor engineering and science students. The Soviet wage structure also heavily favors scientific and engineering occupations, with wage ratios for these occupations ranging anywhere from twofold to tenfold above the prevailing average wage of salaried workers and employees.

The Soviets operate by well-known 5-year periods. At the beginning of the present plan 1955-1960, 10 grades or primary and secondary education were available to only 70 percent of the population. Their goal is to have it universal by 1960. Their educational purpose is indicated by the intense teacher training program, and the high percent of their graduates of higher education turned back into teaching. At the present time it is reported to be 50 percent. The



salary levels of teachers indicate that the Soviets are playing for keeps. President Homer Dodge reports that the salary of an experienced upper grade teacher is about the same as an experienced doctor and three-fourths as much as a factory foreman. The salary of a professor is four times that of a skilled mechanic. Furthermore, as of 1956 all tuition and fees have been removed for study at every level in higher education. Practically all students are supported by fellowships, the stipends of which depend upon the course of study, the level and the quality of achievement to date. Thus by means of mass persuasion and bold incentives, the Soviet state makes every effort to channel the best available talent into engineering and scientific professions.

To enter a college or university one must either be a gold medalist, a graduate from a technicum in the upper 10 percent of the class or pass searching entrance examinations. In engineering and scientific fields, for example, these examinations usually cover five subjects: physics, chemistry, mathematics, the Russian language, and a foreign language. These entrance examinations may be repeated as frequently as one wishes until one is 35 years old.

Because it is their only practical hope for advancement, probably no people in the world are so sold on education as those of the Soviet Union. That is why 56 million of them are presently engaged in some sort of educational enterprise for self-advancement and why the science reading room in the public library in Leningrad is full 24 hours a day, the night workers occupying it by day and the day workers by night. The Soviet Government is also sold on education. That is why it is spending more than 5 percent of the gross national product on education.

The slogan of the late master, Stalin, that cadres of specialists—their number, their quality and competence—will decide the outcome of the industrial build-up essential for Communist victory, is now guiding his heirs more than ever before. Many scholars in the Western World have studied and made pronouncements upon Russian education particularly as to the quality of their engineers. It all adds up to the fact that the Soviet state by and large succeeds in attracting its ablest talent, channeling this talent where the State thinks it is most needed—namely in science and technology. The education of their engineers may be somewhat different from the education of engineers in the Western World, but we may disregard the quality of their training only at our peril. Also, presently they are being trained at about twice the rate of engineers in the United States.

Mr. EASTON. Thank you very much, gentlemen, for permitting me to appear. In closing, let me say that I speak as an individual and not in behalf of any of the institutions I have mentioned.

Chairman PATMAN. We have enjoyed your testimony, and I wanted to ask you just a few questions.

You consider adequate quarters the principal shortage right now?

Mr. EASTON. I said, I think, faculty, No. 1, adequate quarters coming close to it.

Chairman PATMAN. Faculty, No. 1. And you object to taking them away from the college campus?

Mr. EASTON. If in order to do so they charge the taxpayers an exorbitant rate for the service.

Chairman PATMAN. It doesn't seem like a fair practice. I wonder if there is some way you could bring that to their attention?

Mr. EASTON. We in the colleges have certainly done so, Mr. Chairman.

Chairman PATMAN. Maybe we could do something about it here. I think if it is brought to their attention in the right way they would not persist in it. Do you think so?

Mr. EASTON. I am not sure. Let me give you one reason for my doubt—

Chairman PATMAN. The profits motive is there, of course, they take these contracts at cost-plus.

Mr. EASTON. I had one experience which shocked and rather saddened me. Last June at our annual meeting of the American Society for Engineering Education, I met a man whom I had known as a

college professor at the previous meeting. I asked him how he was getting along, and he said, "Fine, but I am no longer with the college, I am now working for a company on the west coast."

I said, "What are you doing?"

He said, "I am recruiting, my official job is to recruit at meetings of college professors."

And that was why he was there. I thought he was a bit of a traitor to the cause.

Chairman PATMAN. That is serious. I didn't know it had gone that far.

Mr. EASTON. That is the extent to which it has gone.

Chairman PATMAN. I think we should give it more attention.

Mr. EASTON. I think so.

Chairman PATMAN. About the quarters, housing; do you think we should build more houses? You said a lower interest rate, you didn't mean that the students themselves would build houses, you meant that the colleges would build them?

Mr. EASTON. That the colleges could build from the college housing loan program which is already in existence at a lower rate.

Chairman PATMAN. We have the program now, and it is going along nicely. I wonder what the interest rate is now. I don't recall.

Mr. EASTON. I am not sure.

Chairman PATMAN. It is about 3 percent, I think.

Mr. EASTON. The reason I mentioned this, it was discussed quite extensively at a recent meeting of the American Association of Land-Grant Colleges, and a move was made at that time to request a lower interest rate.

Chairman PATMAN. Yes. I think it is justified, and I think you could solve a part of this if we could get more housing by raising the standards as you suggest.

Mr. EASTON. I am sure of it.

Chairman PATMAN. There is hardly any point in keeping the people in scarce housing when there is no sincere effort made by the students to finish or to properly pursue the courses.

Mr. EASTON. That is right.

Chairman PATMAN. And I think that is a good point. The colleges themselves would have to do that, or the associations.

Mr. EASTON. I think so. But the general climate would have to be so as to make it possible. You see, in this democratic society everyone appears to be entitled to a degree. One college president recently made the suggestion that on every man's birth certificate in the United States we should confer upon him the doctor's degree, then maybe we could get on with the serious business of education. There is too much of the thought that everyone is entitled to go to college.

Chairman PATMAN. Yes, we couldn't set up a screening committee to say, "Now, this boy is entitled to go and this boy is not," we couldn't do that. But I think on the basis of their ability to pass certain tests would be fair.

Mr. EASTON. I think so.

Chairman PATMAN. I am disturbed by what you said about the college professors not only leaving the campus but going out to help recruit others.

Mr. EASTON. I hope that is not too widespread. I gave that as one example.

Chairman PATMAN. I hope it is not too widespread. I was just thinking about some possible remedy for that without a law. It is something that is awfully hard to legislate on. I wonder if the Secretary of Defense couldn't make sure in entering into these contracts that some provision would be made against that.

Mr. EASTON. The gentleman sitting behind me whispered to me as I went back to my seat, "Did you know that there was a hearing on this very question in this building today?"

And I said, "No, I didn't."

Chairman PATMAN. Which committee, do you know?

A VOICE. The House Civil Service Committee, the Davis subcommittee, is going into this question.

Chairman PATMAN. Well, that is fine. That is very good. But don't you believe that the Secretary of Defense could possibly do something about it?

Mr. EASTON. I should think so, because these are mostly defense contracts.

Chairman PATMAN. They can put all kinds of provisions in the contract, they can always add another proviso. And provided, of course, these engineers are not—I don't know just how it could be done.

Mr. EASTON. It is a difficult thing, because I wouldn't want it in any way to impede the normal law of supply and demand. I don't think it would be wise to attempt that.

Chairman PATMAN. No. But where they use the Government's money in a cost-plus contract to induce people away from colleges, that is serious. And I think I will send Secretary Wilson a copy of your testimony and invite his attention to that and ask him if he will try to find some way, at least minimize it, if not stop it.

Mr. EASTON. I am sure the colleges will appreciate it.

(The following was received from a witness who was unable to be present in person because of conflicting engagements:)

STATEMENT OF DR. ERIC A. WALKER, PRESIDENT, THE PENNSYLVANIA STATE UNIVERSITY

My name is Eric Arthur Walker. I am president of the Pennsylvania State University. I am speaking today, as an individual, on the subject of engineering education and what it can do to meet the challenge of modern shifts in American technology. My knowledge of the subject has been gained through 23 years of experience as an engineering educator. I am a member of the Secretary of the Army's Scientific Advisory Panel and the Naval Research Advisory Committee, and am vice chairman of the Committee for the Development of Scientists and Engineers, appointed by President Eisenhower. I serve as chairman of the National Research Council's Committee on Undersea Warfare and am directing for the American Society for Engineering Education a comprehensive study of the Nation's needs for research in engineering. I am a member of the American Society for Engineering Education, and from 1952 to 1954 served as vice president of the society. During the same period, I served as chairman of the Engineering College Research Council and as chairman of the National Science Foundation's Advisory Committee for Engineering. I am a fellow of the American Acoustical Society, American Institute of Electrical Engineers, American Physical Society, and the American Institute of Physics, and am a member of the Institute of Radio Engineers, the Newcomen Society, Society of Sigma Xi, and Tau Beta Pi. I am a registered professional engineer in Pennsylvania and Connecticut. My remarks do not necessarily reflect the opinions of my university or of any of the organizations of which I am a member.

From a technological point of view, automation is not new and presents us with no new strictly scientific or engineering problems. The history of the use of automatic or semiautomatic machines to replace manual labor goes back almost as far as we have records of human activity. As man has discovered

new forces and phenomena and has learned how to use them to his advantage, they have been incorporated in his machines. As a consequence, the machines themselves have become, on the one hand, more complex and intricate and, on the other, more efficient in performing increasingly subtle tasks. This change, however, has been achieved through an evolutionary process, not a revolutionary one.

Dr. Vannevar Bush pointed out to this subcommittee in its hearings last October that automation is simply one phase of technological change and that technological change is not a new phenomenon. Only two things are new in this area: (1) the word "automation" and (2) the accelerated pace with which the principles and techniques of automation are being applied in industry. The term "automation" is so new that the 1950 Webster's unabridged dictionary fails to list it, and the fact that the word has come to be so widely used and understood in just a few short years is one indication of the tremendously increased significance of automation to industry.

Dr. Bush further pointed out that automation "is a part of a very important general movement, namely, the planned application of scientific results in an economic manner for the increase of man's physical well-being." It is this movement—its implications and its demands—that provides both our problems and the framework within which we must seek their solution.

The movement is significant not simply to our technical community but to the whole of our social and economic structure. Even though, from a technical point of view, the changes that are occurring are more a matter of degree than of kind, their importance probably cannot be overestimated. The effects are felt at every level of our society and have actually changed the structure of it. We can plot, for instance, the rapid change from a basically rural society to a basically urban one. In 1900, the dream of almost every man was to own his own business; today, one out of every two employed workers is on the payroll of a large corporation. In 1900, our discoveries were made by lone inventors working in their cellars at night or in an ill-equipped laboratory on a college campus. Today, they are made by teams of specialists working in the best laboratories Government and industry can provide.

We cannot help but see the significance of this change in our daily lives. To this point, I should like to quote Mr. Mitchell Wilson, whose dual careers as a novelist and physicist have won him fame in both fields: "Americans today—whether they earn their livings in offices, factories, stores, or farms—either make machines, plan new machines, sell the raw materials for machine-made products, or feed, represent, amuse, educate, heal, or bury the people who work on or with machines. \* \* \* I am not talking here about the machines and mechanisms used in the American home, but about the social rules, the social aims, the social strifes that are developed in a society based on machinery and mass production."

Changes as fundamental as these cannot help but cause concomitant shifts in our manpower needs, and the shifts themselves can tell us something about the changes that are taking place and give us some hints of what we must do about them. A great number of statistics indicative of these shifts were presented before this subcommittee at its hearings last year; I shall give a few general ones simply to serve as a review. Between 1940 and 1950, the total labor force increased by about 35 percent; during the same period, the number of farmers decreased by around 27 percent, but the number of research workers increased by almost 100 percent and the number of engineers by about 200 percent. Between 1947 and 1955, output in the electrical manufacturing industry increased by 87 percent, but the number of production workers increased by only 14 percent. In contrast, the number of nonproduction employees, which includes the engineers and scientists, increased by 40 percent. In 1900, about 300 factory workers were employed by industry for each engineer; today, the average is about 50 to 1, and some industries find it necessary to employ 1 engineer for each 10 factory workers.

The significance of figures such as these are perfectly clear, I think. American industry is becoming increasingly dependent upon science and technology for its continuing expansion. In your hearings last year, some fear was expressed that, should this trend increase, it might result in a serious unemployment problem. It is not my purpose in this statement to deal with the sociological problems resulting from automation, but I might note that we have today almost no unemployment. At least part of the reason for this lack of unemployment is no doubt the continued expansion itself; approximately half our labor force today is employed in businesses engaged in producing or selling products that were generally unheard of in 1900.

It is my purpose, rather, to point out our increasing dependence upon highly trained professional manpower for the health of our economy, for our continued technological and scientific advance, and for the maintenance of our ability to protect our way of life. Further, I wish to explore some of the things our colleges and universities can do to meet the challenge of our shifting manpower needs.

This shift was inevitable in automation. By definition, automation replaces unskilled labor with machines that do the work faster, more accurately, and less expensively. But it requires a high level of both intelligence and training to design the machines and keep them running, to prepare the information for them, and to interpret the results they produce. In a sense, we replace large numbers of our least talented, least expensive labor with smaller numbers of our most talented, most expensive labor. This fact, combined with our continued expansion, has created a shortage of professional workers that threatens our entire economy. The fact of this shortage has been dramatized by the desperate search for talent being carried out by industrial organizations. In 1954, 40,000 engineers were needed; our colleges and universities provided only 22,000. The shortage, of course, is accumulative; in 1955, about 80,000 were needed, and we graduated less than 23,000. In comparison, Russia graduated 53,000 engineers in 1954.

This shortage of engineers and scientists is felt throughout our social structure and not just in the industrial world. Undoubtedly, it accounts in part for our severe shortage of teachers; some experts estimate that our supply of teachers is dropping behind demand at the fearful rate of 60,000 a year, and that the deficit may reach 520,000 by 1966. Industry, by outbidding our schools for the best talent, is draining off a large percentage of our superior teachers and, by doing so, may be guaranteeing that the shortage will last for many years to come. The number of teachers qualified to teach physics, for instance, has decreased by 74 percent in the last several years, and the well qualified high-school science teacher has all but disappeared.

Some find encouragement in the population statistics. They point out that probably twice as many prospective students will seek admission to our colleges and universities in 1970 as did in 1954. To provide for this number of students is going to be a tremendous job. For one thing, as many academic buildings will have to be erected in the next few years as were built in the previous 300 years of American college history. We shall have to almost double our faculties. And to do these things, we shall probably have to spend \$8 to \$9 billion annually, about 3 times as much as we now spend.

To wait for the college-age population to catch up with demand, however, would be to invite disaster. By this slow process, we could not graduate enough engineers to supply the annual demand until 1970, if the demand did not increase from the present figure. By that time, the backlog of needed engineers would number about 200,000 and our economy would probably be permanently impaired.

It has been pointed out that each year that about 200,000 high-school graduates in the top 25 percent of their classes—potentially good college material—fail to continue with their education. In fact, only 7 out of 10 high-school graduates in the genius class—those with I. Q.'s of 163 and above—go on to college. About half of these, the studies show, drop out of school because of financial reasons. To reclaim these, we would need from 60,000 to 100,000 additional scholarships. The other half drop out because of a lack of motivation to continue. The underlying cause here is more difficult to identify and correct, because it may involve the home situation and the attitude of the parents, local racial and religious biases, the attitude of the community, and individual differences. Perhaps the most obvious and easily controlled factor is the lack of proper teaching and counselling in the primary and secondary schools. Corrective action requires increasing the pay of teachers, improving buildings and facilities, and up-dating our school programs.

Certainly, these steps must be taken, and I'm sure they will be taken. But they call for long-range programs that can't begin to solve the immediate problem. And if we don't solve the problem facing us right now, the long-range problem may have been solved by default before the solution has had an opportunity to have become effective.

The immediate problem must be solved largely by the colleges and universities through the application of just those methods we are trying to teach those who will become the leaders in our professional, technological society. We cannot solve the problem by multiplying the number of technical courses or curricula we offer. We do have some courses added in this area at the Pennsylvania State University to keep abreast of recent scientific and technological advances:

Advanced electronic analog computers and digital computation and control, for example, are offered by the department of electrical engineering and automatic control systems is offered by the department of mechanical engineering. But the addition of these courses is not, we feel, even a partial answer to the problem. It must be remembered here that there is nothing basically new in automation.

The core of the problem, it seems to us, is the tremendous shortage of engineers capable of the highly creative type of work demanded by automation and by research and development. The important thing to remember is that automation and modern-day research, although based on principles and techniques that we have been teaching for years, is not circumscribed by the traditional curricular boundaries. The design of a computer, for example, requires the skills normally taught and the knowledge normally acquired in several traditional curricula: electrical engineering, mechanical engineering, physics, and mathematics, to name a partial list. To meet problems of this sort, we have come to employ teams of experts in specialized fields, who approach the problem by what we call "systems engineering." This approach stresses overall integrated design to avoid, say, good electronic design coupled with inefficient or incompatible mechanical features. Our traditional curricula can provide the various members of these teams. However, they are poorly oriented for providing the project engineers who must supply the basic creativeness, the imagination, and the ability to analyze and synthesize the problem as a whole and to direct and coordinate the work of the others.

In the past, our methods of identifying individuals capable of, and preparing them for, these positions of technical leadership have been haphazard and wasteful. In fact, the superior individual has been identified in the past only through the recognition of the quality of his work on routine jobs. This process takes time, it depends on the perception and good faith of a supervisor, it presupposes that employment is held in a firm that provides an opportunity for demonstrating this type of creativeness and can use it when it is identified, and it puts basic responsibility for education in fields other than that in which the original degree was granted on the engineer himself. This last factor is important, because most of our curricula and at least the earlier positions stress depth, rather than breadth, of training.

Because of these considerations, the Pennsylvania State University has pioneered an engineering science curriculum designed to prevent this slow, capricious, and wasteful process by identifying these gifted young men and women and providing them with an education deliberately aimed at preparing them for these more advanced scientific engineering positions and for graduate work. This curriculum, which is open only to the top 25 students of each freshman class, is definitely an honors course.

In this curriculum, all students follow a uniform course during the freshman year. At the end of that year, the top 50 students are invited to apply for the engineering science program. From the applicants, 25 students are selected. The program followed in the next 3 years is broader than that of the traditional professional curricula; the student is given work in all major engineering sciences, with special emphasis being given to the fundamentals (mathematics and basic technical science) and the relationship between the various sciences. The curriculum is more demanding than the others and is expected to be more rigorous. It is designed to present the gifted student with a challenge sufficiently strenuous to encourage the development of his full potential.

We feel at Penn State that such a program will help in two ways: it should eliminate the wastefulness of our present process of identifying and training our technical leaders, and it should result in a more efficient use of brainpower. In this connection, I should like to quote from a talk made last April by industrialist Crawford H. Greenewald:

"Behind every advance of the human race is a germ of creation growing in the mind of some lone individual, an individual whose dreams waken him in the night while others lie asleep.

"We need those dreams, for today's dreams represent tomorrow's realities. Yet, in the very nature of our mass effort, there lies this grave danger—not that the individual may circumvent the public will, but that he will himself be conformed and shaped to the general pattern, with the loss of his unique, original contributions. \* \* \* The great problem, the great question, is to develop within the framework of the group the creative genius of the individual. \* \* \*

"I know of no problem so pressing, of no issue so vital. For unless we can guarantee the encouragement and fruitfulness of the uncommon man, the future will lose for all men its virtue, its brightness, and its promise."

Since we cannot, in the foreseeable future, meet our brainpower needs through numbers alone, it is important for us to improve the efficiency of our engineers and scientists. This approach is consistent with the mores of a country that has come to expect fewer workers, whether on the farm or in the factory, to produce more of a better product at less cost. It is also sound engineering practice. I call your attention to the fact that were we to increase the efficiency of our engineers by 10 percent—if we can reclaim by some means 4 hours of their time a week—we will have, in effect, added 50,000 engineers to our work force.

We think the engineering science curriculum will help to increase this efficiency by eliminating waste. Actually, the 1-tier educational program that colleges and universities normally offer is extremely wasteful of brainpower. Not all young men and women have the same capacity for education, just as not all students have the same capacity, for example, of learning to play the piano. By forcing all of those who come to our schools into one educational mold, we fail to provide the most gifted ones with challenges sufficiently vigorous to develop their full potential. We lose the less talented ones altogether.

To reduce the loss of these less talented students, the Pennsylvania State University is also pioneering 2-year associate programs aimed at reclaiming those students with genuine technical interests and aptitudes but with limited preparation or analytical ability by preparing them to relieve our professional engineers of many routine assignments. The savings are twofold: We save for important, valuable work a force that would otherwise be lost, and we improve the efficiency of our engineers by relieving them of subprofessional chores.

These courses are offered at the off-campus centers, our junior colleges located in industrial areas scattered throughout the State. These courses—the original ones were electrical technology and drafting and design technology, but three new ones are soon to be added: Medical technology, surveying technology, and production technology—are aimed more directly at “how to do it” than are regular courses. The courses offered in these programs fall into five categories: Mathematics and basic science, the technical specialty, related technical subjects, English and speech, and socio-humanistic subjects. The difference between these programs and the 4-year programs is one of emphasis, as much as anything else. For example, 37 percent of the electrical engineering curriculum is given over to mathematics and basic science, but only 22 percent of the electrical technology program is so devoted. Thirty percent of the electrical engineering curriculum is devoted to subject-matter specialty courses; 47 percent of the electrical technology curriculum are specialty courses.

These differences reflect the unique aims and objectives of these 2-year terminal programs. They are intended to be more specific in purpose and not to require a broad understanding and application of higher mathematics and basic science. Graduates of these programs are prepared to assume many routine assignments to become an important auxiliary in the modern engineering team.

There is one other important consideration that caused the engineering school faculty to recommend the new 2-year programs. During the next 10 years it is inevitable that applicants to engineering colleges will increase rapidly. In the very near future, enrollments will exceed the capacities of existing institutions. Furthermore, experience shows we must assume that many of those who apply will not possess the intellectual capacity for professional work. The technical institute is the answer for furthering the training of these students.

We feel these changes are important steps toward the removal of the inefficiency of the one-level college curriculum. We have yet another program that we feel can help to improve the efficiency of our professional people and, consequently, to ease the tremendous shortage of brainpower that is threatening our technological progress. This program consists of a series of seminars held in the summer months for graduate engineers to help them keep abreast of the most recent scientific and technical changes. By this program, we hope to reduce the inefficiency that occurs because our engineers and scientists, rushed to keep up with their mountainous daily chores, are unable to keep informed of the most recent developments.

This program was started on a pioneering basis in the summer of 1953. Its success has made it a regular feature of the Penn State summer program, and we now offer annually about eight such seminars. In 1956, 548 engineers and scientists took advantage of this opportunity for self-advancement, and we expect the number to grow. The nature of the seminars changes from summer to summer so that we can provide updating for engineers and scientists in Pennsylvania and the adjacent States in a wide variety of technical fields. The seminars run from about 3 days to 2 weeks, depending on the complexity of the material to be covered.

This past summer, these seminars covered two areas of specific interest to the problem before this subcommittee: Automation and creative engineering. One hundred and seventy-six engineers and scientists participated in the automation seminar and 73 in the creative engineering one. These numbers are close to capacity attendance. Other seminars offered last summer included electrical contacts, electrostatic precipitation, industrial engineering for smaller industry, statistical methods in material research, technical report writing, and torpedo engineering.

It sometimes appears this age is determined to prove historian H. G. Wells' statement that "Human history becomes more and more a race between education and catastrophe." We can be saved from catastrophe today only by reevaluating our educational systems to devise methods and means of eliminating the fearful shortage we now have a highly skilled, professionally trained manpower—or, if you wish, brainpower.

#### SUMMARY

Automation is part and parcel with modern-day technology, and the health of our national economy and the strength of our ability to protect our American way of life depends upon the vigorousness of our scientific and technological progress. This progress is today threatened by a critical shortage of the highly trained professional manpower, brainpower, upon which this progress depends. The expected increase in college and university enrollment cannot eliminate this shortage for many years to come, and, without the requisite number of students, the addition of new courses cannot help, especially since the principles upon which automation is based are not new.

The colleges and universities can help by reevaluating the traditional one-level curricula. By failing to provide challenges strenuous enough to stimulate the superior student to his fullest possible development and by eliminating the less gifted student altogether, these curricula contribute to inefficiency and wastefulness in the use of presently available manpower. To reduce this loss in efficiency, the Pennsylvania State University has pioneered an engineering science program and several 2-year technical institute associate programs.

The engineering science program is aimed at eliminating the slow, capricious, and wasteful process of identifying and training gifted young men for positions of technical leadership. In this program, the top 25 engineering students in each class are given special training in the fundamentals (mathematics and basic technical science) and in the relationship between the various sciences.

The associate programs are designed to reclaim for useful work those students with genuine technical interests and aptitudes but with limited preparation or analytical ability. By concentrating on how-to-do-it training, we prepare these less gifted young men and women to relieve the professional engineers of many time-consuming subprofessional chores.

In addition to these two programs, we provide a means by which graduate engineers can keep abreast of latest technological advances through an annual summer series of engineering seminars. We feel that such updating is important in improving the efficiency of our engineers and scientists.

The colleges and universities can do much to ease the present vital shortage of technical brainpower by reevaluating their programs to provide: (1) an adequate training for the gifted student; (2) engineering aides to perform routine assignments, and; (3) stimulating refresher training for practicing engineers and scientists. If we can improve the efficiency of our engineering force by 10 percent, 4 hours a week, we can, in effect, increase the force by 50,000 engineers.

Chairman PATMAN. Thank you very much, sir.

Mr. Sheen, I believe you were wearing a hat this morning as president of the Instrument Society of America, and since you have put on your other hat as president of your own company, we shall be very glad to hear you.

#### STATEMENT OF ROBERT T. SHEEN, PRESIDENT OF MILTON ROY CO., PHILADELPHIA, PA.

Mr. SHEEN. Thank you, Mr. Chairman, as you said, I have now turned my hat around, and I am appearing in a bit different capacity. I am now making my presentation as president of Milton Roy Co.,



entirely apart and separate from my presentation as the 1955-56 president of the Instrument Society of America.

I do this to relate specifically my testimony in this second capacity to the problems of the small- and medium-size business and in the relief that your committee is specifically interested in the role of small business in instrumentation-automation. I will respectfully offer, as president of a small business, additional recommendations for consideration by your committee.

The problems of small business in the instrumentation-automation field may be briefly summarized under two headings:

1. The procurement of trained men.
2. Grow or die, and the effect of our tax climate on our ability to grow.

Milton Roy was founded in 1936 as the partnership name for Milton Roy Sheen, my late father, and myself. At the time I was engaged in consulting chemical engineering in the field of water purification and industrial waste treatment. The trade name "Milton Roy" was selected to avoid any conflict with my consulting practice.

The first products that we manufactured were known as controlled volume chemical pumps, in reality flow-control instruments for metering specific quantities of chemical to a process. They found their first application in handling water treating chemicals. From a humble beginning in my Dad's basement and with capital of less than \$1,000, the business grew to a point where, in 1946, we changed from a partnership to a corporation. Profits were constantly returned to the business to finance the ever increasing need for growth to meet the demand for our products. In this year of 1956, our shipments will total \$3,600,000 and we now have a total of 200 employees.

Today, even though we are small business, we are the largest single manufacturer of controlled volume pumps in the free world and have licensees in Germany and Japan. We are now starting diversification with other lines of instruments including instruments employed for continuous chemical analysis of liquids and gases.

I had the privilege of testifying before the Congressional Committee on Ways and Means on June 8, 1953, on the extension of the so-called excess-profits tax, to show the punitive effects of that "antigrowth tax" on a growing small business and how difficult it was to lift ourselves by our financial bootstraps. Many of the problems of financial growth outlined in my testimony at that time are still with us today in our present tax climate. The net results on small business are readily apparent from the increased number of sell-outs, mergers and consolidations that are necessary for continued existence.

The United States Department of Commerce data for the first quarter of 1953—the latest figures that we have been able to obtain—reveal that a total of 3,863 total reporting units in Code 38, instruments and related products industry group, only 2.8 percent of these companies had 500 or more employees. This is graphically shown in the chart that accompanies this presentation. 94.6 percent of the companies, less than 250 employees and 82 percent less than 50 employees.

If the tools of automation are to be made available to meet the rising demands from the multitude of instrument users, it is obvious that the problems of small business are of specific and vital concern.

First, let me speak only briefly on the subject of education of trained manpower inasmuch as I have covered that need rather fully in my previous testimony and here I will simply add the relationship between this problem and that of the small business in this field, that of the difficulty of procurement of trained men.

The problem today is tough enough for big business, but it is even more difficult for the small businessman. The glamour of working in the larger organizations together with the training programs, fringe benefits and experience that can be offered present really tough competition when it comes to procurement of young men directly from our colleges. The small businessman has little time in addition to his many other duties to personally visit college campuses. He seldom can afford the advertising spreads for technically trained manpower used by the larger organizations, to say nothing of radio and TV plugs for job opportunities.

To every recommendation I gave in my previous testimony, speaking in my capacity as 1955-56 president of ISA, for programs to give more trained manpower I can only add an emphatic "amen" from my viewpoint as a small-business man.

The very newness of this field of instrumentation-automation has attracted the entrepreneur and the inventor in great numbers. A feature of the recent Instrument Society of America exhibit in New York City in September was a booth devoted to individual inventors in a contest to submit their new ideas for new instruments and new solutions to problems. This contest was quite a success and this idea will become a continuing feature of the annual exhibit.

How are these inventors to merchandise their ideas? The biggest limiting factor and the one possibly most responsible for the increasing trend to sell out or merge is the question of capitalization, the lack of capital to take an invention from the idea stage through to successful manufacture and sale.

Present considerations for a change in the rate of corporate income tax on the first \$25,000, from 30 to 22 percent and then applying the 30 percent rate to all over \$25,000 will, of course, help, but this is only a small step in the right direction.

The most difficult capital for any businessman to raise is the capital I will call brick-mortar-tools capital, or what the accountants call "fixed assets." This is true because after making an investment in this form of capital, business is only permitted to charge to its operations a small portion of this investment each year, called "depreciation" and must then pay taxes on so-called profits immediately before recovering the cost of the bricks-mortar-tool money.

Actually, there is no money to bank as profits until the cost of the fixed asset is recovered.

Here, I have a specific recommendation to make, a recommendation that, if followed, would do more in one step to assist the small- and medium-sized business to grow and to stabilize and do more to stop the trends toward mergers and well-out than any restrictive legislation that might otherwise be considered. In other words, this recommendation is for permissive legislation in the tax field to improve the tax climate to permit growth.

My proposal is this, permit any business to expend its first \$50,000 of capital investment in any one year choosing its own method of

depreciation on capital expenditures up to that amount. Business could choose to expense such expenditures should it so desire. The interesting part of this proposal is that the only cost to the Government would be the interest on the money that would ultimately be paid as taxes in later years.

If a capital expenditure for a tool is made in 1 year and written off the books as an expense, the profits made on that tool or expenditure would be subject to income taxes in a following year. Such a step would not be discriminatory, as this option would be available to any business and of any size but limited to \$50,000 in any one year.

It would be of the most value to small- and medium-sized business and would probably go further toward solving the problem of bricks-mortar-tools capital for small business than any other one step that could be taken. This would obviously require an inclusion in accounting methods of a listing of such assets on the books of the business with reserves for future taxes such as is now recommended and practiced by accountants where certificates of necessity are employed.

This proposal would, in effect, grant a certificate of necessity to every businessman on his first \$50,000 of capital expenditures with the exception that instead of being permitted to depreciate over 5 years, he would be free to choose any period for depreciation or be permitted to expense, should he so desire. Any bricks-mortar-tools assets purchased under this provision would naturally be scheduled on the company's records. In the event of a future sale the income from such a sale would be fully taxable at normal corporate or business income tax rates. The beauty of this aid to small business lies in its comparative simplicity.

I have two other recommendations to make, both in the tax area and in this case, both referring to our educational needs.

The first of these, which I believe has been proposed by others, would allow any individual an income tax exemption for tuition costs at—and here I specifically mention tuition costs—at technical schools. Here, this exemption might be said to be discriminatory in favor of the technical schools. However, it would be an admitted impetus to accelerate and encourage the training of technical manpower so desperately needed in our country today.

The second proposal may, I believe, be now made for the first time. Corporations are permitted up to 5 percent of their net income for charitable and educational deductions. I propose that for the period of the next 5 years, corporations be permitted a credit against taxable income of \$1.50 for every \$1 of contribution to educational institutions. This, in effect, would mean that the Government would share with the corporations the cost of making additional contributions to meet the educational needs, but it would also be permitting the corporation the initiative to decide where such contributions would be made and not have the contributions made as a direct Government subsidy. For example, as a possible answer to our previous witness' suggestions, where more money is needed to build facilities and more money is needed for teachers' and professors' salaries, this sort of a suggestion would help to provide the money to do that particular job.

Many companies today cannot afford to donate amounts approaching the 5 percent of net income. This is, again, particularly true with the small organizations who need every dollar they can retain for their

continued growth. Where such dollars, however, would have such additional credits to help solve another major problem, the shortage of technical manpower, such incentives would undoubtedly generate a vastly increased schedule of giving and aid in solving our educational problems.

To sum up, the role of small business and its healthy growth is a vital one to the future of instrumentation-automation. Small business has great need for technically trained manpower and still greater needs for the improvement of the tax climate that will permit growth and not demand death. Small business can then grow to become the medium and the big business of tomorrow while doing its part in furthering the growth of instrumentation-automation for the benefit of all.

Thank you, sir.

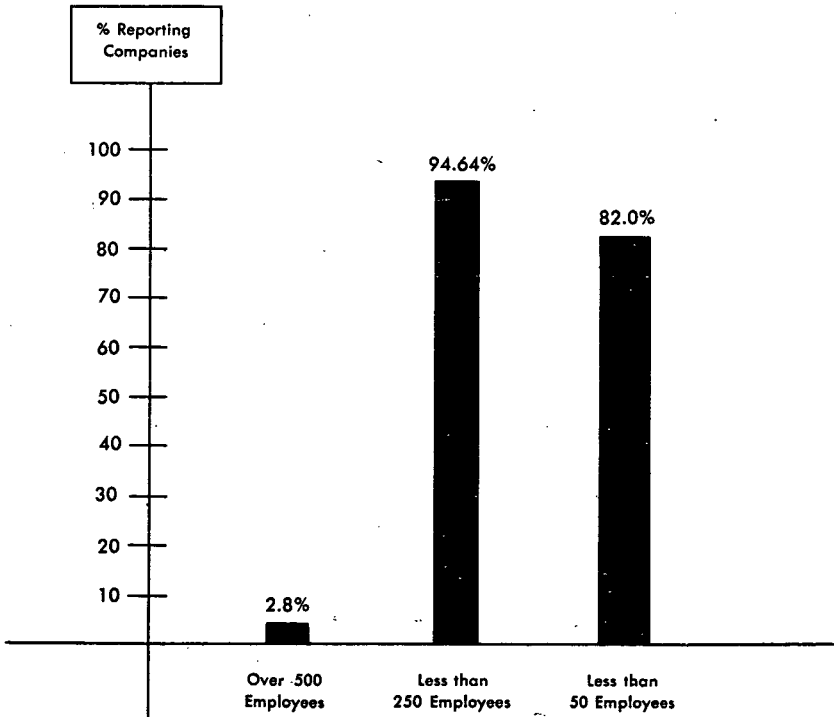
Chairman PATMAN. I assume that you would like to insert the chart in the record, too, along with your testimony?

Mr. SHEEN. I would, yes.

(The chart referred to is as follows:)

### NUMBER OF EMPLOYEES IN INSTRUMENTS AND RELATED PRODUCTS INDUSTRY

(S.I.C. Code 38)



Chairman PATMAN. I am very much impressed with your suggestion, Mr. Sheen; \$50,000—that is, of course, not large as we count money in taxes or in business. You think that will even be better than a reduction in the tax rate from 30 to 22 percent on the first \$25,000, and I agree with you that it would. The bill I have would raise that \$25,000 up to a much larger figure. And I have already prepared that bill for introduction. And it will be introduced the first day. And I hope to get action on it. And I would certainly not object to a consideration of a proposal like you have suggested here.

It is possible that I will make sure that it is considered by having a bill prepared.

Would that be better than having a 27.5 credit to a small-business man?

Mr. SHEEN. In my opinion it would, sir, for the simple reason that a small-business man has so much more difficulty in going to a financial market to get money to invest in his actual tools:

Chairman PATMAN. And \$50,000 becomes a part of his assets, and then if he sells it within 6 months it is a short-term capital gain, and you have got to pay taxes on it just the same, and if it is long term, he pays accordingly.

Mr. SHEEN. You notice that I have suggested that he must schedule that asset, and, if sells it, it is subject to normal or corporate income tax.

Chairman PATMAN. Yes. That is quite an appeal, I think. And the good thing about it, too, is that it will permit producing immediately, and the Government will get the benefit from that production.

Mr. SHEEN. Exactly. You will do more to help that small-business man really stay in business.

Chairman PATMAN. I am very much impressed with it. I want to thank you very much, Mr. Sheen. And I am going to make sure that your proposal gets consideration.

Mr. SHEEN. Thank you very much, sir. I appreciate it.

Chairman PATMAN. Since we have concluded our program for today we will stand in recess until 10 o'clock tomorrow morning.

(Whereupon, at 3:55 p. m., the subcommittee adjourned, to reconvene at 10 a. m. Thursday, December 13, 1956.)

# INSTRUMENTATION AND AUTOMATION

THURSDAY, DECEMBER 13, 1956

CONGRESS OF THE UNITED STATES,  
SUBCOMMITTEE ON ECONOMIC STABILIZATION  
OF THE JOINT ECONOMIC COMMITTEE,  
*Washington, D. C.*

The subcommittee met, pursuant to recess, at 10:10 a. m., in the Old Supreme Court Chamber, United States Capitol Building, Washington, D. C., Hon. Wright Patman (chairman of the subcommittee) presiding.

Present: Representative Patman (presiding).

Also present: John L. Lehman, clerk, and William H. Moore, staff economist.

Chairman PATMAN. The subcommittee will please come to order.

We have as our first witness this morning Mr. Albert F. Sperry, president of Panellit, Inc., manufacturer of data processing, information, and control systems for industry; also president, Panellit Service Corp., systems engineers in instrumentation and data processing; past president and honorary member, Instrument Society of America; past chairman, IRD, of American Society of Mechanical Engineers.

Mr. Sperry, we are glad to have you this morning. I believe you have a prepared statement, and you may proceed in any way that you desire, either from your prepared statement or any way that you wish to.

Anything that you desire to put in the record in connection with your remarks to supplement them, that is germane, we shall be very glad to have it in the record.

## STATEMENT OF ALBERT F. SPERRY, PRESIDENT, PANELLIT, INC., SKOKIE, ILL.

Mr. SPERRY. Thank you, Mr. Chairman. I have a prepared statement, but in view of the extremely interesting discussions yesterday, I would like to supplement it with some comments that bear on certain of the questions that have come up.

I have been asked to discuss systems engineering and data processing, their relation to the general problem of automation and their coming role in industry.

I hope that I will be able to convey to you my conviction that these techniques hold out great promise for technological progress, even though many difficulties stand in the way of their complete acceptance today.

Also, that their widespread applications will not require disturbing readjustments on the part of labor, but may require real orientation in management thinking.

Incidentally, yesterday Dr. Moore asked certain of the speakers if they would define the term "automation" again. This has been done so many times—

Mr. MOORE. The question dealt rather more with "instrumentation," which is an even newer word in the common man's language, I believe, than "automation."

Mr. SPERRY. I have been in the instrumentation field for 34 years, and we long time ago came to the conclusion that it was a frustrating task to try to define instrumentation." Both instrumentation and automation are such broad fields that we have had to break them down each time.

But I will in the preliminary to my talk break down the field of automation, so as to delineate the field in which instrumentation plays the most important part. Without trying to define it, I think I can offer some comments that might help.

In order to do this, I intend to consider automation as breaking into two main aspects. This, incidentally, is a little different than the general approach taken at the first hearing by certain speakers, where I heard it broken down into the four aspects, which were, as I recall, mechanization, continuous process, feedback, and rationalization. I think those overlap and confuse the picture a bit.

To me, therefore, the whole field seems to resolve itself into two distinct aspects. The first of these is usually referred to as mechanization and has to do with the replacement of men with machines, with the shifting of the labor population from the line to the staff functions of production. This aspect of the problem occupied most of your attention during the hearings of 1955, and, quite naturally, highlighted those problems which the public associates with technological change and automation.

The second aspect of automation, and the one which we are mainly concerned with in the present hearings, has to do with the control of our technological processes in order to optimize their operation. Mechanization is usually a prerequisite to effective control and, to follow the pattern presented by Mr. Jones yesterday, it can be considered as an extension of our human capabilities to produce motions, force, and work—our muscles, in other words.

Instrumentation and measurement can be said to be extension of the human senses. Systems engineering and data processing which I am covering more particularly, extend our mental capabilities, such as memory, mathematical manipulation, comparison, and decision making.

It is not necessary to have mechanization, instruments, or automation of any type in order to produce a product, if the process is a simple one. A tailormade suit is an example of a completely unmechanized, purely manual operation, and there will always be many activities which will require skilled manual artisanship. As a matter of fact, the increase in leisure due to technological progress in itself creates new demands for such custom-built products, as a byproduct of our ever-increasing standard of living.

Now, if it is a simple process but we wish to produce it in large quantities, we can usually mechanize it in order to produce it economically.

If, however, there is any complexity in either the product or the process, then the end product, while it may be produced cheaply, may

not have the desired quality, and the entire operation may break down for lack of control. In such a case, one must apply feedback techniques to effectively control the process and produce the desired result.

To apply these techniques, we usually start out by having the systems engineer analyze the process, lay down the basic rules of operation, and set up the standards and goals. Instruments are utilized to keep us informed as to the status of all the variables in the process. A data-processing system gathers this mass of information, correlates it, compares it with the desired goal, and, finally, makes the necessary decisions so that we can adjust the process and produce the desired result.

In a way, these same principles apply to all human activity—not merely the means of production—and this is why the feedback concept has made such a powerful impact on our thinking during this last generation.

Feedback is the key to successful activity, whether human or machine. It makes a science of acting from present experience, rather than from some preconceived plan. The concept is so powerful that there are many who feel that it is broader than the popular notion of automation, with its emphasis on mechanization and replacing of men with machines.

Norbert Wiener used the word "cybernetics," taken from the Greek word "the helmsman," to describe this science of feedback control and information theory. Unfortunately, the public press has glamorized the word "automation," and expanded its scope so broadly that we really have no alternative but to continue to use it as an American colloquialism for technological progress.

In applying the principles of systems engineering, we may utilize a high degree of mechanization and thus produce considerable labor-saving. Likewise, data-processing equipment is often utilized as a tool for reducing clerical work in offices.

In the early stages of the application of these techniques, we will hear a great deal about this aspect of the problem; that is, the labor-saving aspect. We soon tend to reach a limit of the amount of capital expenditure that one can justify on a pure labor-saving basis.

The concern over labor-savings tends to blind us to the fact that there are many industries and activities in which labor is no longer a significant element of cost. The efficient conversion of raw materials and natural resources into usable and salable products and the effective utilization of our capital facilities are really the major problems that face many industries. As a matter of fact, these are problems even in many industries where labor is a large factor.

Much has been said about the "continuous process" industries and the "flow" concept of production. The chemical and refining industries and electric utilities fall in this class and, as you know, are almost completely mechanized. The paper, steel, textiles, and plastics industries are becoming highly mechanized, but their operation has not yet become as completely continuous as in the processing industries.

Recently, the so-called Detroit-type automation has been developed to introduce continuous material flow to parts manufacture, but the capital costs are usually high and the applications have been largely limited to standardized items produced in very large quantities.



The general rule is that the more continuous the process, the less the percentage of direct labor cost—and in modern refineries the direct labor cost is today only 3 to 4 percent of the product value.

In the more modern and larger chemical and processing plants, the same general picture holds, although there are many small plants which are not continuous and which bring the average labor cost up. As a matter of fact, the average labor cost for the entire industry is not much more than this.

It is also interesting to note that maintenance costs are averaging about twice as high as direct labor, so it hardly seems as though a "second industrial revolution" could result from further savings in manpower, particularly in continuous-process operations.

You probably recall statements made at these hearings that seem to indicate that these plants are operating so effectively that it hardly pays to add more automation. Actually this is not so at all, but the information on this point is very difficult to gather because most of these processes in the chemical industry are rather secretly guarded.

The fact is that most modern chemical processes are operating at conversion efficiencies to a point where recoverable losses are often greater than the entire direct-labor cost, and in the case of some of the newer products, many times greater.

Increases of 10, 20, and 30 percent, and even more, would be attainable by many such plants if truly effective control were possible. I know of many such plants, from my own personal experience, and I have checked this with operating engineers all over the country.

Petroleum refineries do not show such losses, of course, because they are so well standardized, but even there substantial improvement could result if their reactions to short-term changes in supply and demand could be handled more efficiently.

Refineries can usually correct their mistakes by blending and re-running certain of their products, but this is costly—both in yield and tankage cost. As raw materials get scarcer and more costly, the pressure for better conversions and reduced capital costs will increase.

From the long-range viewpoint, we can expect something like this to happen in industries whose processes are even less continuous in their nature. At first the emphasis will be on the replacement of men with machines, but in a few years the more obvious and sensational opportunities will begin to disappear and it will take more and more effort and greater capital expenditure to produce appreciable labor savings.

Eventually, commerce and industry will find that the cream has been skimmed off, and they will begin to think of automation in its proper perspective—or I should rather say in its other perspective—as a tool for better and tighter control of production.

I feel, therefore, that the greater need today in industry is to find means of reducing waste in raw materials and capital equipment. I think this is true even in many industries where labor cost is a large factor, but in the chemical-processing industries it is our only hope for real progress.

I might add, that I am referring to progress through increased production. I do not want to give the impression that the research work in those industries is not also an important part of the problem.

Now, while there is general agreement that this problem exists, there are some serious misconceptions that raise doubts as to our ability to solve them. One of these arises from the relatively high degree of mechanization and instrumentation that already exists in the petroleum and chemical industries. Many feel that they have gone as far as they can go, and that they have reached a saturation point in automation.

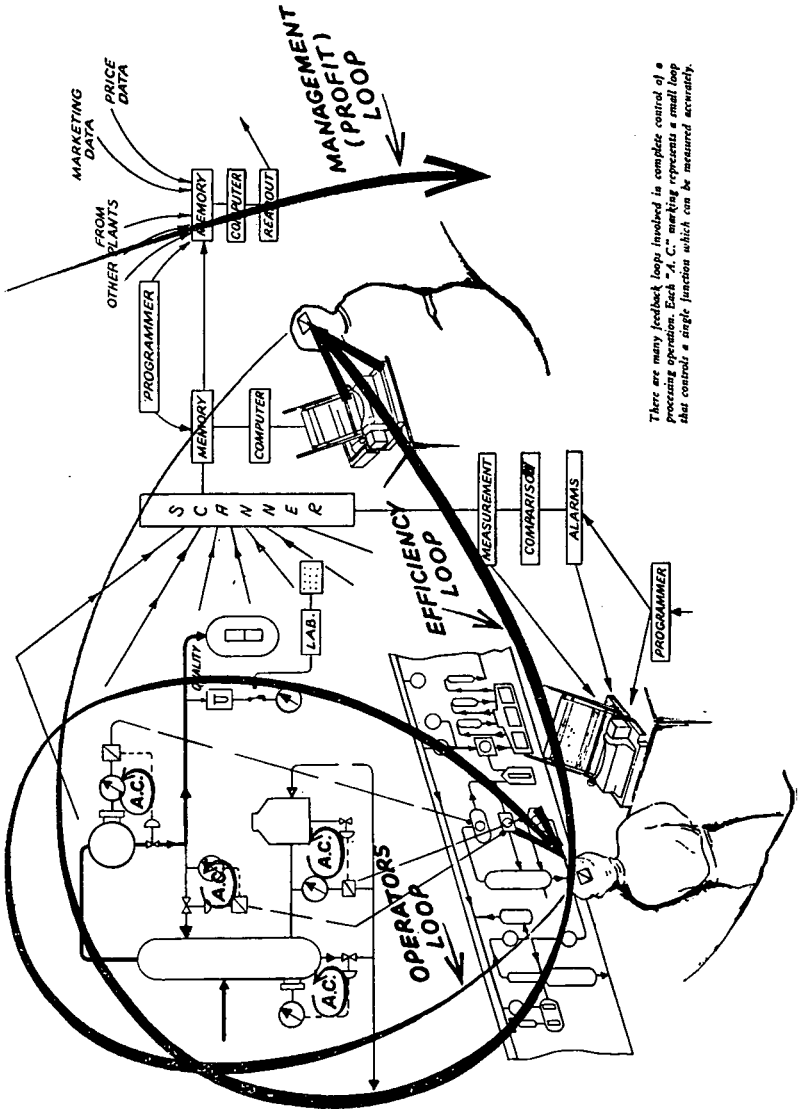
Such a notion is completely erroneous. The fact is that there is very little automatic control in these plants, except at the very lowest levels of operation, and at management levels there seems to be no effective control of operations at all, in the scientific sense of the word.

I would like to describe in a general way the management and operation of a typical industrial plant. I will use a chemical process as an example, but the general principles will apply very largely to any highly organized technical activity.

I have brought figure 1 to show schematically how the individual steps of the process intertwine with each other to form a complex, continuous process.

Each step in the process can be thought of as a closed loop of cause and effect, a feedback control loop in which (a) the result of that step in the process is measured, (b) fed back and compared with the desired result, and (c) if they are not identical, that is, if error exists, then a decision is made as to the action to be taken to eliminate the error and produce the desired result.

(The chart is as follows:)



There are many feedback loops involved in complete control of a processing operation. Each "A, C," marking represents a small loop that controls a single function which can be measured accurately.

This, in essence, is the process of control and for all practical purposes it can be considered as the process of effective management.

In figure 1, I have indicated by the various loops that it can be broken up into four echelons of management, using the word "management" very broadly there.

The largest loop represents the plant manager, next the technical staff, the third the operators and, finally, the laborers or automatic controllers—depending upon the type of process involved.

Let us see how automatic each of these four echelons actually is in a typical up-to-date plant.

The laborers or automatic controllers (the smallest loops), deal with operations that are quite simple and which satisfy the three important conditions for complete automatic operation. These conditions are:

1. They can be measured with sufficient accuracy, reliability, and speed.

2. They are adequately mechanized.

3. The correlations between measurement and correction are definite, simple, and quick. Under these circumstances the machine can make adequate decisions; as a result, these operations are practically always controlled by automatic machines.

One of the most important considerations is the time element that characterizes these functions. Time constants range from seconds in most cases, to minutes for the more difficult (and less highly automatized) functions. The time constant is the measure of the speed with which the process reacts and when it exceeds a few minutes the effectiveness of automatic control is greatly reduced, especially if there are significant disturbances to be coped with. Considerable human attention is usually required to keep such units in operation.

The operator (the next echelon) supervises the complete unit to see that everything is functioning properly and safely. He usually has a centralized control board with instruments, alarms, et cetera, which he reads and compares with the instructions from his technical staff.

He makes the decision to keep the unit onstream and counteracts the disturbances that are constantly cropping up to upset the unit. This is not an automatic operation in any sense, although he uses the automatic devices as mechanized tools to help him get the desired results.

The technical staff and the manager rely largely on the information gathered by hand on log sheets or reports. It usually takes days before they have adequate information on which to base a decision, and management gets its information weeks later, if that soon.

The volume of statistics that management needs is so great that in a typical industrial operation today, it is seldom received in time for effective control.

So we see that automatic control, even in this highly mechanized industry, only exists in the lower echelons of operation. It takes so long for the information to get up to either of the management levels that there is not even a possibility of considering automatic control today. The more complex the operation becomes, the longer the information time cycle grows, and the less chance there is for management to meet the changing conditions with anything like effective control.

Time, as often said, is the essence of this problem. There are plenty of figures and reports available to management in most plants. The instrument industry has made such tremendous strides in the last generation that management is often flooded with statistics that could be of great value if they were available in time and in usable form.

This, of course, is not a problem peculiar to any one industry. It concerns management in every field of endeavor and, therefore, in attacking the problem we can borrow techniques even from such apparently unrelated activities as the biological sciences and the statistical mathematics, and even from the Government.

Table 1 shows in a very general way how these time scales of information gathering have been gradually reduced since feedback

techniques were introduced into industrial processing after World War I.

(The table referred to follows:)

TABLE 1.—*Compressing the time scale*

	(1) Automatic Controllers	(2) Operators	(3) Technical Staff	(4) Management
Prewar (1920-1940)	Sec. - Min.	Min. - Hours	Days - Week	Weeks - Months
Postwar (1945-1954)	- - - -	Sec. - Min. Hours	- - - -	- - - -
Today (1955-1960)	- - - -	Sec. - Min.	Hours - Days	Days - Weeks
Future (1960 - )	Split Sec.-	- - - -	Hours	Days

The pre-World War II period brought us the automatic controller and many refinements of instrumentation, which made automatic control of our process variables a practical reality.

The developments of the postwar era made it possible to integrate the operation of complex processes, not automatically, but by extending the capabilities of human operators through centralized control systems.

Remote transmission, miniature instrumentation, alarm systems, graphic panels, and the tremendous strides in product-analysis instrumentation made it possible for one operator to keep the most complex systems on stream.

Today, we are trying to eliminate the "hours" from the operator's time cycle by the development of quality control instruments such as spectrographs, refractometers, and so forth.

At the same time, we are trying to bring the technical staffs their reports within hours and days, and management its reports within days and weeks.

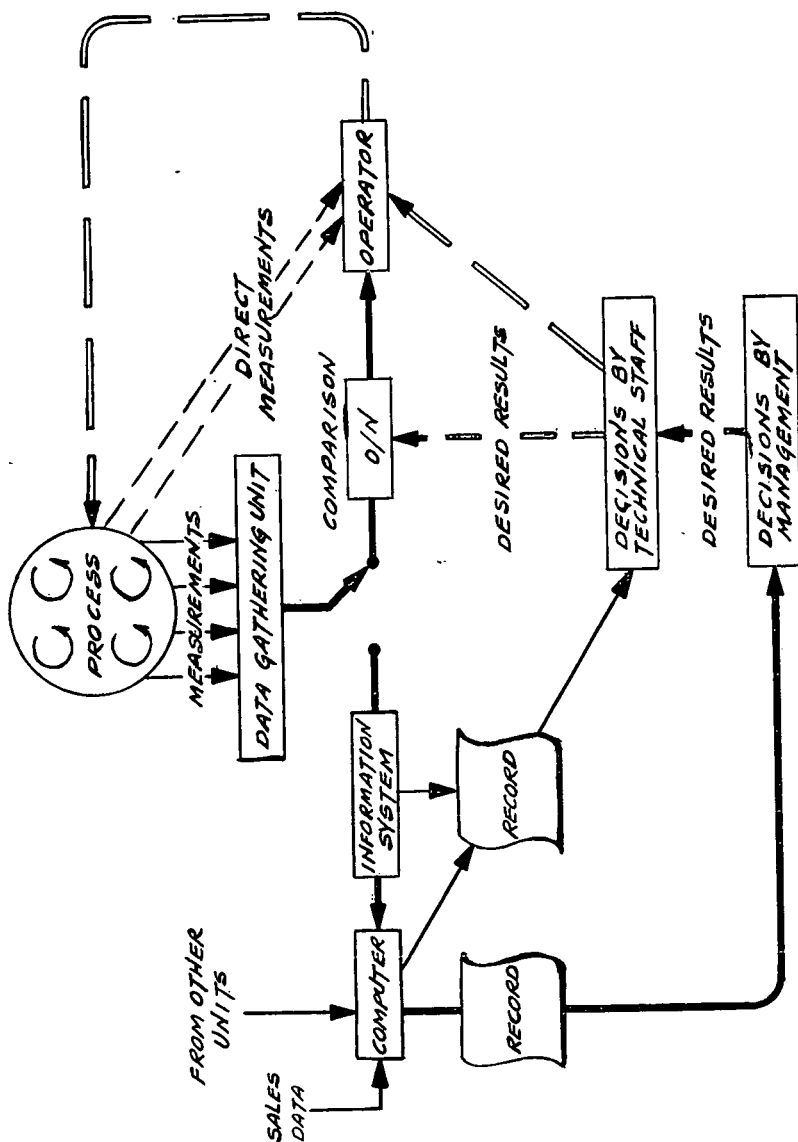
This is where the big push for data processing stands and will be the next few years. The last column labeled "Future" indicates that we soon hope to process all the information needed for control—even by top-level management—within a matter of hours and days.

This, I think, is as far as we will want to go. It will furnish management with the information it needs, in usable form and in time, and the basis for effective control will have been accomplished.

At this level, there is very little serious thought of attempting to make decisions automatic. First of all, the cost and the complexity would be such that there would hardly be a possibility of economic return.

But more important, our free, competitive economy requires of management a flexibility of action which would be lost in a completely automatic system with its more rigid goals and its limited adaptability to unpredictable disturbances.

I am attaching figure 2 which shows in a general way, the role of the computer in the industrial data processing system.  
(Figure 2 is as follows:)



The computer could be one of the typical electronic office machines, such as IBM, Remington Rand, Burroughs, and so forth, or it could be a special purpose machine designed for a particular type of system.

The big difference between this industrial system and an office system lies in the way data is fed into the computer. In an office the figures are punched onto cards or tape by hand, but in an industrial informa-

tion system the data must be measured and gathered automatically, 24 hours per day and 365 days per year.

This poses many new problems for the instrument engineers, since the success of the entire system depends on accurate and reliable primary measurements.

What are the problems today? You have been made well aware of the difficulties that faced industry in finding technically trained people who not only can man these new tools of production, but can also conceive, design, build, and maintain them.

This problem is even greater when we are concerned with this more sophisticated aspect of automation—the application of feedback techniques.

The science of automation has become so complex that a new approach has come to the forefront in the last decade—the team approach—as contrasted with the older concept of the expert, the inventor, the designer.

Systems engineering has been developed as a scientific method for producing an optimum result, using any techniques that it finds available.

Today, this involves such a variety of methods that it is becoming almost impossible for one man to understand them all, let alone be an expert in their application to technical problems.

Systems engineering, therefore, gathers together the scientists, mathematicians, engineers, technicians, and welds them into a team capable not only of conceiving an optimum solution to the problem at hand, but also of designing it, building it, putting it into operation, and maintaining it, if necessary.

New organizations have had to develop in order to fill these needs; and a new type of engineer has come to the front, the man who can think beyond the limitations of available hardware, and use every resource on his team to “do what it takes.”

Such a man must have understanding and background in order to formulate his goals clearly. He must have enough creative imagination to hurdle the roadblocks of tradition and, yet, have the innate conservatism to draw on the experience of the past.

He must be able to carry out his mission, design, build, buy, erect, and operate his project.

This is a pretty good description of the successful entrepreneur of American industry, and describes quite well the men who pioneered the industrial enterprises that made us the great power of the world.

Now, however, industry has reached the stage of complexity where we must train such men by the thousands to create and build the industrial plant of the future, and we are not making sufficient effort to get them.

True, the military have helped and have encouraged many fine systems projects; and certain of our schools are well aware of the problem.

A few schools like Massachusetts Institute of Technology, have done a good job, and the guided missile projects all have made much progress, but industry has had only a trickle of the benefits so far.

Our schools, while they are aware of the problem, need help not only in maintaining teaching staffs, but in doing the basic research that is so badly needed to keep this dynamic science alive and able to meet its evergrowing problems.

Incidentally, the very nature of the problem has encouraged the growth of many small enterprises, ranging in size from 1 man up to 100 or more, and industry has gone to these men to solve many of their special problems.

My own company grew up in this way, almost through no conscious effort on my part. After 15 years of experience as an instrument designer, followed by several years of plant and process design, the war brought me a problem of information-gathering on a large scale that simply could not be solved by stereotyped methods.

The men who conceived—or rather brought me the idea—were not the least concerned with laborsaving. They were dealing with a process of such complexity and danger that they simply had to devise a means of bringing the thousands of pieces of information needed to control the system before one man. It made no difference if it took more men to operate and maintain it, the important thing was that one man should be in a position to make decisions in time to act and control.

My company has grown, as have many others who have entered this field, but the problems have grown faster than we have. Today, we can only undertake a small fraction of the problems in systems engineering that are put before us, even though we now have a few hundred men involved in designing, building, installing, and maintaining these systems.

We simply cannot find enough men with the ability and training to cope with the problems that are put before us, and other companies are faced with the same dilemma.

Of course, we will find a way but it would be a much healthier situation if we could really utilize our manpower to its fullest capacity.

Another interesting aspect of this situation has been the problem of maintenance. This has created such demands for technically trained personnel, that we have found it necessary to take over the maintenance in the field, not only of our own equipment, but of the entire instrumentation and data processing in certain industrial plants.

If we can solve this technical manpower bottleneck, we can move ahead; and certainly one great service that Government can perform, is to promote the educational activities that have been outlined so well by other speakers at these hearings.

Bringing information to management for continuous control is not a new idea, but the systems themselves are just coming out of the development stage. There are a half-dozen or more companies offering systems of this general type and many more are making vital components.

So far, the few systems that are in operation have been only partial solutions to the problem, and even these have been in industrial plants for only a year or so. As far as I know, the first comprehensive system, involving a complete, large refinery is now being installed, and will be in operation within the next few months.

Because of the technical nature of the problems involved, we have not only had to design and build the system, but install it and take over its complete maintenance for an indefinite period.

This will have to be done quite generally, because users simply do not have the trained personnel to maintain this apparatus by themselves.

This places a strain on the resources of technical staffs of the manufacturers, and the future of this entire development depends on being



able to educate and train men capable of engineering and operating these complex electronic systems.

I would like to say a word about the attitude of labor organizations to the introduction of automation and data processing systems. My company is very involved with labor problems, not only in respect to the men who use them, or might be displaced by them, but also to the men who install and maintain them.

We have had to solve many problems, but I can say unequivocally that the labor organizations with whom we have been involved have helped us to solve them as they came up, without raising any road-blocks.

By this, I don't mean to say we have had no difference of opinion. We have had our share of negotiations and discussions, but these have always been part of the normal give and take of industrial relations.

My experience leads me to feel that the responsible labor organizations sincerely want us to enjoy the full benefits of technological progress. There is certainly nothing incompatible with this and their desire to cushion the shock of any local and short-term dislocations that might result from any sudden changes.

I think it is just as important that the public at large understands the change in management attitude during this same period. I think it goes much further than the change from the shrewd entrepreneur to the executive planner and coordination, which I think was discussed quite fully in some of the previous hearings.

I am a relatively small industrialist but I deal mostly with large organizations, and I have been constantly made mindful of their growing awareness of their responsibilities to the public at large.

This is not pure lipservice for the sake of public relations, but a real understanding that organized labor and Government can be helpful and willing partners in this struggle toward technological progress.

I have listened to many discussions of labor problems by management that would have been unheard of 30 years ago, and I am sure they can solve their problems, including those under discussion, without the need of direct legislation bearing on this problem.

Aside from direct legislation on automation, there is much that the Government can do, and must do. Messrs. Sheen and Jones have outlined a number of Government actions which I think are highly essential and which I would highly recommend for your consideration. These have been so clearly stated by them that I do not feel it is necessary for me to repeat them.

In connection with the comments which I enjoyed hearing so much yesterday, I would like to discuss two points which are not part of my prepared testimony.

One of these is the question brought up by Mr. Jones yesterday regarding middle-sized companies. I think you will recall the discussion.

Then there is a scattering of companies doing from 50 to 75 million dollars per year, and finally we have the several very large companies whose annual business is between one-quarter million to half a million.

This presents a slightly different picture from that which you will find in most other industries, and as Mr. Jones has pointed out, there are many middle-sized companies large enough to deal directly with the armed services as prime contractors, and I think a study of their problems might be helpful.

In view of the fact that the record has to be closed by December 20, I realize that it will not be possible to have this study available at this time. However, I understand that we will have another opportunity to put this information into the record at a later date so I should like to be excused at this time, but will submit the study for your consideration at a later date.

The other point that I would like to discuss is the question of the role of the armed services that was brought up yesterday.

As you will recall, a statement was made regarding the number of technicians that the Soviet Union was training, 1,600,000 per year, as contrasted with 50,000 per year that our schools were training.

I find it difficult to believe that Russia is doing 32 times as well as we are in this respect and I have, therefore, made some inquiries from the armed services themselves. This is not because I think we are training a sufficient number of technicians, but rather because it is better to base our conclusions on realistic and factual premises. I learned that the Army itself has trained 66,432 technicians during the last fiscal year. They also estimate that the total number of technicians trained by all the armed services this year, is approximately 150,000 men.

Chairman PATMAN. Are they principally inducted men?

Mr. SPERRY. These are all enlisted men—no officers. All enlisted men. This represents—

Chairman PATMAN. Of course, you have no way of knowing whether they were inductees or enlisted. It does not make any particular difference.

Mr. SPERRY. I did get one impression there I could give you—

Chairman PATMAN. Go ahead.

Mr. SPERRY. A comment, and that is, that the Army is having many discussions about whom they should train, and one of the big questions is: Should they train inducted men or enlisted men?

Chairman PATMAN. That is the point I wanted you to discuss.

Mr. SPERRY. From a realistic point of view it is in their interest to train the men who enlist for a long term, not the inducted men.

Chairman PATMAN. For long-term men?

Mr. SPERRY. Yes. It takes 15 months or more to train men of this type. If he is going to be out in less than 2 years, this is not a very efficient method from the strictly military point of view.

The man that is going to be a professional soldier, or at least going to be in for 3 or 4 years, is going to return dollars and cents value to the Army for his training.

This is a rather understandable viewpoint. The Army, if it has to use its budget in a limited way, I presume wants to get returns from the men it trains.

Unfortunately, this does not help our national situation quite as much as it could.

I should like to illustrate this from my own experience. I am a small industrialist and my company employs probably from 60 to 70 technicians, and we would have been lost in this division of our business if we had not been able to get servicemen who had been trained as electronic technicians. This has been our biggest reservoir of supply, and by far the big majority of our technicians got their training in the armed services.

I would like to make this point very strongly, because while we have heard many suggestions during these hearings, that offer tremendous possibilities for the distant future, all of which I heartedly concur with, here we have a mechanism that is working today although not as an instrument of national policy. It is an instrument of Army policy.

Here is a basic mechanism that is training some 150,000 men every year. Incidentally the men who gave me this information asked me to emphasize the point that these trainees are highly trained technicians. They suspect that in the Russian figure of 1,600,000 there are so many mechanics, armorers, and people who repair rifles and machine guns. The armed services figures do not include those.

This figure of 150,000 are true technicians, the type of men we need in industry.

My estimate of the total number of technicians trained each year, not including those being given on-job training by industry, would be as follows: 150,000 men trained by the armed services, plus 50,000 men trained by our vocational schools, and approximately another 50,000 being trained by the Government for civilian duties. This last group I estimated on the basis of Army Progress Report 4-B on Civilian Personnel. This adds up to a grand total of approximately one-quarter million technicians per year that we are training in this country exclusive of those being trained by private industry.

I think if you take that figure of a quarter million we can still say that Russia is 2 or 3 times as well off as we are in that respect.

Chairman PATMAN. But if you reduce their number by eliminating the mechanics, it is possible we would be closer together.

Mr. SPERRY. We are closer together but they are still ahead—it seems to me that it is a sufficiently startling figure that they are twice as far ahead. To me that is the estimate that I would make after talking with these men.

Chairman PATMAN. That is very shocking itself, that is shocking.

Mr. SPERRY. I think that is more than shocking. I think it is dangerous. When I hear a figure such as 32 times as many, I begin to discount it so much that I wanted to get the real meat out of this. I want to point out that you can discount it all you want and it is still a shocking figure.

I thought it would make the record clearer.

Chairman PATMAN. Yes, sir; we are mighty glad to have that information.

Mr. SPERRY. I think that if there were some mechanism—and this discussion came up too recently for me to try to tell Dr. Moore or you just how this should be done—of making this training program more of an instrument of national policy—

Chairman PATMAN. You mean insofar as the inductees are concerned?

Mr. SPERRY. Insofar as the inductees are concerned. Russia is undoubtedly doing it.

Chairman PATMAN. Of course, they do not have inductees, I do not suppose, except permanent inductees?

Mr. SPERRY. Well, I don't know.

Chairman PATMAN. I do not know what kind of system they have.

Mr. SPERRY. They have some conscription or something of that sort.

Chairman PATMAN. Yes. I assume they use something like that. But, of course, the Army's viewpoint—I can see their viewpoint, they are operating on a limited budget. And they do not want to train people and spend all of the money on them that they have to spend to train them in these trades unless they can keep them and get something out of them and if they are just in for 2 years and the inductees are in for a less period than 2 years, why they cannot see their way clear to do that, to spend all of that money out of their budget.

It occurs to me, though, as a matter of national policy, like you have just mentioned, that Congress should consider encouraging them to do it, although the Army itself might not get its money's worth, the Nation will be helped by it. That is your point; isn't it?

Mr. SPERRY. That is exactly the point. I see this—

Chairman PATMAN. It sounds very reasonable to me.

Mr. SPERRY. It has such an immediate possibility of returns because the mechanism is there. An organization that can train 150,000 men, whereas the whole educational picture only trains 50,000 technicians, certainly can be made into a useful tool. In spite of the Army's dislike for our doing this, we are finding it useful, even to the limited extent that they are available today.

If I were in the Army, and had a limited budget I would feel exactly as they do. Incidentally, the men who talked to me about this yesterday said, they have had months and months of argument as to whether they should go one way or the other and they are not unanimous as to which is the best policy.

There are many people in the Defense Establishment who realize that industry is part of its arsenal. They are not losing these men entirely when they send them back to civilian life as technicians for building essential goods.

For example, in my company over half of our output goes right back to the services. And we are basically suppliers of industrial types of equipment.

I would say that the bulk of our output goes back to the defense effort in some way or other.

Chairman PATMAN. Could we separate items like that in the budget and just admit that this is not really military—this part is not. That part should not be charged to military. And in that way, possibly, we could encourage them to do more of this in the armed services.

Mr. SPERRY. It occurred to me that there are already bills before Congress which have to do with our educational program.

Chairman PATMAN. Yes.

Mr. SPERRY. These are not unrelated problems.

Chairman PATMAN. That is right.

Mr. SPERRY. You are spending money, and are proposing to encourage education in engineering. Yesterday you heard a very fine case made for the need for scientific education.

This case has been made so well. But there should be some way of tying in our general educational program with regard to the sciences, with the immediate work of the Army, where there is this existing mechanism. It would seem that it would be possible to convince the Army that the long-range viewpoint of training men for industry is just as much a part, as the training of men to be Signal Corps men, and Air Corps technicians directly.

Chairman PATMAN. And we should certainly discourage the lack of use of these men, and using them for jobs you know—you know anyone can perform.

People who are qualified to receive training like this—in other words, it is not only helpful to the young men but to the entire Nation.

It occurs to me that we should encourage the armed services to better utilize these inductees, particularly along the lines you have suggested.

Mr. SPERRY. There is one other factor that could us back if Government did not implement its declared policy of maintaining free competition, in this instance, among the builders of the tools of automation.

The entire concept of systems engineering and integrated information processing for management would fall down if the components that make up the system were not available to all on an equal basis.

No one company, no matter how large, can corner the know-how in this dynamic field, but it could hold back progress by restricting the free use of one vital element.

I have pointed out, and Mr. Jones pointed out yesterday, that the complications of research and development are such there are going to be many proprietary things developed by large organizations which the smaller companies that you heard talk about are not going to be able to handle, are not going to be able to get into.

The patent structure has become so complicated that small companies frankly just give up in frustration. We have heard a lot about patent-consent decrees that the Government has obtained, and I certainly think that one way in which this committee could be very helpful would be to make sure that, both in regard to the patents and the effects of price discrimination under the Robinson-Patman Act, the companies who entered this field of systems engineering had available to them every possible component.

That is usually true, but it is not always the case in this industry. And as this thing gets more complex and these proprietary components are built up more and more we are actually going to be faced with a problem of getting them on an equal basis.

The Federal Trade Commission is beginning to be conscious of this problem. They have just begun to discuss this with the instrument industry. Perhaps in the next year or two this might well be a phase that you might look into further.

May I say in closing that these hearings, and the excellent report of your committee on last year's hearings, have already done a great deal to clear away much of the confusion and misunderstanding in the public mind with respect to automation. This is feedback working at its best, and it bodes well for the future of our economic system.

Chairman PATMAN. Thank you very much, sir. We appreciate your testimony. It will be helpful to us.

Mr. SPERRY. Thank you.

Chairman PATMAN. Thank you very kindly, again, sir.

Mr. SPERRY. Thank you, Mr. Patman.

Chairman PATMAN. Dr. Moore, will you introduce Mr. Kirkbride.

Mr. MOORE. Mr. Chalmer Gatlin Kirkbride appearing before the committee is a past president of the American Institute of Chemical Engineers. At the time he was invited to appear he was president of the Houdry Process Corp. but since December 1 has been executive director of research, patent, and engineering department of the Sun Oil Co. Mr. Kirkbride was graduated from the University of Michigan with B. S. and M. S. degrees in chemical engineering. His professional career involves not only industrial but academic experience. He was a distinguished professor at Agricultural and Mechanical College in Texas for 3 years; also he served for 13 years in the accrediting committee of the American Institute of Chemical Engineers. So we will have somebody from Texas.

Chairman PATMAN. When were you in Texas?

Mr. KIRKBRIDE. Well, I lived in Texas for 12 years but I was in Texas at Agricultural and Mechanical from 1944 to 1947.

Chairman PATMAN. If you do not mind, we always ask anyone what part of the State were you from?

Mr. KIRKBRIDE. I lived in three parts of the State. I lived in Galveston for 8 years, and in Dallas for 2 years.

Chairman PATMAN. They are good parts of the State. There are no bad parts, as Dr. Moore reminds me. Sorry you had to leave Texas but we know that you are engaged in a fine work or you would not have done so.

You have a prepared statement, I understand, which we will be glad to hear in any way that you wish to present it.

**STATEMENT OF CHALMER G. KIRKBRIDE, EXECUTIVE DIRECTOR,  
RESEARCH, PATENT, AND ENGINEERING DEPARTMENTS, SUN  
OIL CO.; PAST PRESIDENT, AMERICAN INSTITUTE OF CHEMICAL  
ENGINEERS**

Mr. KIRKBRIDE. I am appearing before your committee as a past president of the American Institute of Chemical Engineers. At the time I was invited to appear, I was president of Houdry Process Corp.; therefore, I do not necessarily reflect the views of Sun Oil Co.

In the petroleum industry, automation is looked upon as a word recently coined to lend popular appeal to a practice which has actually been a commonplace for many years. It is generally accepted as a logical advancement in the use of automatic controls.

Basically it represents the application of a relatively few mechanical, electrical, chemical, and hydraulic principles, through devices of varying complexity, for the accomplishment of a desired result in a continuous or repetitive process.

The use of industrial instruments generally, and automatic-control instruments particularly, has reached an advanced state of applica-

tion in the petroleum-refining industry because of factors which are peculiar to that industry.

First, the scale of operations in petroleum refining is necessarily large, and these operations deal almost entirely with the handling of liquids, gases, and fluidized solids.

Second, petroleum refining is made up primarily of continuous processes, and refining units usually are closely interrelated.

The development and use of automatic controls in the petroleum industry form an interesting chapter in the story of the development of the industry itself. The remarkable growth, and the intense competition which has characterized the oil industry, presented many complex problems. The ingenuity of engineers in the petroleum industry has been taxed to the utmost to meet the demands of our modern industrial age for a mobile source of energy, lubricants for every conceivable use, and special products in great numbers—and always at the lowest possible price.

It has been possible to meet these enormous demands only by inventing new processes, by designing larger and more efficient operating units, by combining related processes for increased efficiency, and by integrating operations to balance supply and demand, both in the short and long range.

In doing so, the growing complexity of these processes has spurred engineers to seek constantly for new ways to release plant operators from duties that reduce or restrict their freedom of action and thought. Thus, wherever possible, item after item in plant operation has been subjected to automatic or semiautomatic regulation.

Today's complex refining units combine many operations within one coordinated whole. Most operating units in a modern refinery also are related more or less closely with one or more other operating units.

This is where the centralization of control is of real value. The availability of data from the various operations at one location makes it possible for the operator to reach important conclusions from an evaluation of relative facts.

Through the use of centralized controls, refinery operators today have time to think, to know their plant, to recognize malfunctions, and to make the adjustments necessary to keep the plant "on the line." And they have a new dignity which goes with the responsibility attached to being entrusted with a multimillion dollar installation.

Over the past 30 years, the development of control methods and devices has gone through a continuous evolution, paralleling to some extent an evolution in petroleum refining. In fact, some of these developments have been so rapid as to be considered revolutionary.

Both Sun Oil Co. and Houdry Process Corp. have been especially instrumental in bringing about what might be termed the "catalytic revolution" which unquestionably has changed the nature of the oil industry.

#### INDIVIDUAL PRODUCTIVITY

One of the most obvious changes in petroleum refining over the past decade has been the increase in crude charging capacity. Daily crude runs to United States refineries have risen from 5,075,000 barrels per day in 1947 to 7,480,000 barrels per day in 1955.

In the same period, total refinery employment has increased from 189,000 to 201,000. It is evident from these figures that productivity has increased.

The great increase in crude runs from 1947 to 1955 has been accomplished primarily through the use of larger, more efficient units. But this increase in crude runs to stills is not the whole picture. It has been accompanied by the development of more complex processes for the manufacture of a variety of new products, such as petrochemicals, which have enabled refiners to increase the value added by manufacture to each barrel of crude oil. The greater use of automatic controls and instrumentation has made possible the precise operation such new processes demand.

This expansion of refining capacity and growing complexity of new processes represents tremendous sums in capital investment by refiners. According to Chase Manhattan Bank estimates, capital expenditures in refining from 1947 to 1955 reached the staggering total of \$4,800 million.

Based on Chase Manhattan Bank figures on annual capital expenditures in refining, and Bureau of Labor Statistics employment figures, the gross investment per refinery employee in 1947 was \$19,000, compared with \$36,000 in 1955. This represents an increase in investment per employee of almost 90 percent.

It is evident from this that the increased productivity per refinery employee is related to the investment per employee. In other words, larger, more efficient processes, operated with the use of automatic controls and instrumentation, have enabled the refinery worker to raise his productivity. These developments have also enabled refinery workers to upgrade their skills through the creation of expanded opportunities for technicians and other skilled specialists. Consequently, as the equipment provided by this capital investment enabled the refinery employee to increase his skill and productivity, his earning power was also increased.

#### REAL WAGES HAVE INCREASED

The only measure of refinery wages available covers only hourly paid refinery employees. These statistics, published by the Bureau of Labor Statistics, do not include the wages of salaried personnel. There has been a gradual shift of employment to higher-paid salaried classifications, brought about by the need for larger numbers of technicians, specialists, and supervisors. The growing use of instrumentation and process complexity has created this need.

But purely on the basis of statistics covering hourly paid refinery employees, the Bureau's figures show an increase in the average annual money wage from \$3,270 in 1947 to \$5,200 in 1955—an increase of about 60 percent. In real annual wages, adjusted for the increase that has taken place in the consumers' price index, the gain is from \$3,420 to \$4,540, or 33 percent, in the same period.

The position of the individual refinery worker, therefore, is much better today than it was in 1947, based on dollars of constant value. But it is significant to consider not only his improvement in wages, but also his position in relation to employees in other industries.

Again based on the Bureau of Labor Statistics, we find the refinery worker among the highest paid in American industry. Whereas the



average hourly wage for all manufacturing employees in 1955 was \$1.88, the average hourly wage of petroleum refining employees was \$2.46, an appreciable difference.

#### INVESTMENT IN INSTRUMENTS

We have no accurate figures on the investment in instruments in relation to total refinery capital now being employed. However, from a study of available information on a number of refinery units for which we have no data, we can conclude that there has been no discernible trend in the past decade in the percentage of total investment represented by instruments.

While the investment in instruments, in relation to total investment in refinery units, varies considerably in individual cases, we believe that a minimum of 3.2 percent and a maximum of 4.2 percent would be representative of 95 percent of all refinery installations made in the past decade.

In the following table we have attempted to give this committee an idea of the magnitude of investment made each year by the petroleum refining industry in instruments by applying the average percentage of 3.7 to the annual expenditure data of United States refiners.

#### *Financial data for petroleum industry in the United States*

[In millions of dollars]

Year	Capital expenditures in refining <sup>1</sup>	Gross fixed assets in refining <sup>1</sup>	New investment in instruments per year
1955.....	\$835	\$7,175	\$30.9
1954.....	800	6,400	29.6
1953.....	675	5,850	25.0
1952.....	470	5,300	17.4
1951.....	325	4,750	12.0
1950.....	275	4,600	10.2
1949.....	420	4,375	15.5
1948.....	600	4,150	22.2
1947.....	400	3,600	14.8

<sup>1</sup> Source: Chase Manhattan Bank.

From this table, it can be seen that annual expenditures for new instruments have increased steadily, but there probably has been no disproportionate increase in investment in instruments as compared with productive facilities as a whole.

The same instruments can control a process whether its capacity is 5,000 barrels per day or 50,000 barrels per day.

Thus, the increase in productivity of the individual refinery worker seems most closely connected with the increased tempo of industry investment in expanded refinery capacity.

#### EXAMPLES OF PROCESSES TOTALLY DEPENDENT ON INSTRUMENTATION

Since 1925, the petroleum refining industry has gone through a major revolution in which the production of high-quality distillate products from a barrel of crude oil has risen about 30 percent to a possible high today in special situations of 85 percent.

This latter figure, of course, does not represent the current United States average since this is a function of the demand for residual products such as asphalt and Bunker C fuel.

In 1925, refining units were largely manually controlled, supplemented by rudimentary automatic methods which operated to a degree of accuracy entirely adequate for the time.

In 1937, the introduction of catalytic cracking on a large commercial scale at our Marcus Hook refinery created a necessity for automatic control and measuring devices of far greater complexity and precision than had been previously necessary.

Fortunately, instrument manufacturing technology had by then developed to the point where instruments of the required quality—with a few notable exceptions—were available, even though processes for their use had not been generally adopted. The development of instruments in the few excepted categories was accomplished quickly after the need became evident.

For example, our first catalytic cracking installations required programming instruments which were capable of precisely operating some 45 large gate valves according to a very rapid time schedule and with absolute reliability. The success of the process depended upon the precise and reliable operation of these valves.

In addition, the yield and distribution of products from the process was further dependent upon maintaining a very accurate temperature control and flow control of the crude oil vapors and regeneration gases to the catalytic reaction cases.

It is safe to say that without automatic control devices, the catalytic cracking process would have been an impossibility. It is of significance to note that it was this process which supplied the major amount of aviation gasoline blending stock for our Nation in World War II.

The development of other catalytic processes in the years following was also dependent upon precise control of operating variables in the refineries. I believe it is fair to say that virtually no modern refinery could be operated at economically efficient levels today without automatic control instruments.

I say this, not from a consideration of the labor costs which would be involved if one were simply to try to encompass the operation of modern refining units with men rather than machines. Rather, the precision and speed of operation required by today's processes are such that human operators would be incapable of performing the tasks.

Specific examples of processes wherein automatic control is indispensable might include all presently practiced forms of catalytic cracking, precision fractionation, catalytic reforming, high-quality alkylation, lubrication-oil manufacture, and solvent-treating processes.

#### INDUSTRY TRAINING

The petroleum industry, in cooperation with a number of instrument manufacturers, has had a very effective program of on-the-job training for personnel to handle the servicing, installation, and application of control instruments for at least 25 years.

This program has been entirely adequate for these purposes, and I believe that, even in today's rather competitive market for technical skills, the petroleum industry is holding its own in this regard.

In recent years, the petroleum industry has not been able to man and carry out instrument-development programs aimed at the creation of newer and better instruments to the extent that this would be either possible or desirable. The instrument companies themselves have done a reasonably good job of attempting to supply new instrument ideas to the refining industry, but frequently their success in doing so has been reduced by the difficulty of obtaining proper communication between the refinery technicians and the instrument-development people.

More recently, the Instrument Society of America has served as a common meeting ground for people in manufacturing industries such as the refining industry and technicians in the field of instrument manufacture. It is reasonable to expect that in time a good liaison will be established.

The training by petroleum refiners of scientists and engineers who are capable of understanding and dealing with the problems of automatic control has proceeded quite smoothly over the past 25 years or so. It is apparent that an industry which has utilized instrument control to the degree used by the petroleum-refining industry would have had to develop its own scientific and engineering specialists.

Up until the very recent past, there has been no great shortage of these people because there has been no aggravated shortage of young scientists or engineers in the petroleum industry.

The rapid expansion of our economy from 1945 onwards, coupled with the low volume of scientists and engineers graduated in the years following 1946, has increased the competition for scientifically educated and technically trainable manpower in all fields of endeavor.

Consequently, petroleum refiners have been unable to fill technical manpower rosters, and have been unable to train the desired number of instrumentation engineers.

The solution to this shortage of scientists and engineers is very complex, and involves things as seemingly remote as the training of secondary-school teachers, and the motivations which impel teen-agers. The problem is only secondarily related to the impact of automation on our economy, and I rather doubt that any quantitative data on the projected need for engineers, or for instrument engineers as a specific subgroup, would be either reliable or significant.

One thing is certain. Instrumentation and automation are rapidly advancing technologies which hold forth the promise of more efficient use of the engineering talents we are producing. There is a very high order of probability that the stridently proclaimed serious shortage of engineering and scientific manpower may be really symptomatic of the birth pangs of a new era of engineering in which automation and high-speed computation will elevate the scientific professions to new levels of prestige and effectiveness.

This latter fact alone will probably attract the best of our young manpower to careers in science.

#### EDUCATIONAL PROGRAMS

It has been suggested that this committee would be interested in having some expression of opinion from me concerning technical education in instrumentation and automatic control.

A recent survey of some 67 colleges and universities disclosed some 1,014 different courses with content which might be classified as being

primarily directed toward instrumentation and control. This would be an average of about 15 courses per institution, so it would seem that the subject is being given adequate, if not excessive, attention.

It is my feeling that the prime requisites for a good instrument engineer or scientist are sound basic training in mathematics, physics, and physical chemistry, plus specialized training in some one branch of engineering or science.

Instruments, as far as the petroleum industry is concerned, are not an end in themselves, but rather an adjunct to processing. This being the case, formal undergraduate training would be best confined to intensive training in the basic disciplines, plus one course on principles of measurement and control.

More than this, I think, would tend to overspecialization and to reduction of the quality of the basic training necessary for effective and versatile performance in the engineering profession.

#### PROFESSIONAL SOCIETIES

A number of technical societies have given increasing attention to instrumentation and control technology in the past 10 years. The American Society of Mechanical Engineers, through its division on instruments and regulators, has been active in the creation and promulgation of standards, the analysis of educational requirements, and in the development of the theory of instrumentation and control.

The American Institute of Chemical Engineers, which is the engineering society with which I am most familiar, has for many years recognized automatic control as an inseparable element of chemical processing. Although it has not sponsored separate studies of the industrial significance of instrumentation, the institute has maintained representation with the ASME committees in this field.

Additionally, AICE joint programs with the Instrument Society of America in 1954 and this year, 1956, have been particularly effective in serving as a forum for the publication of technical information on the design and application of control systems to petroleum refining and to chemical processing.

The general activities of ISA in this field have been particularly effective, and I believe this committee has already received information in this regard.

#### SOCIAL AND ECONOMIC IMPLICATIONS

I have already mentioned how the expansion of the industry and the development of more efficient refining processes, made possible to a large extent by the development and use of automatic controls, has benefited refinery workers.

Total refinery employment has increased. From 1947 to 1955, wages have risen 60 percent; and real wages, adjusted for consumer price index variation, have gone up 33 percent. Not only is the refinery worker one of the highest paid in American industry, but he also enjoys higher nonwage benefits than employees of other manufacturing industries.

One measure of his increased earning power is in relation to his ability to purchase the products he helps to produce. In 1935, with 1 hour's earnings the average refinery worker could purchase  $4\frac{1}{4}$

gallons of gasoline; but in 1955, his hourly wage could purchase 8½ gallons of gasoline—exactly twice as much.

What about the consumer of petroleum products? There is no doubt that he has benefited also from the application of more efficient refining processes. Again, I will use for example the product with which we are most familiar—gasoline for the family car.

According to automotive engineers, 1926 gasoline used in a vehicle maintained at a constant road speed of 40 miles per hour gave the equivalent of 26 ton-miles per gallon. The comparable figure for 1956 gasoline is 46 ton-miles per gallon.

Thus, on this basis, it can be said that vehicle fuel economy has been improved to the extent of 77 percent from 1926 to 1956. And yet, except for increased taxes, today's gasoline costs only about a penny more per gallon than it did 30 years ago. Actually, of course, a modern high-compression automobile would not even run on 1926 gasoline.

So it can be demonstrated by example after example that the consumer has benefited from petroleum refining's progressive efficiency. Today, petroleum refineries throughout our country are using techniques and processes that were merely ideas in the minds of research scientists 8 or 10 years ago.

The powerful driving force behind this progress is competition. This competition is evident in every branch of the industry's widespread and diversified operations. Producer competes with producer, refiner with refiner, marketer with marketer, and so on through the whole chain of petroleum operations.

The objective sought in this competition is to be in position to offer better values to the American consumer in the hope of winning his patronage. This intensive competition has spurred the technical improvements necessary to provide customers with a greater variety of new and improved products at the lowest possible cost. Some of these products, like petrochemicals, have given impetus to developments in other industries.

I am sure it is obvious to the members of this committee that the expansion of refinery facilities and the increased efficiency of refining operations are of vital importance to the Nation from the standpoint of national defense.

If you will permit me just one specific example of how the Nation benefits by the advancements in refining technology, we can now wring more than twice as much gasoline from a barrel of crude oil than by old refining methods.

Stated another way, if we were still using the refining methods of the early twenties, it would take twice as much crude oil to supply the same amount of gasoline we produce today. The tremendous amount of crude oil conserved by modern refining methods is obvious.

Now, as far as the future is concerned, instrumentation and automatic control are already so solidly entrenched in the petroleum refining industry that literally no refinery today could run without a high degree of instrumentation. Despite this, today's refinery is far from being a completely automatic plant, and tomorrow's refinery will certainly not be completely automatic. Nor, in the opinion of many refinery engineers, is such an advanced development either practical or desirable.

As a matter of fact, the very nature of petroleum refining renders such a development almost impossible of accomplishment. Sparked by the competitive forces which keep the industry dynamic, changes take place with great rapidity.

Changes in technology, in raw materials, in products, and product quality; changes in operating capacity caused by fluctuation of supply and demand; changes due to the deterioration of physical plants and equipment—all introduce factors in operating control that can be satisfied by the decisions and actions of men, not machines.

On the other hand, there is much evidence to support forecasts that our work force will not increase in proportion to our population. According to estimates prepared by the Department of Commerce and the staff of the Joint Committee on the Economic Report, there will be an increase of 23 million by 1965 in our total population. But these estimates indicate there will be an increase of only 10 million in the labor force.

At the same time, it is estimated that there will be a decrease of about 200 hours per year in the average time worked by men and women in private employment. Therefore, it is anticipated that total man-hours worked in our economy in 1965 will be only about 5 percent greater than at present.

According to a projection prepared for the Joint Committee on the Economic Report, gross national product in the United States will be \$535 billion in 1965. This, compared with \$391 billion in 1955, is an increase of 37 percent.

In other words, to achieve an increase in our gross national product of 37 percent and to provide for a rapidly growing population, we will have available only about 5 percent more labor time than we have at present. Clearly, this presents a great challenge, and many believe that the answer lies in more efficient methods, with the use of automation to provide the increased productivity necessary.

Assuredly, tomorrow's refinery will need better instruments and instrumentation. It will need faster and more accurate measuring and analytical instruments. It will need inexpensive, reliable, and rugged computer-type instruments which can optimize processes. It will need cheaper instruments that require a minimum of maintenance. It will need instruments specially and peculiarly adapted to refinery operations.

Cooperative efforts between the research and engineering departments of oil companies and instrument manufacturers have already been initiated in these areas. The problems are generally recognized, and I am confident they will be met and solved by that balance of competition and cooperation which our free-enterprise system so uniquely allows.

Chairman PATMAN. Thank you very much, Doctor. Your testimony will be very helpful to the members of this committee, and to the Members of Congress and to the public generally.

Dr. Moore, would you like to ask any questions?

Mr. MOORE. Mr. Kirkbride, I wondered, since you have come from the petroleum industry, whether you would care to comment on a statement which surprised me a bit in Mr. Sperry's statement. I think I understand what he had in mind, but I would still like your comment.

He said, speaking of the relatively high degree of mechanization and instrumentation in the petroleum and chemical industries, and I am quoting:

Many feel that they have gone as far as they can go, and that they have reached a saturation point in automation. Such a notion is completely erroneous. The fact is that there is very little automatic control in these plants, except at the very lowest levels of operation.

He goes on to say that at management levels they do not have these controls, and that at that level it can still be improved. But this statement, that there is very little automatic control except at the very lowest levels of operation, came as a surprise to me.

MR. KIRKBRIDE. I would, of course, have to resort to my imagination as to what he was thinking about when he made that statement. But this is what I would conclude that he meant: Back in 1930, when I entered the petroleum industry, we had separate units for each process step. We had a separate unit to fractionate crude oil. We had a separate thermal-cracking unit to crack the heavy oil. We had a separate unit for all other process steps. Each of these units was automatically controlled in itself.

Now, as we have grown in the direction of automatic control, we have tied many of these separate operations together with a single control center. Many manual controls have been replaced with automatic controls. Even so, we could go much further; for example, in the direction of automatic-analyses of product streams. This is in a state of embryonic development, but it will no doubt come to pass.

One of the most important qualities of gasoline is its octane number. There has not been any method of combining the method of determining the octane number of a gasoline in an automatic scheme, but it is conceivable that it could be done so that one could have the octane number of his gasoline instantaneously, as it is being produced.

This general field offers a tremendous breadth of possibilities for development in the field of automatic control.

MR. MOORE. Well, even in this industry, which is conspicuous for its degree of automation, do you think there is room for even greater automation?

MR. KIRKBRIDE. It has had to be that way; it is the only way it could have progressed.

MR. MOORE. Could you estimate at all, or would it be possible to suggest, how fast a pace there may be in rendering present installations obsolete? Any comment at all on that?

MR. KIRKBRIDE. Well, I would not want to comment offhand, but the danger of obsolescence is really pretty much a direct function of the extent of research and development that is carried on; and in the petroleum industry, most of the processes that were outstanding when I entered in 1930 are obsolete today. It is impossible to compete successfully in the petroleum industry unless the refiner replaces obsolete processes with modern processes. Obsolescence is rapid in the petroleum industry, and consideration of this should be given in our tax laws to permit correspondingly rapid amortization of investments in processes that soon become obsolete.

MR. MOORE. This final question may appear a little facetious, but how do you know your instruments are always right? I find that my watch is not always right, nor the bathroom scales.

MR. KIRKBRIDE. Many times I have been in an airplane stacked up over Washington, and hoped that the altimeters were reading prop-

erly. Sometimes they aren't, and that is why we have to have people to think and handle the maintenance on instruments. It is a very high type of technician needed for this type of work.

That is why I contend that we can go so far in automation, but we can't go completely automatic. We must always have people to think.

Chairman PATMAN. Doctor, at page 13 of your statement you make a statement that is rather interesting. Of course, they are all interesting, but this one in particular.

What I have reference to: Dr. Seymour Harris, of Harvard, often points out that while we have a 50-cent dollar, we have 4 times as many dollars to use. I notice your statement here corroborates him to the extent, at least, that we have twice as many dollars, when you state this:

In 1935, with 1 hour's earnings the average refinery worker could purchase  $4\frac{1}{4}$  gallons of gasoline; but in 1955, his hourly wage could purchase  $8\frac{1}{2}$  gallons of gasoline—exactly twice as much.

So while the refinery worker has a 50-cent dollar, his wages will purchase twice—he has twice as many dollars to make his purchases with.

Mr. KIRKBRIDE. The refinery worker can buy twice as much gasoline even with a 50-cent dollar.

Chairman PATMAN. Yes, sir.

Again I thank you very much for the committee, Doctor, and we appreciate it.

Chairman PATMAN. The subcommittee will stand in recess until 2 p. m., here in this room.

(Whereupon, at 11:45 a. m., the subcommittee recessed, to reconvene at 2 p. m. of the same day.)

#### AFTERNOON SESSION

Chairman PATMAN. The subcommittee will please come to order.

We have as our first witness this afternoon, Dr. Louis N. Ridenour, director of research, Lockheed Aircraft Corp., missile systems division, Palo Alto, Calif.

Dr. Ridenour, we are delighted to have you appear before our committee. You have a prepared statement, I notice. You may proceed in any way that you desire.

#### STATEMENT OF LOUIS N. RIDENOUR, DIRECTOR OF RESEARCH, LOCKHEED AIRCRAFT CORP., MISSILE SYSTEMS DIVISION, PALO ALTO, CALIF.

Mr. RIDENOUR. Thank you, sir.

Mr. Chairman, my name is Louis N. Ridenour. I am director of research for the missile systems division of Lockheed Aircraft Corp., and I am appearing here as a representative of the aeronautical industry.

That industry is both a user of and a contributor to what has in these hearings been called automation—the development and use of refined measuring instruments and automatic controls.

In fact, the whole art of guided-missile development, with which I am intimately concerned, is that of replacing the human crew of an aircraft with sophisticated automatic instrumentation.



As the speed and operating altitude of military aircraft have increased, the demands on a human pilot for these advanced flying machines have simply gone beyond the range of human performance.

Lockheed is now building a manned fighter aircraft which can out-fly an artillery shell. The demands of this plane on its pilot are almost outside the range of human performance.

Thus, in aircraft applications, as in many other fields where automation is coming to be used, there is in a very real sense no competition between men and automatic control systems. There is no competition because men are outclassed from the start.

Human reaction times are measured in milliseconds—the reaction times of automatic control devices can be, and often are, thousands of times shorter.

Men need air to breathe, and must be kept at a temperature not too far from that of their bodies. Much of the complication of a manned aircraft comes about because it is necessary to provide these amenities in the midst of a violently different environment. Properly designed control instruments are far less demanding in their environmental requirements.

I have dwelt on this point to make it clear that, while your committee and many who have given testimony before it have quite properly been concerned about the social impact of automation on human workers who may be displaced by it, there is a large field of application in which automation is simply taking over tasks which the human being is no longer able to perform—tasks which make demands our nervous systems and musculature cannot meet.

Not only do automatic-control devices take over when the range of human environmental tolerance or control performance is exceeded—they can also be used to replace men in the performance of boresome, unpleasant, or degrading tasks.

We all know that there are jobs in our present society which are of such nature that they seem somewhat incompatible with the dignity of the human individual. A century ago there were relatively more jobs in this category than there are now; a century hence there will be many fewer. Automation is making, and will continue to make, the difference.

Of this view of things, automation, when properly introduced as an important element of human activity, will take over control tasks which men cannot do or do not enjoy doing. The whole level of human activity can thus be raised.

Others who have given testimony before your committee have strongly stressed the requirement of our present society for technically competent men. I concur that this is of the utmost importance.

We are steadily removing the demand of society for the unskilled worker, steadily upgrading the intellectual content of the tasks performed by human workers in our society.

In consequence of this, both the productivity and the pay of workers have steadily been rising. These desirable trends can be continued only if the technical competence of the average worker rises also.

We need fewer men in the shop—where automation is beginning to be applied—and more in the engineering department. The aircraft industry is outstanding in its proportion of scientific and technical workers. In my division of Lockheed, for example, 1 man in 5 is a professional or technical employee.

It does appear that those in charge of the educational system of this country have not yet fully appreciated this growing requirement for technical education, nor taken adequate steps to provide for it. Anything that can be done to improve the scientific content of public education will be immediately helpful in meeting the technical challenge of our times.

Part of the difficulty that the youthful automation industry is experiencing today—and the difficulty that industrial and military users are experiencing with its products—can be ascribed to the fact that the tools of automation are mainly electronic in nature.

The electronics industry, which itself is a lusty infant less than half a century old, is today largely devoted to supplying consumer goods—home radio and television receivers. Let us turn aside to take a brief look at this new industry.

Electronics is one of the major industrial phenomena of our time. At the end of 1955, the industry was producing goods and services at the rate of about \$9 billion per year. In the half decade since 1950, this represented an increase of more than 80 percent in output.

Last year, the Electronics Production Resources Agency estimated the total number of manufacturers of electronic and equipment components and other hardware as being 3,600.

One thousand companies produced either end-item equipment or major subassemblies of some type in the entertainment, commercial, or military fields. Components were manufactured by about 2,000 suppliers, while the other 600 companies listed produced miscellaneous related sorts of hardware.

Despite the relatively large number of individual companies in the electronics business, it is still a rather concentrated industry. Only some 50 of the 1,000 end-item producers account for more than 80 percent of the dollar volume of such production. Of the 2,000 components suppliers, about 200, or 10 percent, accounted for 80 percent of the dollar volume in the components business.

Electronics has grown to be a major source of employment for American workers. The industry now provides employment for more than 1.75 millions of people. This figure is especially impressive when we reflect that fewer than one-quarter of these present jobs existed only 10 years ago.

Optimistic forecasters believe that the \$9 billion industry of today will attain a level of \$15 billion by 1960.

Such growth can be characterized as no less than explosive. It has been caused, it is today sustained, and it will be continued by an equally explosive increase in our understanding of the properties of matter, and in our ability to make engineering application of this new knowledge.

Practically speaking, electronics as we know it today dates from the invention of the thermionic triode, the grandfather of all today's vacuum tubes, by Lee deForest in 1907. Electronics is thus just under a half-century old, and the man who gave it birth is still living.

The development progress of electronics in the early days was slow. It was applied to wireless communication very early; in fact, Marconi sent a distinguishable signal across the Atlantic Ocean in 1903, 4 years before the invention of the vacuum tube. Electronics had almost no other early application.

World War I was a great spur to electronic development. As a matter of fact, I'd like to tell you a personal anecdote at this point. I had gone to the University of Pennsylvania as a member of the physics department in 1938, and taken leave at the end of 1940 to work on the then breathlessly new microwave radar in the radiation laboratory at MIT.

The radar work was, of course, subject to a high degree of secrecy classification during and immediately after the war.

When I returned to Penn after the war, I had occasion to clean out of my office some correspondence files that had belonged to a Professor Goodspeed, who had been head of the Penn physics department practically since the opening of the 20th century.

Some of this old correspondence was important historical material; all of it was fascinating. Among the more interesting items was an interchange of letters between Professor Goodspeed and Prof. Arthur Gordon Webster, who had been down in Washington during World War I, concerning himself with electronic matters.

Goodspeed had asked Webster to stop off at Penn on his return from Washington to Worcester, Mass. (where Webster was a professor) after the war, to give a physics colloquium on radio telephony, then a brandnew art.

Webster said that he would be willing to do this "subject, of course, to the requirements of military security." Thus, in late 1918 the techniques which underlay radio broadcasting were as secret as the radar techniques—which underlie television—were after the Second World War.

If World War I was an important spur to electronic development, World War II was incomparably more so. Radar—the technique of seeing in the dark by making use of the reflection of radio signals from targets of interest—had been suggested by Marconi as long before as 1922, but it was not really invented until the late 1930's.

It was independently invented, at about the same time, in several countries simultaneously. It became a major weapon of World War II, and enormous technical advances were made.

When I arrived at the MIT Radiation Laboratory just after New Year's Day of 1941, the staff was jubilant at seeing the dome of the Mother Church of Christian Science, 2 miles across the Charles River, on the scope of a primitive radar; when I left 5 years later, radar echoes had been received from the moon, a quarter of a million miles away.

The development of commercial television, which has taken place largely after World War II, owes much to the radar work during the war. Techniques at high radio frequencies had to be developed for radar, and are much used by television; techniques for the visual display of radio signals had to be worked out for radar, and have been taken over by television.

One of the most important electronic developments, particularly in terms of its significance for the future, has been the creation and great improvement of electronic computing machinery.

Beginning in the early 1940's, electronic techniques were used to design machines capable of making the logical decisions fundamental to arithmetic computation and of performing still more elevated logical decision processes.

The resulting high-speed computing machines, as they are now called, have become familiar topics for luncheon speakers. They

have begun to take over an increasing share of the routine clerical work which is so prominent a responsibility in modern industrial society, and they have been touted as being able to aid in the decision-making processes of industrial management, and otherwise to assume human burdens.

The fact is that machines of this sort can do all of this. The further fact is that they have not yet been called upon, in any great measure, to do it. We are only just beginning to learn the capabilities and limitations of such information-processing machines, and are only just beginning to learn how to design them so that they will have proper balance for attacking problems other than the scientific and engineering ones whose requirement for solution gave them birth.

In addition, and this is most important, modern electronic automation devices suffer from the occupational disease of modern electronics: they are extremely unreliable.

The unreliability of electronic equipment is perhaps the major factor regulating and guiding the growth of electronic application. The central component of any electronic end item—the vacuum tube—is the least reliable component of all. It has an average lifetime of perhaps 10,000 hours, a little over a year.

However, since this is a statistical lifetime, tubes begin failing as soon as they begin to be turned on. In the entertainment devices which have thus far been the major applications of electronics, this is annoying, but not fatal. This unreliability of electronics has, however, drastically limited the breadth of application of electronic techniques.

Let us explore the reasons for electronic unreliability, and try to indicate its causes. As we have already noticed, the early growth of the electronics industry took place mainly because of its application to the burgeoning amusement industry.

In radio, in electronic musical recording and reproduction, in television, and in the telephone business electronics made it early mark.

Only in the case of the last application, telephony, which was and has always been rather specialized because of the quasi-monopoly situation which obtains, was there any premium on electronic reliability.

In the generalized electronic entertainment business, reliability of the end-item equipment was about the last thing desired or sought by the manufacturer. There being only some 8,000 hours per year, even the most avid radio or television fan was unlikely to use his set more than a few hundreds of hours per year, and a mean life of a few thousands of hours was plenty to make the equipment seem well designed and built.

At the same time, the price battle in the discount houses was vigorous and influential.

The overall result has been that the principal controlling factor in electronic development has been price. Engineering departments of radio and television manufacturers have existed principally for the purpose of engineering cost out of the company's product. The prototype of all black-and-white television receivers has been the RCA-type 630 chassis of the late 1940's; engineering progress in television since that time has consisted very largely of finding out which complicated circuits, which expensive components, can be successfully engineered out of that design without unduly affecting performance.

The sole exception to this trend of cheapening electronic equipment at the cost of performance has been the work done by the telephone companies. Here there is a premium on reliability of equipment which does not exist in the case of consumer electronics.

There are now situated at the bottom of the Atlantic Ocean vacuum-tube cable repeaters which have been designed with the utmost care by Bell Telephone Laboratories. A mean life of 350,000 hours is expected for the most perishable part of these repeaters, the vacuum tubes; this lifetime is many times that anticipated for the tubes of any existing radio or television set. Such long life has only been obtained by the greatest care, attention to detail, and willingness to spend money to achieve it.

It is a major paradox of the electronic business that the vacuum tube, which is absolutely essential to the equipment of modern electronics, is the least reliable component of electronic equipment.

I made the remark 5 years ago that there was nothing wrong with electronics that elimination of the vacuum tube would not cure, and that remark is still pertinent today.

However, it is only very recently that we have been able to consider seriously the likelihood that we might eliminate vacuum tubes from electronic equipment. The major line of electronic development is now that which centers around doing this.

As of today, the thermionic vacuum tube is just under 50 years old. The solid-state device called the transistors, which bids fair to replace this vacuum tube, is about 8 years old.

This difference in ages is also a fair measure of the difference in the technical effort which has been expended in behalf of the two devices: the International Radio Tube Encyclopedia, which lists all the type numbers of the vacuum tubes produced at any time anywhere in the world, reaches a total of 18,500 type numbers for vacuum tubes.

Comparable figures for transistors are not so easily accessible, but the latest compilation of type numbers produced in the United States totals approximately 235 transistor types and, even adding foreign contributions, the list does not exceed 300.

Production is another index, and a most important one, to what is going on. The total production of transistors in the 8 years of their existence is not over 5 millions of units.

This number of vacuum tubes is currently made in any 2 working days in this country alone; over 40 millions of tubes are made every month; half a billion tubes every year.

At a conservative estimate, the cumulative worldwide production of vacuum tubes today exceeds 7 billions—3 tubes per generation for every man, woman, and child in the world.

Thus we are now in the period of transition from consumer electronics centered around the vacuum tube to industrial and military electronics based on the far more reliable transistor.

Until this transition is complete, the tools of automation will suffer from the low reliability that characterizes current electronic equipment. This unreliability has two major causes: the deficiencies of vacuum tubes, and the price-centered nature of the consumer electronics industry.

The cure for this unreliability is inherent in the new solid-state devices, like the transistor, that can and will replace the vacuum tube. At the same time, designers must put far more emphasis than is now

customary on the problem of attaining the greatest possible reliability.

To sum up, I feel that the following points are important:

1. Far from competing for desirable jobs now done by men, the devices of automation will relieve human beings of tasks which are either beyond the scope of human performance or beneath human dignity.

2. The growth of automation is putting unprecedented demands on the educational system of the country; a far greater output of technically trained individuals is required.

3. Automation requires of electronic equipment far greater reliability than has yet been attained in the price-centered consumer electronics industry.

4. The tools for achieving this improved electronic reliability are being developed; notable among them is the transistor.

Industry and government, hand in hand, must encourage the trends that the growth of automation foreshadows. Anything that can be done to encourage the availability and quality of technical education, to speed up the transition from unreliable consumer electronics to the ultra-reliable military and industrial electronics of the future, should and must be done. Since the end result of increased automation is to enhance the dignity and effectiveness of human life, this is in the general interest.

Chairman PATMAN. That is a very fine statement, Dr. Ridenour. We appreciate it.

I just want to emphasize some of your points, and ask you a very few questions, if you please.

Your testimony corroborates testimony that has already been introduced about the educational system.

I notice you state what other witnesses have stated, that anything that can be done to improve the scientific content of public education will be immediately helpful in meeting the technical challenge of our times.

I am personally very much impressed that that is an urgent matter. I think we should do something about it.

Many different plans have been proposed before our committee which will be followed through for a discussion and I hope action.

On page 7 you mention about television. I just wonder if you have any ideas about the \$64,000 question on color television, about when you expect it to be in general use.

Mr. RIDENOUR. Yes, sir, I have. I do not know whether you want me to tell you about them.

Chairman PATMAN. We would like for you to.

Mr. RIDENOUR. My views are rather unconventional.

Chairman PATMAN. We just want it for information. It does not make any difference to us how conventional it is.

Mr. RIDENOUR. I spent nearly 4 years of my life working in the television field and I formed very strong opinions about certain matters there.

I feel that the problem of how to develop the ultra-high frequency channels which is bothering the FCC—

Chairman PATMAN. Very much so.

Mr. RIDENOUR. And how to bring about practical color television and how to bring about practical paid television are all tied up together.

If you will allow me to say a word about that.

Chairman PATMAN. We would like for you to comment fully, if you please.

Mr. RIDENOUR. Well, first then, with regard to why talk about paid television:

We are experiencing a transition to a wholly new financial structure of the entertainment industry.

The motion picture theaters have made it possible for the producers in Hollywood to put millions of dollars into a single production, and to produce thereby, I think it is fair to say, pictures which are considerably better than the half-hour soap operas one sees on television with a commercial at the beginning, the middle and the end.

Now, the whole purpose of pay-as-you-see television is to make it possible by another method to channel money from the people who want superior entertainment, and are willing to pay for it, to the producers who need money to create this entertainment.

It is a bit like erecting an electronic theater that covers the whole United States.

The people who have opposed the development of paid television have made a great point of the fact that the individual American citizen, having bought a television receiver, ought to get free programs. This is rather like saying: if you go to the hardware store and buy a frying pan you ought to get free pork chops.

I am not sure that either statement is quite true.

Chairman PATMAN. Or an automobile, get free gasoline.

Mr. RIDENOUR. For example, yes, sir.

Be that as it may, it is clear that we cannot let paid television, if it should come about, take free television out of the American home. We must not interfere with what exists now.

This suggests very strongly that paid television ought to be cultivated in the part of the radio spectrum which is today hardly at all in use: namely, the ultra-high frequency, UHF part of the spectrum.

I am of the opinion that paid television, also, ought to offer something that is scarcely available today, although it is marginally available, namely, color.

If one looks at the technique of color television as it now exists, and as it is being developed and made available to the public, it turns out that the whole basic idea behind the thing is a very clever attempt to squeeze about 6 megacycles worth of picture information into  $4\frac{1}{2}$  megacycles of channel space, the result of which is that they ought to sell a little technician with every color television set.

There are a great many handles that need to be turned to make it work right. It would be rather simple to do a job of color television if a wider band in the frequency spectrum were made available, wider than the 6 megacycles which is the presently defined channel used by television stations.

In the ultra-frequency spectrum there are over 400 megacycles available. So that there is, in my opinion, plenty of room to do a more simple-minded job of transmitting color over the air, through the use of a wider channel for the job.

This would have an immediate benefit to the consumer because it would make it possible to design a far simpler and cheaper and more reliable color receiver.

Now, this has been a rather rambling reply to your very challenging question, Mr. Chairman.

Chairman PATMAN. I am very much interested in your reply and I know that the people all over the country will be interested in it, the Members of Congress in particular. And if you want to elaborate on it further, it will be appreciated. We do not want to cut you off.

Mr. MOORE. Is widespread use of color being held back today deliberately or scientifically awaiting further development in the ultra-high frequency sector?

Mr. RIDENOUR. In my opinion, sir, it is not. I think that the Radio Corporation of America, which is the main backer of color television development, is doing everything in their power to advance the art, and to bring it forward.

Mr. MOORE. You don't feel that the prospect of paid television is delaying this development in the other sphere?

Mr. RIDENOUR. No, sir. I do not. What I do feel is that the technical scheme which is now the one on which color television must rest, is so complicated and difficult that that in itself is holding the art back.

And I feel that the relaxation of these technical requirements, which can only come by a widening of the channel width that is made available for color television, will be possible only through the opening up of new and wider channels in the UHF spectrum. This would, so far as I can see, solve the problem of UHF television, because it would provide a new service there that people want, and that they would buy sets or converters to get.

Second, this would solve the color television problem through the simplification of schemes for transmission and reception.

Third, it could open the way to pay television if this is wanted.

Chairman PATMAN. I want to thank you for that comment.

You mention about the life of a vacuum tube, I believe, of the Bell Telephone Co., that is in the Atlantic Ocean, being 350,000 hours.

Isn't that about 40 years?

Mr. RIDENOUR. It is about 4½ years.

Chairman PATMAN. About 40?

Mr. RIDENOUR. Four and one-half.

Chairman PATMAN. Four and one-half?

Mr. RIDENOUR. Wait a minute. Yes; you are absolutely right. Forgive me. It is 40.

Chairman PATMAN. About 40 years?

Mr. RIDENOUR. Yes.

Chairman PATMAN. That is the way I just figured it roughly.

Mr. RIDENOUR. Yes.

Chairman PATMAN. That is quite unusual, isn't it, for a vacuum tube to last that long?

Mr. RIDENOUR. It is entirely unprecedented. This tube is the culmination of a long program of design and development and extremely careful kid-glove manufacture.

Mr. MOORE. Does it follow the tube or the transistor approach.

Mr. RIDENOUR. These repeaters came under design at a time many years ago when the transistor was not yet dreamed of. So that we now have vacuum-tube telephone repeaters under the ocean.

If the Bell System had it to do over—and they will have it to do over in a generation, as the chairman has pointed out—they will undoubtedly have transistor amplifiers next time.

Chairman PATMAN. In your concluding statement, indicating some points there that are important, the first one is—



far from competing for desirable jobs now done by men, the devices of automation will relieve human beings of tasks which are either beyond the scope of human performance or beneath human dignity.

I have always heard that the four greatest evils are poverty, ignorance, disease, and crime.

So I assume from your statement there that one of the goals will be in the use of automation relieving drudgery which is not in one of these four that I named, but I believe it logically would belong there and a great evil and so automation should go a long way towards relieving drudgery.

Mr. RIDENOUR. Yes, sir. I cannot emphasize that too much. People are worried about these automatic devices reducing the number of jobs available. What one has to do, I think, is to look at the other side of the coin, which is that these automatic devices are giving more job satisfaction to people in what they have to do.

As a Member of the Congress, I know that you take great pride and satisfaction in what you do. Very few of us have as rewarding a task to do as you have.

The devices of automation are making it more and more nearly possible for each of us to have a task as challenging and rewarding as yours, sir.

Chairman PATMAN. Well, I just feel like that we mean so little, I mean Members of Congress, in comparison to scientifically trained people, engineers, like yourself, and other people who have appeared before this committee.

In time of war, for instance, World War II, I realized the importance more than I ever realized before of trained people, skilled people, scientists, engineers—we just could not have gotten along without them.

And although I am chairman of the Small Business Committee and have been since it was created, and I offered the resolution that caused its creation in 1941 just a week before Pearl Harbor, and I have been the chairman except when the Republicans put us out a couple of terms, I am not opposed to big business at all.

I feel like there is a place in our economy for big concerns and little concerns, too. We just want to make sure that the rules of the game are written properly so that the Golden Rule will prevail and everyone will have an equal opportunity, an equal chance.

And big business, certainly, performed a great service during World War II. I don't suppose we could have gotten along without the big concerns that we had. And we certainly are indebted to them.

The one reason is because they were in a position to employ, by going together, the finest people for the jobs that we had to do, the people who had the know-how, the professional know-how, the knowledge, the ability, to do the job.

I notice you state here, point 2—

the growth of automation is putting unprecedented demands on the educational system of the country; a far greater output of technically trained individuals is required.

That is, of course, along the lines of other testimony that we received. And I think Members of Congress who keep up with these hearings are convinced that that is certainly a point that should receive early consideration that is urgent.

I do not know what the answer is. I know that college professors are human beings like ourselves, must take care of themselves. They have families like we do. And they are entitled to compensation that will reward them adequately for the services they perform, to enable them not only to have the comforts and conveniences and some of the luxuries of life, but also sufficient to educate their children in the best schools and colleges of the country.

And I am afraid that the salary range has been rather low from the testimony we have received. In fact, too low in some States.

Mr. RIDENOUR. Mr. Chairman, I paid last year Federal income tax in an amount slightly greater than my total salary as dean of the Graduate College at the University of Illinois, 5 years before.

Chairman PATMAN. Quite a difference. It just goes to emphasize the point that you were receiving such a low salary at that time.

And I know that has got to be corrected. I do not know how it should be done, but something has to be done about it. We cannot afford to have these professors taken out of their positions in the colleges and put into private work when we need them so badly in the colleges, to train other people.

At the same time they have to decide and we have to answer it some way. We have to answer it satisfactorily. And I assume that adequate salary would be about the first consideration that should be given, for the purpose of trying to solve the problem.

Automation requires—

so you state in point 3—

of electronic equipment far greater reliability than has yet been attained in the price centered consumer electronics industry.

Four, the tools for achieving this improved electronic reliability are being developed; notable among them is the transistor.

Mr. RIDENOUR. There is a point there which is not in my prepared testimony but might be of interest to you.

Chairman PATMAN. Feel free to develop it, please.

Mr. RIDENOUR. The transistor was invented at the Bell Telephone laboratories in the year 1948, and the three men who are most responsible have just received the Nobel Prize in physics, from the King of Sweden.

There was considerable discussion at the time of this discovery as to whether it should be subject to secrecy classification or whether it should be published. After all of the returns were in, it was decided that this discovery was sufficiently important, sufficiently significant outside of the military, so that its classification would be a mistake.

It was made freely available to all of the people of this country.

I think this is an example of how we can help ourselves by telling ourselves what we know. I think that we should all congratulate ourselves that we still live in such an atmosphere that a discovery as important as this one, which could have been kept under wraps, was still published for the good of the national economy.

Chairman PATMAN. Dr. Moore wants to ask you a question.

Mr. MOORE. I take it from page 9 that this transition to transistors is not being delayed by anything other than cost considerations and the time it takes for an evolutionary change; is that correct?

Mr. RIDENOUR. That is correct. It has been proceeding very rapidly. In the hearing aid business, for example, there is not a single hearing aid presently under manufacture that uses any vacuum tubes at all.

Mr. MOORE. In due course it will substantially take over the field?

Mr. RIDENOUR. That is my expectation, yes.

Mr. MOORE. One final question, and this may be a little visionary in a sense, but what do you foresee as the next big frontier for commercial development in the field of electronics?

Mr. RIDENOUR. Well, I am probably a little old and stodgy, but at the moment my prediction would be confined to faster and faster progress along the lines that are presently in work.

I think that the business of interpersonal communication is going to be managed by radio, and by very compact radio sets. And we shall presently have in our pockets personal telephone sets that are about this size [Referring to a watch].

I think that we shall experience a totally new level of reliability in all of the new electronic equipment. I think that the tools of automation which are under discussion in this committee will become ever more potent and effective.

And I cannot imagine the next great breakthrough, which is kind of the definition of a breakthrough.

Chairman PATMAN. Thank you very much, Dr. Ridenour, and if you have anything that you would like to add to your testimony when you review it, you may be privileged to do so.

Mr. RIDENOUR. Thank you, sir.

Chairman PATMAN. Dr. Bronk, I believe, is our next witness.

Dr. Detlev Bronk, president of the National Academy of Sciences, National Research Council, Washington, D. C.

Dr. Bronk, we certainly appreciate the fact that you agreed to appear as a witness. We shall look forward to your testimony.

Would you like to present your testimony in writing and read it or would you like to speak extemporaneously?

Dr. BRONK. I prefer to speak extemporaneously and give you an opportunity to ask any questions that you may wish to ask.

Chairman PATMAN. That is very fine. And we have in mind your time limit, too—that you want to get away from here at a certain time.

We want you to feel free to work to that end.

#### STATEMENT OF DR. DETLEV BRONK, PRESIDENT, NATIONAL ACADEMY OF SCIENCES, NATIONAL RESEARCH COUNCIL, WASHINGTON, D. C.

Dr. BRONK. Thank you very much. I have plenty of time, I think.

Mr. Chairman, I am here as president of the National Academy of Sciences and its Research Council, although as Chairman of the National Science Board of the National Science Foundation. I am also very much interested in the generous support given to science by the Government through the National Science Foundation.

I assume we are concerned with the usefulness of the new developments known as automation for the furtherance of human welfare and the building of our national security and economy.

The title that has been given to me is, "The Need for Trained Scientists and Research Workers in the Field of Automation." With your permission I would like to modify that somewhat and speak of the need for automation in the field of research and the way in which the development of automation affects the national scientific manpower problem.

Our country has attained its high position in part because of the great natural resources which have been available to us, but more especially because of the qualities of American manpower, courage, imagination, ingenuity, devotion to human freedom, and willingness to work hard. These qualities have brought us to our present high position at a time of great destiny.

During these recent months when there has been so much attention focused on the Middle East, I have kept remembering the first time I saw the pyramids when I was serving with the United States Air Force during this last war. It emphasized in a spectacular way some of the things we are concerned with this afternoon.

As we came into Cairo that early morning, I saw the shadows of the pyramids spread across the desert sands, I could not help but be reminded of the tremendous amount of human effort that had gone into the building of those structures by what was essentially slave labor. In a space of less than 2 days, I, on the other hand, had come from Mitchel Field in relative ease and comfort. The reason that was possible was because of the creation of machines, in part by our industry but essentially as the achievements of the human mind.

It is the function of machines to extend the range of human powers.

The airplane has made it possible for our muscles to act in such a way that we are able to fly as birds have never flown—we are able to travel as the human unaided muscles could never enable one to move.

We are able to hear around the world not because of what our unaided ears can do, but because of the instruments which we have developed as aids and extensions to our human senses.

We are able to see distant objects by television that men unaided could not see.

And by the electron microscope we are able to explore the very nature of the living cell.

Last evening I was speaking at a dinner held in the Chicago Museum of Science and Technology on the occasion of the receipt of a spectacular exhibit given by the International Business Machine Corp. to that museum.

That was a reminder that now, by new devices, the capacity of the human has been extended. I refer to the new electronic devices which have made it possible for the human mind to think as the human mind has never before been able to do.

I think we should not lose sight of the fact that these new devices have been conceived of and developed by the human mind as an aid to the human mind itself. I do not want to get into deep philosophical water but I do think it is important, as we go forward in this tremendously significant developments as a new chapter in science, technology, and industry, to remember that all of these devices are merely means for extending the powers of man himself; in this case, his intellectual powers.

This relates to the general theme assigned me, because when we talk about the shortage of scientific manpower, when we talk about the shortage of all types of trained manpower for the accomplishment of the task which confronts us in society and for the development of new means for extending our physical and spiritual developments, we must continually bear in mind the fact that we will be able to meet these new needs, not merely by the unaided powers of man, but by the continual development of new aids to man.

And so I see in automation the means whereby man can supplement an inadequate reservoir of manpower competent to deal with the increasingly complex modern society.

And so I disagree with those who say that by automation we may create a less satisfying way of life because the need for man will be displaced.

I believe that through automation we are going to free men from dull, uninteresting tasks, so that he can do more significant things that will enable him to achieve his higher destiny.

I believe that as we have greater and greater need for trained manpower, we shall through automation find the means for satisfying this inadequate supply of manpower by extending the capacities of the available manpower.

This brings me, however, to what I think is a very significant problem of great national concern. If we are to make unnecessary much of the dull, uninteresting labor, what are we going to do with those people who are now performing that type of labor?

I am one who believes that the potentialities of people for doing more significant things is practically unlimited.

And so when I hear some of my colleagues say that we should have fewer people going into higher education I object.

I believe that as we are able to free men from the necessity of doing dull, grinding, work, we will enable them to develop more fully their intellectual capacities, provided through education we give them the opportunity to develop their potentialities.

I am one who believes that we should have more and more opportunity for higher education, so that more and more people will be able to carry out their higher activities.

I believe it will require a greater diversity of educational institutions, so that people will be able to fit themselves for those things for which they are especially qualified. I do not believe if we are to continue to have a satisfying democracy that we should lay stress upon encouraging fewer and fewer people to go into higher education.

Unless our country is to be torn between those who know and those who do not know, we must give more and more people an opportunity to know more and more about the laws of nature, the laws of human relationships, the spiritual qualities which make for satisfying rights so we can have a more wholesome society.

I believe one of our most powerful weapons in this grave conflict of ideologies is a more desirable way of life. The more we can do to enable people to create the physical means for a more satisfying life, the better guaranty will we have that democracies will survive.

From a more practical standpoint, it is perhaps unnecessary to add to what has already been said with regard to the need for more and better scientific education. This has been said over and over again by countless committees, boards, and commissions.

But it is desirable repetition to say that we should do everything we can to raise the quality of scientific education.

This affects Congress in this way: If we are to have more people better educated, it is obviously necessary that we have more well-qualified, inspiring teachers. If the opportunities for a satisfying life as a teacher becomes less and less, we will have fewer and fewer inspiring teachers.

In the field of science it is important that there be better facilities and more support for research as a way of learning. It is a way of keeping one's mind alert and better fitted for the teaching and inspiring of the young.

In our various governmental agencies and especially in the National Science Foundation we are deeply concerned with supporting fundamental science more adequately so that our teachers in the colleges and universities will be less tempted to go out into other forms of activity.

When it comes to the matter of secondary school education, from which we derive our future scientists, the problem is somewhat different, because it may be impossible to provide adequate opportunities for research.

But if we had a higher regard for education and for the educated man in our local communities, people would be less tempted to leave secondary schools and primary schools and go into other walks of life.

How this can be accomplished, I have no easy answer.

We must, by all devices, try to improve the regard for the teacher, so that those young people who are entrusted to the teacher will be encouraged to go into an educated way of life.

Also, I feel that one of our great national responsibilities is to recreate a regard for the satisfaction of hard work. This is not in conflict with what I have been saying about significance of automation as a means of freeing man from the necessity for hard physical work.

Automation frees man from the necessity for doing hard, dull, grinding physical labor. But now that we have passed our geographical frontiers, and have our Nation's future dependent upon our intellectual frontiers, we must develop in our young people a realization that hard intellectual work is not only a necessity but a great satisfaction.

And so when we hear that there are fewer and fewer people studying science and mathematics, it reflects the desire of so many to have an easy way of life.

Our country did not become great by the choice of the easy way. It was made great by hard work and courage. Now we need that same hard work and courage.

What I have tried to say is this: I see in automation great opportunities for extending the range of man's ability to think, and to do things of greater significance so that man can have a more satisfying way of life.

I see in automation the means whereby man can understand better the laws of nature, and of life itself, so that man may be in a better position to develop industry, learning, the control of man's own body, and of man's own thoughts.

Chairman PATMAN. We have heard several witnesses, as you indicated, about our lack in education, particularly along the lines that you have suggested.

I wonder if you have any suggestion to make as to what Congress should probably do, that would be helpful in solving those problems or should it be done entirely on the State level, or should we encourage the military to better utilize the young men, inductees as well as enlisted men.

Dr. BRONK. I think that Congress can do a great deal in this regard by increasing the support for fundamental research because as I have

just said, this enables people to keep themselves intellectually alive and thereby better to fulfill their responsibilities as teachers.

The way in which this can be done is by support of the National Science Foundation and those fundamental aspects of the research programs of all the various Governmental agencies—the Department of Commerce, the Department of Defense, the Department of the Interior, and related organizations.

I feel that in the field of education there should be more widespread support of our private educational institutions which have played such a tremendous role in the development of our country.

If education is furthered in these private and State institutions there is a greater sense of participation on the part of individuals, because they are more intimately related to these colleges and universities.

In this regard, I think that we should all pay high tribute to the tremendous loyalty of individuals and of private industry.

Several years ago, over a period of years, I served on the Commission for the Financing of Higher Education under the Association of American Universities. In the late forties and early fifties, we were gravely concerned with what was to be the future of higher education because of the great shortage of funds.

Since that time there has been a tremendously satisfying response on the part of the American industry in the support of our institutions of learning. The alumni and the friends of these institutions have contributed in increasing numbers.

With regard to the role of the Department of Defense, in the manpower shortage as it is affected by the necessary draft of our young people, I believe that there is much that can be done in order to utilize those who are drafted better in accordance with their special aptitudes.

It has been my experience in the military services that we can, by careful thought, train the people more quickly for the basic military responsibilities and use the time saved for their education on specialized scientific and technical problems with which they will deal in modern warfare.

Chairman PATMAN. It has been brought to our attention, Dr. Bronk, that Russia is ahead of us in graduating scientists and engineers and technicians.

For instance, a year ago, to be exact in November of 1955, this committee conducted the first hearing, I believe, that has ever been conducted in Congress or by a congressional committee, on automation.

Testimony before our committee at that time disclosed that the Russians were graduating twice as many engineers this year, 1956, as the United States.

Furthermore, the alarming, shocking information was brought to our attention that Russia is graduating 32 times the number of technicians that we are graduating. And that was such a shocking figure that many people have looked into it more carefully since that time.

And Dr. Sperry enlightened us some this morning as to what is being done in this country that has been overlooked in that respect, particularly concerning technicians. And he invited our attention to the fact, too, that possibly Russia is including a lot of mechanics in their 1,600,000 and that they are graduating this year as technicians.

Do you have any information that you would like to bring to our attention along that line as to how we stand with Russia?

Dr. BRONK. I do not have any available with me at the moment, Mr. Chairman, but there have been studies of this sort made under the auspices of the National Science Foundation and the National Research Council. These are available. In general they bear out what you have just said.

I would hope that we have enough faith in our future and enough ability to define our own objectives, so that we do not have to depend upon the stimulus of Russia to decide what we should do.

Some of us who have been arguing for the better education of our young people for many years, are somewhat gratified to see us more alert to this need at the present time, but we wish we had not had to wait for comparison with Russia in order to come to these conclusions.

Chairman PATMAN. I thoroughly agree with you.

Is there not a place where television can be used for education? And, if so, which level would it be, the elementary grades, high school, or in the arts and sciences?

Dr. BRONK. I think this is one of the challenging opportunities that lies before us in all levels of education, from the very elementary levels on up through adult education. It is heartening to see that after years of failure to recognize that one can do new things in education we are beginning to do some of the things that are now possible by modern science and technology.

Television is being extensively experimented with, to see how we can better use it for general education. Beyond that, there have been studies made as to the utilization of television in the classroom so that the shortage of teachers can be met by using one brilliant teacher to reach hundreds of thousands of students.

There have been tests made as to whether or not students suffer from a lack of intimate contact with the professor under these conditions. It is significant that in at least one test it was found that the students felt they were just as close if not closer to the figure on the television screen than they did if they sat at the far end of a large classroom.

There are a number of experiments being carried out in the development of sound films for instructional purposes, which again will be used not to replace the teacher, but to supplement the teacher, so that a brilliant physicist or biologist or chemist will be able to talk to classes of high school students and college students.

In this way, we can bring more inspiring presentations to the students, and we can also help solve the shortage of good teachers.

Chairman PATMAN. Well, we certainly have appreciated your testimony, doctor. You have enlightened us on so many questions.

Tomorrow morning we have as our witnesses, Friday, December 14, Mr. Rocco C. Siciliano, Assistant Secretary for Employment and Manpower, Department of Labor, and also tomorrow morning Mr. George Meany, president of the American Federation of Labor-Congress of Industrial Organizations.

The subcommittee will stand at recess until tomorrow morning at 10 o'clock.

(Whereupon, at 3:20 p. m., the subcommittee recessed, to reconvene at 10 a. m., Friday, December 14, 1956.)



# INSTRUMENTATION AND AUTOMATION

FRIDAY, DECEMBER 14, 1956

CONGRESS OF THE UNITED STATES,  
SUBCOMMITTEE ON ECONOMIC STABILIZATION  
OF THE JOINT ECONOMIC COMMITTEE,  
*Washington, D. C.*

The subcommittee met, pursuant to recess, at 10:05 a. m., in the Old Supreme Court Chamber, United States Capitol Building, Washington, D. C., Hon. Wright Patman (chairman) presiding.

Present: Representative Patman (presiding).

Also present: John W. Lehman, clerk; Grover W. Ensley, executive director; and William H. Moore, staff economist.

Chairman PATMAN. The subcommittee will please come to order.

We have with us this morning Mr. Siciliano, Assistant Secretary for Employment and Manpower, United States Department of Labor, Washington, D. C., accompanied by Mr. Clague, Commissioner of Labor Statistics.

We are mighty glad to have both of you gentlemen. You may proceed any way you desire, sir.

## STATEMENT OF ROCCO C. SICILIANO, ASSISTANT SECRETARY OF LABOR FOR EMPLOYMENT AND MANPOWER; ACCOMPANIED BY EWAN CLAGUE, COMMISSIONER, BUREAU OF LABOR STATISTICS; AND LEON GREENBERG, CHIEF, DIVISION OF PRODUCTIVITY AND TECHNOLOGICAL DEVELOPMENTS, BUREAU OF LABOR STATISTICS

Mr. SICILIANO. Thank you, Mr. Chairman.

I would first like to thank you for this opportunity to discuss the Department of Labor's work in the field of automation and technological change.

The hearings before your committee last October were most constructive in clarifying the meaning and some implications of technical developments for the economy. The Department's staff has used the hearings as a convenient reference and a ready source of useful ideas.

We noted with interest, in your committee report of last year, your recommendation for continued research on automation and occupational change.

This morning I would like to discuss and review the program of the Department of Labor in this field during the past year, to discuss briefly some of our research findings, and to indicate the outlook for future work. Before taking up these matters, I would like first to summarize some more general views.

A reasonable view of automation and other labor-saving innovations must take account of two important aspects. In an economy of full employment we must look with approval at efforts to increase output per man-hour. Automation affords us a means of enlarging both our per capita material abundance and leisure at the same time as our population continues to grow. Moreover, the margin of our productivity level over that of competitive nations is an important element of our national security.

We must be mindful, however, of potential human costs. Dramatic changes in production techniques may often have important consequences for the people who work in factories, plants, and offices. The past history of our economy saw examples of job displacement and obsolescence of skill that often imposed harsh readjustments on individual workers.

Today, there seems to be general or universal agreement about the need for adequate worker training, guidance and education, protection against arbitrary discharge, and social provision for income security in the event of unemployment.

Modern management is, more and more, coming to recognize the importance of considering the problems of the individual worker in making changes. This personnel planning is as essential to the progress of technology as is the careful planning that precedes an investment in new machinery.

Because of its responsibilities in the training, placement, security, and general welfare of workers, the Department of Labor is keenly interested in the progress of new industrial technology.

Sound administration of manpower programs necessarily requires some understanding of the implications of these changes for employment, occupational and skill requirements, industrial relations, and for special groups such as the older workers.

Accordingly, we have given special attention during the past year, and I might say during the past 2 or 3 years, to programs concerned with the human impact of changing technology. These activities cover various areas of study and action, including automation and productivity research, the skills of the work-force program, and the older worker studies.

#### AUTOMATION AND PRODUCTIVITY RESEARCH

First, we have broadened the Bureau of Labor Statistics' research work during the past year in the measurement of productivity growth and study of technological developments.

To obtain factual information on actual experience of management and labor in introducing technological innovations, the BLS initiated a series of case studies of individual plants. The first two case studies—one on a radio plant, using printed circuitry; the other, on an insurance company adopting a computer—were submitted to this committee during the October 1955 hearings, at which time Secretary Mitchell appeared and testified.

This year, we published a study of a bakery that had undergone extensive mechanization. We are now preparing a study of technological change at a petroleum refinery, and the introduction of an automatic system of handling reservations at an airline.

We plan to make additional studies in the coming year in plants adopting automatic techniques in the metalworking, wholesale distribution, and chemical industries.

In making these studies, our staff interviews management and labor officials concerning changes in productivity, employment, occupational needs, wages, industrial relations, and related subjects pertinent to presenting a record of human adjustment at a single plant. This case-history technique, as you may recall, was recommended by several witnesses before your committee in October 1955.

These case studies are filling a gap in our knowledge of the effects of current changes. While trade and technical journals report fully on examples of the latest automatic control or computer developments, concrete information about the human adjustments required is too often only fragmentary.

Consequently, these studies have proved useful in discussing ways of adjusting to technological change, and have been widely circulated and reprinted.

In addition to these on-the-spot studies, the Bureau of Labor Statistics has published an extensive bibliography on Automatic Technology and Its Implications, which is designed to assist other research workers in studying this important aspect of the economy.

Also, the Monthly Labor Review from time to time publishes significant articles on the subject of automation, including a summary of this committee's hearings. And we are now also engaged in preparing a broad review of changing technology, which will be the Department of Labor's yearbook in 1958. It will cover the origin, development, and implications of the new technology.

Because of their great importance in evaluating and gaging the rate of technological change generally—and thus the dimensions of the social problems that may be implied—considerable attention is directed to the BLS statistical program on trends in output per man-hour. Indexes for the trend of the manufacturing sector, from pre-war up to 1953, were released last year by the Secretary at this committee's hearings.

Our current work is concerned with the improvement of this important series, and the development of indexes for the economy as a whole and its important sectors. This fall, indexes of output per man-hour for the basic steel industry were published, covering the period since 1939.

Finally, mention should be made of the growing interest abroad in the human aspects of automation, which should be noted. Within the past year, private citizens as well as Government officials from Sweden, England, France, Germany, and Australia have come to the Bureau of Labor Statistics and other bureaus in the Department, seeking information and advice in studying the American approach to the social problems of automation.

#### SKILLS OF THE WORK-FORCE PROGRAM

The progress of automation, along with the development of peacetime atomic energy, the increasingly complex technical defense program, and the extension of industrial research, is certainly going to contribute to today's widely discussed shortage of qualified personnel.

Persons with creative talent are needed not only in the ranks of the scientists and engineers of automated factories, but also among the

teachers of technicians, the skilled workers supporting them, and the managers and executives responsible for the plant's performance.

The problem of shortage of skills has many ramifications for our educational system, for our industries, and, indeed, for our whole system of incentives and attitudes toward work and study.

The Department of Labor is seeking to make a contribution to this important problem through its skills of the work force program. This program is intended to stimulate an increase in the number of qualified workers in the skilled occupations and professions, and to assist in broadening the skills of the whole labor force.

One line of activity concerns the improvement of our statistical and research program on current occupational trends and opportunities.

As part of this program, the Bureau of Labor Statistics in its occupational research studies is bringing together a vast amount of information about various fields of work. The new Occupational Outlook Handbook, to be published early in 1957, will cover the outlook, nature of the work, training requirements, earnings and working conditions for about 500 occupations and industries.

Through the Bureau of Employment Security, the Department of Labor is providing leadership and technical assistance in improving and expanding counseling, testing, and selective placement services throughout the State employment services, particularly in relation to skilled and professional workers.

The Women's Bureau, in cooperation with the Bureau of Labor Statistics, is conducting a survey of wages and working conditions of nurses and other personnel in hospitals in 16 large cities. This effort is directed toward alleviating the shortage of trained nurses which has been a serious problem for many years. The Women's Bureau is also making other analyses of the demand and supply of women workers.

We are also promoting more adequate training programs in industry by stimulating employers and labor groups to improve on-the-job training, by encouraging the extension of educational activities in support of industrial training, and by creating in the general public an atmosphere of general and greater acceptance and interest in training.

During this current year, several community studies, directed by groups of local representatives of education, business, and labor, under the technical guidance of the respective State employment services and the Bureau of Employment Security, are being made to evaluate their community skill requirements and to provide a basis for developing necessary training facilities.

These initial pilot studies, each slightly different in approach, will in addition provide important experience in assisting many other communities as they undertake a systematic appraisal of their own present and future manpower requirements.

These communities, by the way, Mr. Chairman, are St. Louis, Phoenix-Tucson, which is one, Bridgeport, and Indianapolis.

#### OLDER WORKER STUDIES

When an older worker is displaced, he generally experiences more difficulty in finding a new job than a younger worker. Special attention to his particular problems of readjustment seems essential in an

age of changing technology. In this room, last year, a number of witnesses mentioned the special difficulties of the older worker under automation.

The Department of Labor has been engaged in a comprehensive program of study and demonstration projects designed to overcome age barriers and discriminatory hiring practices, and to increase job opportunities for older workers. These particular programs cover a number of things: (a) Job performance and age; (b) status under collective bargaining and private welfare plans; (c) pension costs; (d) forums on earning opportunities; (e) adjustments to labor-market practices; (f) counseling and placement; and (g) changing patterns of labor-force participation.

The Bureau of Labor Statistics undertook two fact-finding projects. One consisted of a pilot study of the age and on-the-job performance of production workers in selected manufacturing establishments.

The main emphasis of this study was to develop suitable statistical tools for measuring the relationship between age and job performance in terms of output per man-hour, attendance, and other performance criteria.

However, the preliminary findings from this study are being tested in a more extensive survey this year. Even the preliminary figures from this pilot study have important implications for employment policy. Output per man-hour of both men and women pieceworkers showed only slight variation up to age 54, and in no group did the average performance of workers 55 through 64 fall below 90 percent of the group aged 35 to 44.

Measurement of the output per man-hour of individuals showed that variations in the output of persons in the same age group were very large. Actually, variations in output within age groups were generally larger than between age groups.

This means that workers displaced by technological developments should be selected for retraining projects on the basis of individual ability and not simply on the basis of chronological age.

In addition, the Bureau of Labor Statistics issued a report on the status of older workers under collective-bargaining agreements. One significant finding is that older workers generally do not find age a barrier to coverage under health-insurance plans, but pension plans frequently have provisions barring new employees for the older age groups from ever receiving benefits.

Finally, the Department of Labor is trying to improve operating services and educational activities—for the older workers—of the 1,700 employment offices of the United States Employment Service.

About one-half million dollars have been allocated during this current fiscal year to State employment security agencies, to strengthen and extend direct counseling, placement, job development, and employer visiting services in behalf of older workers in the local employment offices.

As a result, specialists in older workers' matters have already been appointed in 44 States and in approximately 70 of the largest communities. Much of the guidance for this program was developed during the past year by the Bureau of Employment Security in cooperation with the States—this is a Federal-State program—in a study of the nature and extent of the problems of older workers in the labor market in seven major areas.

## SOME RESEARCH RESULTS

We have no direct answer to the question "How rapidly is automation growing?" From our constant survey of published information in trade and scientific journals, industry periodicals, and a host of similar sources, as well as our own studies, we have the impression that the growth of automation, so far, has been generally characterized by extensive planning and learning periods.

However, where automation has been adopted in only a small segment of an industry or an establishment, it may be the forerunner of more extensive application later. For example, the large insurance company described in the case study presented in evidence at your hearings last year, has recently installed two additional large computers.

Its experience with the first computer—discussed in our case study—prompted its decision to expand the number of computer installations. The company will consider even further installations if its recent additions fulfill expectations.

Thus, it would appear that, as learning periods are successfully completed in small sections of many American plants, a new and significantly larger growth in the rate of introduction of automation may yet be ahead of us.

One of the significant statistical indicators of the results of technological change is the measure of productivity. According to estimates of the staff of the Joint Economic Committee, the rate of productivity growth for the total private economy has been significantly higher than prewar; but these figures are affected by many economic factors in addition to technology.

In the manufacturing sector, our estimates—and I am referring to the department's estimates—show an average annual increase of about 3½ percent in output per man-hour of production workers since World War II, compared with a rate of 3.3 percent for the 30-year period prior to the war.

So the total effect of automation on productivity in the economy is not clear-cut.

At the same time, economic activity has expanded sufficiently to maintain nearly full employment. Total civilian labor force and employment, in fact, reached record highs during 1956.

Average monthly employment increased by nearly 2 million for the first 11 months of 1956, compared with the corresponding period in 1955; while unemployment remained about the same.

While the overall extent of labor displacement appears to be small, as measured by unemployment statistics, it should be recognized that its concentration in a particular industry or area may constitute serious economic and social problems.

I think Secretary Mitchell touched on the isolated areas of serious or persistent unemployment last year. I think the same thing is true today.

So far, the available fragmentary evidence about plants introducing automation does not reveal large-scale layoffs of workers. The three plants we have studied, and many others that have been reported, are generally ones where management sought to expand and diversify output rather than displace labor.

Workers whose jobs were eliminated were, for the most part, absorbed in other activities of the plant. In the case of our most

recently published study of a bakery, there was a slight layoff at the outset, despite a considerable absorption of the people affected; but within 2 years, expanding business required the hiring of slightly more persons than those previously laid off.

As is obvious, the key word here is "expanding." The establishments we have studied could absorb all—or nearly all—of the people who were displaced by automation, because of an increasing volume of business. This underlines one of the recommendations of the subcommittee last year, concerning the maintenance of a dynamic and prospering economy.

From an industrial-relations viewpoint, it is gratifying to see, from our bakery study, how management and labor can often plan to alleviate the effects of change on the workers. Union representatives were called in at an early stage of the planning, to work out with management the assignment of workers, their duties, and wages.

Through collective bargaining, the work schedule of the plant was adjusted to keep layoffs to a minimum. Workers shifted to lower rated jobs were able to keep the higher wage rate paid on their previous jobs.

In most of our case studies, including those still in preparation, there is evidence of advance notification of workers by management, and in some cases actual advance consultation with worker representatives.

Benefits, in a plant introducing automation, are not equally spread among all workers. From our studies we found that there was a difference between automation's effect upon people on the one hand, and job structure on the other.

Most of the people who were directly displaced were transferred laterally within their skill levels, and in some cases were actually downgraded. No one, however, suffered a cut in wages as a result of these transfers. The job structure, or staffing pattern, was nevertheless generally upgraded by the change to automation; that is, the ratio of skilled or better paying to less skilled or lower paying jobs increased.

A few of the more skilled jobs were filled from the ranks of those on hand at the spot of the change, but generally the small number of highly skilled jobs created by automation were filled by more talented people selected elsewhere within the establishments or by hiring them from the outside.

The important point to note here is that the number of skilled jobs has increased relative to those of lesser skills.

Anticipating the rising importance of groups requiring intensive training and skills, we in the Department have tried to look ahead at the composition of our future work force. Based on what has already been happening, and of course based on people who are already born, projections of probable changes in occupational employment to 1965 and 1975 have been made in connection with the Bureau of Labor Statistics' occupational outlook project.

These show that by 1975, professional personnel may account for 1 out of every 8 workers, a third higher than the proportion today. The white-collar group, which includes clerks, salespeople, managers and owners, as well as the professionals, are expected to be the dominant occupational group, with 44 percent of the labor force.

This year, 1956, we were able to make the determination, for the first time in history, the white-collar group exceeded the blue-collar.

Among blue-collar workers, we may expect some increase in the proportion represented by craftsmen and operators, and an actual decline in the number of laborers. Owners, managers, and laborers on the farm are also expected to continue to decline in number.

I am submitting, attached to this statement, a table showing a projection of the labor force to the year 1965.

Summing up these studies of our changing occupational structure, we foresee the need for a very considerable increase in the amount and quality of training and retraining throughout the labor force.

Fitting today's workers into the jobs of tomorrow's technology will require vigorous action which must be planned now by industry, Government, unions and local communities. Earlier in this statement some of the Department of Labor's work in connection with helping to improve the skills of the Nation's work force was described.

#### FUTURE RESEARCH PLANS

In view of the many economic and social implications of automation and other technological changes, it seems essential that research work in this area be continued.

The Department of Labor hopes to conduct broader studies of the implications of automation for employment, productivity, occupations, and displacement.

For example, we hope in fiscal year 1958 to make a broad study of the effects of the electronic computer, its rate of adaptation, the accompanying gains in productivity, and effects on jobs and occupations. To attain a broad view, both makers and users of this equipment would be queried.

As I noted above, the Bureau of Labor Statistics' study of job performance and age is being extended this year to a larger number of representative establishments. Also, we plan to extend our program of case studies of plants introducing technological change to cover the special problems of older workers.

Next and of great importance, the Department hopes to develop more accurate information on the supply and demand for workers in many occupational fields, especially technical and professional.

We hope, also, to improve our methods of estimating future occupational requirements through study of industrial employment trends and the changing occupational composition of each industry.

These types of investigation represent forward steps, but still will not yield sufficient information concerning the effects of new technology upon the rate of productivity growth in our economy or its major sectors.

To make a realistic determination of automation's impact upon changes in productivity, employment, and other factors in a major sector such as manufacturing, we must study the details of the important individual industries within the sector.

This means comprehensive productivity studies of the individual major industries, coupled with equally comprehensive studies of the developing technology at work in these industries—in other words, a study both of the plant itself and of the entire industry, and then a study of the machine itself and its effect upon workers.



Such information, analyzed in the light of employment changes and occupational shifts in the industries, could permit the type of assessment your subcommittee called for a year ago—one which could be used “for policymaking in business as well as in Government.”

The objective of technological progress should be, to cite the words of the President's Council of Economic Advisers, “better living in all of its aspects, not merely indefinite increase in per capita income and possessions.”

With better understanding of the implications of the changes for the workers, employer and the community, we can surely attain this goal for all Americans.

(The table submitted by Mr. Siciliano is as follows:)

*Employment in the major occupations of the United States, 1910, 1955, 1965*

	1910		1955		1965 estimated	
	Number (in millions)	Percent	Number (in millions)	Percent	Number (in millions)	Percent
Total.....	35.5	100.0	61.7	100.0	73.1	100.0
White collar.....	7.9	22.3	23.8	38.7	30.5	41.6
Professional.....	1.6	4.6	5.7	9.2	7.8	10.6
Proprietors and managers.....	2.6	7.6	6.0	9.8	7.3	9.9
Clerical and sales.....	3.7	10.4	12.1	19.7	15.4	21.1
Blue collar.....	13.3	37.4	24.7	40.2	29.4	40.3
Craftsmen.....	4.2	11.8	8.2	13.4	10.2	14.0
Operatives.....	5.0	14.1	12.8	20.8	15.6	21.3
Laborers.....	4.1	11.5	3.7	6.0	3.6	5.0
Service.....	3.4	9.6	7.2	11.3	8.1	11.1
Farmers and farm workers.....	10.9	30.7	6.0	9.8	5.1	7.0

Source: 1910 and 1955: U. S. Census Bureau; 1965: U. S. Department of Labor, Bureau of Labor Statistics estimates.

Mr. SICILIANO. I would like to mention, Mr. Chairman, that, as you know, Mr. Clague, the Commissioner of the Bureau of Labor Statistics, is here this morning.

Chairman PATMAN. Yes. I expected to ask him if he had additional comments he would like to add.

Mr. CLAGUE. No, Mr. Chairman, I think not. We have covered pretty well the work that we are doing in the Bureau of Labor Statistics in Assistant Secretary Siciliano's statement.

Chairman PATMAN. Thank you, sir.

I would like to have you comment just a little bit more on the aged people. This problem is becoming an increasingly bad problem, I think. I do not think we can afford to lower the age on social security below 65 at this time, but the workers between 45 and 65 are finding it very difficult to get a job when they have to be readjusted; when they lose a job one place, for any reason on earth, and must seek another job, they just cannot find it.

Have you come up with anything in the way of a concrete recommendation to the Congress on that?

Mr. SICILIANO. Mr. Chairman, we have actually come up with a number of results from the various studies that we are making. As a

matter of fact, I identified earlier some of the problems affecting older workers that we are trying to overcome.

Take one of them which is this pension cost handicap. It is often cited by employers as the reason they are reluctant to hire —

Chairman PATMAN. I think that is a No. 1 item; I think it is.

Mr. SICILIANO. Yes, sir. They have often felt it is the obstacle to the hiring of workers, we will say, over 45.

We have met during this past year with quite an impressive group of consultants in the form of a committee to the Secretary of Labor. These people represent insurance companies, institutions, that is, private institutions, foundations, others who have a vital interest in the greater use of the older worker.

We have tried to analyze whether these pension costs are really a bona fide obstacle; and, if so, whether they can be overcome by some type of adjustment, either with the insurance company involved or in the companies themselves.

This is not an easy area for progress. Attitudes will have to be changed by explanation, and facts will have to be presented. The facts of —

Chairman PATMAN. I know. But you are just a little bit beyond what you first said. You said you were making studies. Well, that has been going on for quite a long time, has it not?

Mr. SICILIANO. Well, actually in this pension field area, we have been doing this just during this past year.

Chairman PATMAN. Well, I heard some 2 or 3 years ago that one suggestion was that where there is increased cost, that the Government should pay that increased cost, so as to cause no discrimination against the aged worker.

Have you considered that?

Mr. SICILIANO. We haven't gotten to the point of recommending that the Government pay the differential in cost for pension plans in private industry. Is that the suggestion, Mr. Chairman?

Chairman PATMAN. Yes, sir.

Well, have you really come up with anything which is definite and positive and concrete; that is, a suggestion which would be helpful to these workers?

Of course, the study has been going on for a long time, but you know it is becoming a desperate situation with a lot of people.

Mr. SICILIANO. Well, Mr. Clague also wants to add something here, but we recognize the situation as desperate; in fact, we think it is going to be even more serious in the next 10 years, because the composition of our labor force is going to change materially in the next 10 years. By 1965, we will have a net increase of some 10 million people to our labor force. But of that net increase of some 10 million, about a half of it will be in this age group.

Actually—I have the figures here—5 millions will be 45 years of age and over. We will have, in 1965, some 900,000 less people than we have today in the age group of 24 to 35, this so-called middle management group.

So that the conclusions are obvious that industry is going to have to use older workers to a greater extent. They are going to have to use women, because half of this 10 million increase will be made up of women; and they are going, of course, to have to concentrate in re-training or new training for these older workers.

Mr. Clague, do you want to add a comment?

Mr. CLAGUE. I wanted to add a word, Mr. Chairman, on this matter of pension costs.

It depends on the kind of pension contract that is written, and that is one of the findings that came out of this group: That, if you write the pension contract in such a way that the benefits are related to the length of service the older worker has, then it does not operate as a cost against him.

But if you write the contract in such a way that the benefits are much higher in relation to his contributions, then, of course, the employer is up against the fact that it will cost him money to hire this older worker, age 50 or above.

So one of the recommendations that we were able to make was that management and labor and the insurance companies might well take into account the kind of pension contracts they are writing.

Then, Mr. Chairman, since social security has been extended so widely, we now have an additional advantage: That this industrial pension that is paid privately comes on top of, let us say, a reasonable social-security benefit.

Therefore, again it will be easier to write the kind of contract that will help in the employment of the older worker by another concern.

Chairman PATMAN. Well, the impact is terrific in areas where these defense plants were located. Take, for instance, an ordnance plant employing several thousand people from, say, 1940 to 1955, 15 years. During that time, thousands of people were induced, by reason of the fact that they had good employment at good wages, to give up their farms and their businesses, and depend entirely on that work.

Mr. CLAGUE. Yes.

Chairman PATMAN. Well, at the end of the 15 years, maybe they are only 45 years of age or 50 years of age. They lose the job, and there is no place for them to go. They cannot go back to the farm because since under the farm program you have to have some sort of an allotment in order to grow crops that are sufficiently profitable to enable a person to earn a living for himself and his family, and he is unable to get that kind of an allotment.

There is no place for him to turn. It is a pitiful situation.

Have you actually gotten anything done in the last few years for these older workers, that you could point to?

Mr. SICILIANO. I think you cannot point to any one single thing and say, "This is what we have done." We have actually tried to do things in several areas.

For example, I mentioned in my prepared remarks that we have attempted to identify people in the various major employment offices throughout the United States who are charged with the responsibility for the counseling, the testing, and the placement of older workers.

Now, this is one step. It is an important step.

Chairman PATMAN. Have they reported to you any results? Have they reported to you results?

Mr. SICILIANO. Oh, yes. The placement figures for this older worker category are definitely on the upgrade. There is a very definite improvement and a very definite result in this area.

Chairman PATMAN. Of course, part of that is due to the fact they cannot get anybody else to do the job. You see old people working as elevator operators, you know, and jobs like that, where they cannot get anybody else to do the job.

Mr. SICILIANO. I am sure that is a factor. And, of course, the expanding economy, the employment picture, is a definite factor. Yes, sir; that is right.

Mr. CLAGUE. Mr. Chairman, I might add another point there. Many of these older workers are highly skilled, although generally speaking a high skill is so much in demand that a skilled man can get a job.

But among the semiskilled, there are many older workers. One of the complications is that the older worker is pretty much settled in the community where he is. You spoke about the 15 years. He has a home, he has bought property, he has a family. If the job is somewhere else, it is quite a problem to get him to move off a thousand miles away.

And we find that among the older workers, particularly, this problem is serious. Younger workers are glad, sometimes, to move to another part of the country. They want to see the world, the West or Texas or someplace else.

But these older workers are settled. They stay in these distressed communities, and you really have to bring the work to them.

One of the programs of the Department has been to try to get industry put into those communities.

Mr. SICILIANO. In other works, part of the job is not only with industry, but also with the individual himself, to condition his own attitudes to such a point that he might either seek to transfer his skill or learn a new skill.

But these habits do become fixed, and of older workers very often wish to stay in the exact locality they are in, and do exactly what they have been doing.

Chairman PATMAN. Yes, sir.

I think it is really to their credit. It is just one of the problems we cannot solve.

Mr. SICILIANO. It is a very serious problem, and we have to move in a number of ways.

Chairman PATMAN. Dr. Moore, do you wish to ask any questions?

Mr. MOORE. Mr. Siciliano, a strike at the Standard Motors in England—so bitter as to attract widespread attention in this country—was attributed to company plans for the installation of automatic machinery.

Are you aware of any important labor disputes or strikes in this country that have developed over the issue of advancing automation in plants?

Mr. SICILIANO. I am aware of no such strikes. I don't know of disputes that may not have reached the strike stage, although I would assume some of these adjustments might cause an occasional difference of opinion.

I would like to ask Mr. Greenberg, who is the Chief of the Productivity and Technological Development Division, if he knows of any.

Mr. GREENBERG. I don't know of any; certainly of no large-scale disputes such as that which occurred in England.

Of course, I am sure that as a general, day-by-day affair, there must be differences of opinion in plants when technological changes are introduced, but this has not been terribly serious. There has been something in the newspapers about a dispute over speedup, but I am not sure that this is really a technological change problem. That is

more in the nature of any day-by-day dispute which may occur within a firm.

Mr. MOORE. Well, apparently our labor in this country is rather more willing to accept these radical changes, or labor-management relations are better able to adapt to them than were Standard Motors and its employees.

Mr. SICILIANO. I would like to say that there is a complete willingness, so far as we have been able to see, of acceptance of technological change on the part of both labor and management.

The only emphasis we would make in the Department of Labor is that the human values must not be overlooked or underestimated, and that there should be consultation with workers.

Mr. MOORE. I have nothing further.

Chairman PATMAN. Dr. Ensley?

Mr. ENSLEY. Mr. Secretary, if you don't mind, I might address this question to Mr. Clague or Mr. Greenberg.

Mr. SICILIANO. I would be very happy for you to do so.

Mr. ENSLEY. If you look at current aggregate data, and make comparisons with a year or two ago, it seems to us that you come up with a tentative conclusion, at any rate, that output per man-hour in recent months or in the last year has been falling.

Would your information confirm this, or not? I would first of all like to get your reactions to that very tentative conclusion; and second, if there is something to it, your views as to why you have this below-normal increase in output per man-hour in recent months.

Mr. CLAGUE. I think I will have to answer that question in several parts.

In the first place, such figures as we have currently are very limited in character. We have the Federal Reserve Board index of production; we have our employment data in the Bureau of Labor Statistics. And the conclusions that you mention are those drawn by people who are putting these two sets of figures together.

Now, when more accurate data are available, when we have had time to gather the full picture of production in the United States in 1956, the results may be somewhat different than what they now show. Let me stress that first.

However, the general picture that you sketch is not an unusual one, and we find it in our productivity figures as we go back through the years.

You have to be very careful about drawing any conclusions on productivity from any short-time period, even 1 year; and of course for a quarter of a year or for a month, it sometimes becomes quite ridiculous to draw conclusions from what one finds in the figures.

Productivity is really an underlying relationship between output on the one hand, and people on the other, and it is most significant as a long-time trend.

Bearing that in mind, however, we do know this: In times of a business downturn, the volume of production falls off. Plants don't operate at capacity. Sometimes output falls more than they can cut the labor being used.

It is quite natural that the firm should hang onto its people. It doesn't want to let them go. So you sometimes get an adverse effect in a business downturn; I mean, what looks like a temporary adverse effect on productivity.

Conversely, when business turns up, like in the year 1955, the plant has its workers on the job. The plant gets new orders. Output expands. Then you can get a rather spectacular increase in productivity. The figures, in other words, look very good—output is high, with very little additional labor.

I did call attention to this last year when those 1955 tentative figures were issued. I expressed the opinion that those were due to the fact that it was a recovery year after a business downturn.

Now, when we reach a full employment year like 1956, when most all businesses are employed to capacity, they cannot ignore any longer the necessary repair labor, the servicing labor, and so forth. The firm has to take on more people, but the output does not expand proportionately.

So I would say, Mr. Ensley, the figures probably do picture the kind of thing we get in a business downturn, a recovery, and then a leveling off at the top, as we have had in 1956. So I suppose it is true that more labor has been employed this year per unit of output; that is to say, the increase has not been up to the normal rate of growth.

Mr. ENSLEY. Remembering this tremendous rate of capital investment of the last year—

Mr. CLAGUE. Yes.

Mr. ENSLEY (continuing). And that is currently going on, and current high levels of employment, would you venture or hazard a guess as to what, assuming this boom continues, the output per man-hour figures will look like for the next 6 months or so; in other words, extending your analysis of what has happened as we went into the slump in 1953 and 1954, the boom year coming out of the slump in 1955, and then leveling off with the result of a decline, perhaps, in the rate of output per man-hour in 1956, where would this type of analysis carry us into 1957, on the assumption that we are bringing in this new capacity that we have just built this year and currently putting into operation, and a continued reasonably full employment?

Mr. CLAGUE. Well, the two factors you mentioned are as follows:

First of all, we are at the peak, operating at almost full capacity; labor is scarce generally, in many areas and industries, and consequently we have the normal difficulties in attaining high productivity in a full employment economy.

Sometimes it is hard for the employer to get labor. Sometimes output is held up because of shortages of labor or of supplies.

Now, that kind of situation is still existing, and would, I think, continue into 1957.

The other side of it, as you mention, is the high capital investment of recent years, the enormous amount of new machinery and equipment being put in.

Our studies so far indicate that this is still in its early stages, as far as extensive labor displacement is concerned. You will notice that the overall productivity increases for the economy are not spectacular. They are not even as spectacular in manufacturing as they were in the 1920's.

This doesn't mean, however, that capital investment and automation is not taking hold. I, myself, feel that the enormous amount of capital investment that has taken place in recent years is bound to have some effect on productivity in the long run. Businessmen are foolish to put in this equipment if it is not going to save labor; and as it spreads, I think it will take effect.

You will recall that our study of an insurance company was based on the introduction of a new electronic computer. Already the company has added two more. This shows how mechanization moves faster as it develops. However, for industry as a whole I would not expect anything spectacular in the early part of 1957 or even in 1958.

Mr. ENSLEY. To what extent has the change in product mix, so to speak, during 1955 and 1956 and in, say, the outlook for 1957, affected the output per man-hour? You would say 1955, being a year notable for its consumer durable goods and automobiles and other items of high output per man-hour type, as against 1956, where automobiles were down and services and nondurables moved ahead—does that have or does that constitute a factor?

Mr. CLAGUE. Yes; that certainly does have an effect.

When there is an expansion of a high-productivity industry, let's call it, an industry where there is large capital investment per man and large output per man, like automobiles, there is no doubt about the fact when such an industry declines during a year, as compared with another industry like textiles, which has less capital per man and less output in dollars per man, there is a depressing effect on overall productivity figures. But this will be modified again when automobiles expand.

This factor is present, but I don't know that I could say what fraction of the change was due to this one as distinct from technical improvements within individual industries. I don't know whether Mr. Greenberg wants to add anything to that, or not.

Mr. GREENBERG. Mr. Ensley, we haven't looked specifically at the years 1955 and 1956 with regard to your question; but, based on our analysis of what has happened since the war in manufacturing and in the total economy, I would guess that industry shifts have not had a major influence on the productivity trend.

Generally speaking, even though significant changes may occur in the importance of industries, it takes a rather big change to affect the productivity trend.

Mr. ENSLEY. That is all, Mr. Chairman.

I am very interested in these productivity figures, these statistics of output per man-hour, which I think we have got to improve on in the years to come.

Chairman PATMAN. Mr. Siciliano, I would like to ask you a question or two, please, sir.

Mr. SICILIANO. Yes, sir.

Chairman PATMAN. You consider the economy is going along now on what you might consider an even keel, or going along evenly, or is it up or down?

Mr. SICILIANO. Well, I am not going to be able to give you an answer on that, Mr. Chairman. My own experience, though I am not an economist, would indicate that it is hard to ever say that anything is ever moving along on an even basis.

I don't think that, even when we are optimistic about the upward movement of the economy, we can be sure that it will continue on that basis.

So that all I can say is, I don't think the movement could be ever considered even; but it is perhaps a good movement.

Now, I don't know if Mr. Clague wants to add anything to that.

Chairman PATMAN. Would you call it good up or down?

Mr. SICILIANO. Normally, progress is up.

Chairman PATMAN. You would say it was moving up or down?

Mr. SICILIANO. I would say it is moving up.

Chairman PATMAN. Up.

Do you see anything in the high interest policy of the Federal Reserve System which is causing any unfavorable signs to appear?

Mr. SICILIANO. The Federal Reserve moving upward the interest rate, for example?

Chairman PATMAN. That is right.

Mr. SICILIANO. Well, obviously that has an effect on many of the small borrowers of money, and that would have a deterrent effect, I would assume, although I am not too sure that it would make borrowing any more difficult for them than it has been already.

Chairman PATMAN. Do you see any unfavorable signs by reason of this policy?

Mr. SICILIANO. Unfavorable signs to the borrower, for example?

Chairman PATMAN. Unfavorable signs in the economy, like small fellows closing up and putting people out of work.

Mr. SICILIANO. No, sir, I don't see—

Chairman PATMAN. You do not see any signs like that?

Mr. SICILIANO. I do not see any. There may be some, of course, some effect.

Chairman PATMAN. What about the home construction, the housing construction? It is down very low.

Mr. SICILIANO. Housing starts are down, although I understand that actually this current year will show that the total or the aggregate in volume of dollars will be the second greatest year on record, although the housing starts themselves are down.

That is possibly accounted for because of the—

Chairman PATMAN. Inflated price of material?

Mr. SICILIANO. Inflated prices, and the higher priced homes.

Chairman PATMAN. And other costs?

Mr. SICILIANO. Yes, and other costs.

Chairman PATMAN. Yes.

Let's see, do you see any effect on the disposable income of workers by reason of the high interest policy?

I refer particularly to this: As interest rates go up—it is possibly too early to see much difference now—you know, somebody must pay that increased cost. If interest goes up 1 percent, our total debts of the Nation are \$700 billion, a few billion more than that, including the national debt—now, we will always have those debts, and more, because our system cannot operate without debt.

When that interest charge goes up 1 percent, that means \$7 billion a year. Somebody must pay it. If you divide that \$7 billion by the 165 million-plus people, you will find that that is about \$40 per capita for every man, woman, and child, just that 1 percent increase on the debts of the country.

A family of 5—that is \$200 per year.

Now, whether they know it or not, they are paying that, they are doing it either through higher rents—because the landlord must pay the higher taxes and higher charges because of higher interest rates—or, if he is buying a home, he must pay it in the form of higher interest; or if he lives in the city he must pay higher taxes, and pay higher taxes to the State; because all the States, counties, cities, and political



subdivisions have to pay higher taxes, too, and that goes right down to the person paying the taxes. He has got to pay more.

And the automobile manufacturer must charge more, because interest is a part of the cost of doing business, and that is passed right on down to the consumer.

So, whether we know it or not, we have a hidden tax there of about \$7 billion a year additional with every 1 percent increase.

I don't suppose you have been able to detect any difference in that so far, to this extent, that the average person has so much less to spend by reason of that hidden tax or that extra interest that it is affecting his purchases of other goods, durable goods, for instance. You do not see any change in it so far, I don't suppose.

Mr. SICILIANO. I don't think I do. I would assume that there could be an effect here in terms of the purchase of consumer goods, but thus far it seems to be not deterred too much.

Chairman PATMAN. It is a little bit—it has not been going on long enough, probably, to just be able to see the difference. But, naturally, it is coming, because we cannot escape it.

Are you dealing satisfactorily, in your judgment, with the critical areas, the critical-unemployment areas, in the country? Or do you need new legislation or additional legislation?

Mr. SICILIANO. Mr. Chairman, I think that the administration is prepared to submit to this forthcoming Congress legislation which is designed to alleviate some of these persistent problems that have plagued these so-called critical areas of unemployment.

Chairman PATMAN. Chronic unemployment.

Mr. SICILIANO. Chronic, persistent areas of unemployed; yes, sir.

Chairman PATMAN. Do you feel that you have the weapons to deal with it now, the tools, or that you need additional power and authority and money?

Mr. SICILIANO. Yes, sir; that is right.

Chairman PATMAN. All right. Well, thank you, gentlemen, very much.

Mr. SICILIANO. Thank you.

Chairman PATMAN. Mr. Ruttenberg?

Mr. George Meany was to be the next witness this morning—president of the AFL-CIO—but Mr. Meany is unable to be here, and we have with us in his place, Mr. Stanley Ruttenberg, who is the economist for this group.

And I want to say, personally, Mr. Ruttenberg, that we shall look forward to your testimony. I know that you will give us some good ideas and suggestions.

**STATEMENT OF GEORGE MEANY, PRESIDENT, AFL-CIO, PRESENTED  
BY STANLEY H. RUTTENBERG, ECONOMIST, AFL-CIO**

Mr. RUTTENBERG. Thank you very much, Congressman Patman.

Might I just say at the outset that Mr. Meany is terribly sorry he could not be here this morning. He has asked me to read excerpts from his statement, which is to be submitted in his name.

What I have are really just excerpts from a longer statement which I should like leave to submit for the record next week, if I could.

Chairman PATMAN. It will be inserted as part of the record.

Mr. RUTTENBERG. Thank you.  
(The statement referred to is as follows:)

STATEMENT BY GEORGE MEANY, PRESIDENT, AFL-CIO, TO THE SUBCOMMITTEE ON ECONOMIC STABILIZATION, JOINT ECONOMIC COMMITTEE, ON AUTOMATION AND TECHNOLOGICAL CHANGE

I appreciate this opportunity to provide the committee with a few comments on the far-reaching technological advances that are taking place in American industry.

The committee is to be commended for devoting special attention once again this year to this critical problem.

Most of the people from whom the committee has heard, both in last year's and this year's hearings, have been either engineers who have been responsible for developing the new automatic equipment or businessmen who have had the responsibility for marketing or utilizing the new equipment. These are the individuals most qualified to explain the latest devices to the committee, and to give the committee a feeling of the future developments in this area.

I feel, however, there is some danger that from these witnesses the committee may be learning about only one aspect of this broad issue. Committee members may be learning a great deal about the new types of automatic equipment and about the vast new potentialities that are opened up by the development of these new machines.

Such a presentation almost inevitably leaves the listener with a feeling of awe and wonder. Under such circumstances, there is the danger that the committee will neglect some of the real impact problems that are inextricably bound up with adoption of the new automatic techniques. This committee should ask representatives of business corporations to indicate what their companies have done or intend to do in the way of introducing automation. They should be asked to discuss manpower and skill requirements, industrial migration, retraining, and collective-bargaining implications resulting from the impact of the installation of automatic equipment.

It is the duty and responsibility of organized labor to be very insistent in calling attention to the human element in automation. Questions of designing, installing and maintaining the new equipment are all problems which lend themselves to scientific treatment; they can be solved by the engineer. It is the human problems, the questions of adjustment to change, or preparation for new assignment, and of economic impact to society as a whole that cannot be solved in such a mechanical fashion but must be subject to the most imaginative thinking that all of us can give.

I cannot in this short presentation discuss in any detail the many human problems that will arise with the introduction of these new automatic machines. I would like, however, to focus attention on the following particular problems which I feel have received inadequate attention.

#### I. THE POSSIBILITY OF LARGE-SCALE SOCIAL DISLOCATIONS

The maintenance of high national levels of employment during the coming decade is an essential requirement if we are to achieve social and economic adjustments to the new technology, with a minimum of social disruption.

Declining markets and layoffs due to production cutbacks would only magnify and aggravate the many problems that accompany radical technological change. We must do all in our power to avoid such a situation.

A rapid introduction of automation equipment and production processes in the next 5 to 10 years may produce large-scale layoffs and unemployment, unless markets grow fast enough and working hours are reduced. Even if we are sufficiently wise and fortunate to avoid widespread layoffs, there is the possibility that the economy may not produce enough new jobs, in the transition to the new technology, to provide employment opportunities for a growing labor force. Many companies have boasted of adjusting their work forces to the new production processes, without layoffs, but without hiring new employees.

The Nation is now entering a period in which the labor force will be growing more rapidly than in the past. The high birth rate since 1939 is increasing the number of young people entering the labor market. The labor force, which increased by an average of about 700,000 a year, between 1950 and 1955, is now growing at an average annual rate of about 900,000, between 1955 and 1960. According to the Census Bureau, the yearly rise in the labor force, between 1960 and 1965, will be about 1,200,000. Will there be job opportunities for such

a rapidly growing labor force in this coming period, when the new technology spreads through the economy?

To maintain high levels of employment in a period of technological change and a rapidly growing labor force will require intelligent action by private groups and government. Expanding consumer markets will be needed—requiring adequate wage and fringe-benefit improvements, reductions in hours of work, and a relatively stable price level. The Government's fiscal and monetary policies must be sensitively geared to the requirements of full employment, and in the event of a general economic downturn, the Government must be prepared to act, without delay, to forestall the spread of unemployment.

By maintaining high national levels of employment, we will be able to provide a general environment in which the problems that accompany radical technological change can be more readily solved. The development of dangerous, large-scale social dislocations can be avoided by maintaining the general health of our national economy.

The maintenance of high national levels of employment in this period of widespread changes in production processes should be considered a No. 1 objective of domestic economic and social policy. But even if high national employment levels are maintained, there will be scores of other problems that we will have to deal with, a vast multitude of adjustments that will be required.

## II. MIGRATION OF INDUSTRY

The requirements of the new types of automatic equipment are such, according to various engineers, that it will be cheaper in many cases—if not most of them—to build entirely new automated plants in new locations, rather than to rebuild old plants. Furthermore, since automation may mean substantial changes in cost relationships—labor costs become a smaller part of the cost of production, for example—the shifts in plant location may well be from one State or region to another. The construction of a newly automatic factory in one locality could thus create dislocations in other communities if it forced the shutdown of older factories and idled workers in other localities.

Thus, we are faced with this critical question:

To what extent will these improvements in technology speed up the trend toward the migration of industry leaving older established communities without sufficient job opportunities for their residents?

We have seen the devastation that has been caused in the textile industry by the wholesale migration of plants from the New England to the southern part of the country. In large measure the motivation behind this mass movement of industry has its roots in problems of machinery and new equipment. The mills in New England with their older equipment and inefficient plant layout were admittedly becoming obsolete, with the result that tremendous savings could be made by establishing a new plant in a new location. At the same time, the South offered special subsidies to migrating plants as well as a generally lower level of wages and a climate of opinion more hostile to unions.

The resulting movement of the textile industry has produced very difficult problems in New England where the costs of this migration have had to be borne by the local townspeople in Lawrence, Lowell, and other textile centers throughout the area. There are already indications that automated factories have been built in new areas away from older plants. This results in loss of employment in the older areas, with expanded employment opportunities in the newer ones. How extensive this is is not fully known. But this committee could well look into the problem of whether we are now likely to create new distressed areas because the urge for automatic equipment provides special incentives for industry to build new plants in new locations. This committee, too, should examine the needs of distressed communities and establish the basis for a long overdue program of Federal Government assistance for communities of chronic economic distress.

## III. TRAINING

Organized labor welcomes the new advances in technology. We want to see the new equipment introduced as promptly as possible so that we and our heirs can receive the benefits of the lowered operating costs and higher productivity.

At the same time, we insist that all of us—labor, management, and the public—plan ahead for any problems that might develop in introducing this new equipment. In particular, we think it is important from the point of view of the entire economy that any displacement of workers be kept to the irreducible minimum.

In this connection; special problems of training are bound to arise. Workers whose jobs will be eliminated by installing the new equipment must be the first to be considered for work on the new equipment. Many of them will be mature people to whom learning new skills may not come easily. They must be given full opportunity, at company expense, to acquire new skills. It will require the best brains of labor, management and vocational training specialists to develop new types of training programs for these workers so that they can make their maximum contribution to their new jobs.

This will not be an easy task. In some cases it may seem impossible to adapt the worker who has been used to a semiskilled assembly-line job to become an integral part of one of the newer-type electronic machines. However, we are confident that if we start now to work on this problem, there is no reason why it cannot be solved.

Part of this retraining effort will have to be worked out by unions and management. But cooperation and assistance will be required from Federal, State, and local governments to provide vocational training facilities and instructors, wherever needed, and improvements in the unemployment insurance system to provide compensation for employees, if they are not receiving their pay during the retraining period.

#### IV. ADJUSTMENTS IN COLLECTIVE BARGAINING

A host of other problems are bound to arise involving the particular plant or company introducing the new equipment. New job titles and new wage rates will have to be negotiated for the new jobs on the basis of new skill requirements, new responsibilities, and added output. Some workers will probably be downgraded in the process of change—will they retain their old wage rates? Existing job evaluation plans will probably have to be discarded.

Work on the new automated jobs will not lend itself to a wage incentive system, existing incentive programs will have to give way to straight-time rates or another wage system particularly geared to the new jobs.

In some cases revisions of the wage structure of the entire plant or office will be required as a result of the changes for automated jobs. Special efforts will have to be made to provide continuing employment for older workers who find it difficult to adjust to the new production techniques.

The entire question of seniority, promotions, and transfers will have to be carefully reviewed in collective bargaining. Clearly the shifts in production processes brought out by the new machines may force revisions in the plant's job structure, promotion ladder, and transfer arrangements.

Collective bargaining provides the mechanism for working out the complicated details of these adjustments. This mechanism will be able to perform its function, only if the parties bargain in good faith.

Joint consultation between labor and management, in advance of the installation of new equipment, is required to develop the necessary adjustments affecting workers due to radical changes in machines, production processes, and work flow. Companies usually plan technological changes long in advance—1, 2, or 3 years before they become effective. Management carefully plans and revises the financial and cost aspects of such changes. It would be well for managements to consult unions long before the new production processes are placed into operation—to work out the required shifts in the work force, the changes in jobs and skill requirements, the necessary retraining of workers. Only through such advance consultation and planning can orderly procedures be developed to achieve equitable adjustments in the factories, offices, and other places of work.

These are but a few of the specific issues that are bound to arise as the new automatic machinery takes its place in modern industry.

Labor is raising these issues because we feel that they require thinking and planning in advance of the actual installation of the equipment. We do not know at the present time how serious these problems may become. It may well be that the questions we are raising will prove only a minor irritation in the process of adopting the new techniques. Certainly that is our hope. However, unless these questions are discussed fully and frankly in public and at the bargaining table, there is a real danger that misunderstandings or difficulties may arise.

What is the role of the Government in meeting these problems? We are not here to ask the Government to solve these questions for us or for American management. We do think that because of the far-reaching implications of the new automatic equipment, the government has a responsibility:

1. It should collect and publish relevant information on current technological developments regarding the new types of automatic equipment.

2. It should conduct studies drawing on the experience already obtained in industry that would prove helpful to labor and management in planning the introduction of the new equipment.

3. It should provide Government agencies with adequate funds for case studies concerning the social and economic effects of automation and the extent to which the new production processes are spreading in various parts of the economy.

4. It should encourage and stimulate universities and private research groups to study the social and economic implications of the new technology.

In addition, of course, we urge this committee to continue its very real interest in these problems, reviewing the latest technological developments, bringing to light possible problems, and where necessary prodding the Government to undertake programs that will help to minimize social and economic disruptions.

#### NO AUTOMATIC ADJUSTMENTS

Let me add that I am not pessimistic about the ability of American society to adjust to the new technology. Neither do I believe, however, that the adjustments will be automatic.

There is no machine, automatic or otherwise, that can produce customers for an expanding economy. Nor are there self-correcting machines that will automatically provide jobs for a growing labor force. And there is no mechanical device that will automatically train a technically skilled work force or spread the benefits of automation to all groups in society.

It is not characteristic of the trade-union movement to sit back and let the future take care of itself. If the adjustments are to be made, they will take foresight, planning, and cooperation between business, labor, and Government.

I have no doubt that automation's promise of improvements in national strength, living conditions, and in leisure will, in the long run, be achieved. These long-run achievements, however, will require the efforts of all groups in American society to ease the process of human adjustments to the new production techniques.

Mr. RUTTENBERG. That concludes the formal statement of Mr. Meany.

Chairman PATMAN. I want to ask you, do you see any unfavorable signs in the economy at this time?

Mr. RUTTENBERG. Do I see any unfavorable signs in the economy at this time?

Chairman PATMAN. Yes, sir.

Mr. RUTTENBERG. Well, I do, Congressman Patman. I am particularly concerned about what is happening in the housing market with home construction declining, new housing starts on the decline. We are even running now, I think, currently at an annual rate of less than a million starts a year.

Chairman PATMAN. Don't you think we should build up around 2 million houses a year in order to take care of the market properly?

Mr. RUTTENBERG. I can't agree with you more fully, Mr. Patman. We as an organization have strongly advocated that there is a need now for at least 2 million new homes a year, and that these ought to be built, and as we look into the next 4 or 5 years, there will be need for even more than 2 million homes a year to meet the new family formations that are occurring in American life, and it is unfortunate that various developments are now retarding the housing market. I think that is an important area.

Chairman PATMAN. It is principally the tight money, the hard-money, high-interest policy, isn't it, Mr. Ruttenberg, that you are talking about?

Mr. RUTTENBERG. Again I must agree with you, Mr. Patman. I really think that the interest-rate question of moving interest-rate structure now to where it takes to get an FHA loan  $5\frac{1}{2}$  percent, in-

cluding a half percent insurance, as against 4½ percent a year ago, more than a year ago, and 5 percent within the last year or so, is a very unfavorable sign.

I think VA loans are now almost not available because——

Chairman PATMAN. That is right.

Mr. RUTTENBERG. It takes legal change by the Congress to up these rates. But upping the rate is not going to solve this problem.

Chairman PATMAN. May I suggest there is something else there that is a deterrent. They must give additional amounts in the form of discounts, and if the buyer can't pay it, the seller must pay it. It is going on all over the country. It is disgraceful. It ought not to be permitted in a civilized country, it is terrible, 10, 12, 14 percent in addition to all these others, high interest and everything else.

We had a provision in the law against that. It is a form of racketeering, that is what it is, and we wrote a provision in the law against it a few years ago.

And in some way or somehow, there was a provision in the law in 1954 that repealed it outright.

Do you know about that?

Mr. RUTTENBERG. No; I do not.

Chairman PATMAN. I don't think Members of Congress realized it. You know that is one thing that I have a criticism of Congress about, that Congressmen are not equipped to do their jobs, things go through that they don't even know about.

I don't think that would have ever been allowed to go through, if Members had known about it generally. But they don't have administrative assistants to go around to the different committees and keep up with the different bills and keep their Members fully informed.

They are just not equipped to do it. They don't have the time themselves to do it.

I am not criticizing the Members, the hard-working Members, and I served with 3,000 Members of the House since I have been a Member of it, and I don't believe you could find finer or better or any more conscientious or harder working people in the world than the people who serve in Congress. But they are just not equipped to do the job.

And I think there is an outstanding example of permitting a provision to go through and become a part of the law to repeal that provision which really stopped the racketeering against the veterans in housing a few years ago. But that went through in 1954.

Pardon my interruption. I wish you would go ahead with your statement.

Mr. RUTTENBERG. Well, there is another area of the economy that is disturbing, I think, and that is one which you were previously discussing with Secretary Siciliano a moment ago, and that is distressed areas.

It in part is implicit in some of the testimony of Mr. Meany here today.

It seems to me it is an interesting and probably sad commentary upon the American economy in which we have relatively, and I say relatively advisedly, full employment, where we are running in the neighborhood of currently about 2½ million unemployed, where we are down to almost a minimum, although I think the unemployment ought to be lower than that, but generally speaking where we have relatively few unemployment that we still have, I think by the latest

count, something like 15 major labor-market areas, and something between 45 and 50, if I am not mistaken, of minor labor-market areas in which unemployment is today in excess of 6 percent of the labor force.

Chairman PATMAN. Are they the chronic areas?

Mr. RUTTENBERG. These are mostly chronic areas of unemployment, and, of course, over the period of the last 2 years, the number of areas were even greater, they have declined in the past year, there is no question about that, and they tend to get down now to those that are more chronic as against those that periodically move in and out of the so-called distressed areas, and this is a segment of the economy that needs to be taken care of, and I think needs some attention by the Congress of the United States.

And I should hope that they would begin consideration once again of the bill which passed the Senate in the closing days of the last session, and came to the House, and almost got through, but not quite, as a result of the Rules Committee bottling the bill up. This is one area.

Another area which disturbs me, as I look at the economy with a long-run gage of more than just the new few months, is the relationship between the expenditures in the national economy for new plant and equipment or business expenditures on the one hand and consumer expenditures on the other.

The proportion of gross national product or national income going to business investment is going up. The proportion going to consumer expenditures is declining, and I think this is creating a distortion in the economy, that could prove to be a difficult economic problem, a difficult problem for economic adjustment as we look into the future.

I think this has to be handled in some way, particularly because—and here I don't want to get into a technical problem—but because I think there is now developing a greater productivity of capital than we have ever had before in our economy, whereby for each additional dollar of capital invested there is a larger output per product coming from that dollar of invested capital, and this, if true, and I think the figures now developed by various research organizations, particularly the National Bureau of Economic Research in recent studies and others shows this to be a fact, or at least developing it as a fact.

If this is true, then we are exaggerating the relationship between capital and business investments on the one hand and consumer investments on the other even more, by the large-scale business investments that have taken place during the last year, and will by current reports continue into next year.

I could go on and list a few other areas.

Chairman PATMAN. That is all right.

Would you like to ask any questions, Dr. Moore?

Mr. MOORE. Mr. Ruttenberg, you were in the room when I asked Mr. Siciliano, or referred to the Standard Motors strike in England?

Mr. RUTTENBERG. Yes.

Mr. MOORE. Are you aware of any important labor disputes or strikes in this country that have arisen with the automation being a primary issue at all?

Mr. RUTTENBERG. I am not aware of any serious strikes that have occurred as the result of protests against the installation of new machinery such as the strike in England was.

You do, of course, have strike situations in grievances developing that probably do not get to strikes where the unions are terribly concerned about this other area, the third area that I discussed in the paper here, how you handle the collective-bargaining problem of adjusting wage scales or adjusting incentive system to a totally new approach to the problem of mass production.

So this creates internal problems. But I think I ought to say quite clearly and I think quite unequivocally on behalf of the labor movement, that there is no opposition on the part of organized labor to advances in technology in the American economy.

You will find, of course, certain fringe situations here and there where local groups tend to object, but the basic position of the American trade-union movement is quite sound in this connection and it differs considerably from that of the economics of Europe and England in the fact that they strongly support new developments in the field of automation and technology.

We say only that in these developments the benefits resulting from them must be shared equally by the workers and the consumers and the corporations installing the equipment.

Mr. MOORE. That is all. Thank you.

Chairman PATMAN. Dr. Ensley, would you like to ask any questions?

Mr. ENSLEY. One question.

Mr. RUTTENBERG, you heard the question I asked Mr. Clague with respect to recent trends in output per man-hour. Do you have any observation you would like to make on that?

Mr. RUTTENBERG. Well, only to lend support to what Dr. Clague said, that I think the data available so far for 1956 on which certain tentative conclusions seem to be or are being drawn, is not sufficient really to draw any real sound conclusion, and I think that while there may have been a temporary lag in productivity advances in 1956, and I don't thoroughly agree with that as a concept, but even if there was just this temporary lag, I think the whole notion of the billions of dollars that are being spent on new plant and equipment now, carry into the future the concept of substantial advances in productivity.

I agree with Dr. Clague that business and corporations in this country would not be investing such money unless it was for the purpose of reducing costs.

Mr. ENSLEY. That is the only question I have.

Mr. Chairman, in light of your earlier questions with respect to the problems of the aging, I just this moment received an interesting statement by Chairman Seymour Harris of the department of economics of Harvard, a statement on economic problems of the aging for the New York Legislative Joint Committee on the Aging, which he presented December 11, and with your permission if it might go into the record.

Chairman PATMAN. It may be inserted in the record.

(The statement referred to follows:)

STATEMENT ON ECONOMIC PROBLEMS OF THE AGING FOR THE NEW YORK LEGISLATIVE JOINT COMMITTEE ON THE AGING HEARINGS, NEW YORK CITY, DECEMBER 11, 1956

By Seymour E. Harris, Chairman, Department of Economics, Harvard University

#### I. THE PROBLEM

By the old I mean those aged 65 and over. Those 55 to 65 face problems similar to those of the aged but in a less intense degree.



The problem is that the old, increasing relatively twice as rapidly as the rest of the population, numbering 3 million in 1900, 13 million today, and an estimated 21 million in 1975, are confronted with inadequate and uncertain income. They are not sharing in the prosperity nearly to the extent of the whole population.

Their savings are disproportionately small; their numbers on relief rolls, 6 times their proportion of the population; their income, on the average, one-half of the Nation's average; their state of health below average as suggested by the fact that two-thirds of the aged beneficiaries under the old-age and survivors insurance program (OASI) suffer from chronic diseases; their days in the hospitals about 3 times those of the whole population and yet only 15 percent covered by hospitalization insurance; their housing and institutional facilities far below need; their access to jobs blocked by ignorance and lack of flexibility of management; and the contributions of the Government, though greatly increased in 20 years, still inadequate.

#### *Allocations of resources*

The problem is largely one of allocation of resources and financing. Annual outlays on highways are likely to approach \$10 billion yearly in the next decade. Yet Government makes but \$7 billion, exclusive of insurance, available for the old, inclusive of veterans. The amount provided is less than 2 percent of the Nation's gross national product of \$415 billion.

#### *Cost in relation to income*

The costs of an adequate program should be put against the income not of today but of tomorrow. In a thorough study, the Twentieth Century Fund showed that if 5 to 6 percent of the gross national product of 1980 were available for the old (inclusive of their own contributions), then each retired worker and his family would have an income of \$200 per month. Then 9 percent of the population would receive 6 percent of the Nation's income. This compares with an average income of somewhat less than \$200 per month per employed old today, of \$62 per retired worker under OASI, and of \$55 under old-age assistance (OAA).

In his statement *Where Does the Money Come From*, Governor Stevenson estimated that with a rise of income of the old population from 50 percent, the current rate, to 75 percent of the average of all incomes, the additional cost would be \$4.3 billion per year; the additional gains of the old, \$800 per family. Since an improved hiring policy would absorb part of the cost, the net addition to the Government of this proposal would be about \$3 billion, or less than 2 percent of the expected rise of the national product in the next 10 years.

#### *The lags of incomes of the aged*

Perhaps one of the toughest problems is the effects of the steady rise of income upon the economic status of the old, the rise in part reflecting inflation, in part increased productivity. Insofar as past accumulation provides the income of the old, this is a serious problem. Today insurance provides about one-quarter; in the future its relative contribution is likely to rise. In 1955, the face value of survivors' life insurance alone under OASI was \$339 billion.

But the average old man or woman accumulates these credits over a period of 40 years, the mid-year point being 20 years before retirement and about 27 years before the mid-year of the retirement period. In a period of 27 years, average incomes double aside from inflation. In addition, inflationary pressures are great. Hence the retired receive much less than they bargained for in dollars of stable purchasing power and even more so relative to the income of the active members of the population.

From past experience we draw the conclusion that the old, dependent primarily on savings, inclusive of pensions and annuities, will be confronted in retirement years not with the income anticipated at the time of accumulation but perhaps one-half as much, and vis-a-vis the income of the active population, their income at time of retirement, to the extent it is based on past accumulation, will be substantially less than one-half, and might even fall to one-quarter of anticipated amounts.

## II. SOLUTIONS

#### *Full employment*

Continued full employment lightens the burden on the economy of supporting the old. Hence the need of full-employment policies. In 1949, a recession year, unemployment of those aged 65 and over was 4.6 percent; in 1953, a prosperous year, 1.9 percent.

*Stability in the purchasing power of the dollar*

Perhaps no group is injured as much as the old by inflation. First, because they are dependent on savings, inclusive of insurance, pensions, and annuities. Second, because large numbers are off the labor market and hence, unlike members of the labor market, they are unable to adjust income as prices rise. Third, because their income is low relative to all income. The Government should, for this reason and others, pursue a vigorous anti-inflation policy.

*Improved medicine*

Since the old require much more medicine than the active population and since they are disproportionately excluded from medical insurance, medical aid is imperative. Outlays on medicine are an economical approach, since the payments are made only to those in need of this kind of help. Here are some alternatives:

Encouragement of private voluntary comprehensive insurance for the whole population and coverage of insurance fees of the old under OASI and old-age assistance.

Discouragement, by legislation or otherwise, of the increasingly popular practice by insurance companies and even by nonprofit associations (e. g., Blue Cross) of insuring only the best risks and, therefore, endangering genuine comprehensive insurance which should cover all risks on the insurance principle. With 3 out of 5 aged suffering from chronic diseases and but 15 percent covered even by hospitalization insurance, this is indeed an important area of exploration; for it is especially the old, who are not good risks, that are excluded from insurance.

*Housing*

Related is the procuring of nursing homes and other housing especially suited for the old. A beginning has been made in providing nursing homes under the Federal hospital construction legislation. Much more should be done here and also in providing special financial facilities for the building of home to serve the old—e. g., a home that provides common medical facilities (but much less elaborate than hospitals), recreational, dining, and service facilities.

*Institutional care*

One of the most perplexing problems is the provision of adequate institutional care. This is especially important for the very old. In 1900 public institutions provided for 47,000 aged; in 1950, only 60,000. The provision from private sources rose from 18,000 to 157,000 (largely nursing homes) and of mental hospitals from 13,000 to 141,000. But even today all these institutions can provide for but 2 to 3 percent of the old.

*Private pension funds*

These now cover from 12 to 15 million workers and may ultimately cover twice as many. The effectiveness and contributions of these plans will be greatly increased if, as recommended by the Senate Labor Committee, the managers were required to register and make full disclosures.

*Liberalization of benefits under Government programs*

Average payments under OASI are inadequate, even granting that they will rise as is provided under present legislation. On the basis of past experience, the growth of income and inflation are most likely to make anticipated benefits inadequate. Hence we need a built-in escalator clause which should raise benefits not only as prices rise but even to some extent as per capita incomes rise. We do not want a repetition of the experience in the 1940's, when retired workers received two-thirds as much in 1949 as the grossly inadequate benefits of 1940 in dollars of stable purchasing power, even as factory wages rose by 25 percent in stable purchasing power—or a relative loss for the retired workers of almost one-half.

*Increased jobs*

Above all, the old want jobs. They should have them. In an overemployed economy the case is stronger than ever. We need more workers. The old want to work, as is evident from the fact that a large proportion of those eligible for OASI stay on the labor market; as is evident in the average age of 68½ (instead of 66) at which beneficiaries first obtain benefits.

As a result of the increase in life expectancy and other factors, the average worker now voluntarily or involuntarily spends about twice as many years relatively in retirement as 50 years ago.

Through State legislation (as in Massachusetts), through cooperation of business (tapering off of older workers, adjustment of jobs to advancing years, nondiscrimination against old), and through Federal measures (e. g., reducing the penalty under OASI for annuitants who work), it is possible to increase the contribution of the old to their own support. It is well to remember that policies appropriate in a great depression are not the ones to support in prosperity.

#### *Integration of programs*

A dollar contributed by Government might become a more potent dollar with improved integration of the various programs. For example, the administration of veterans' benefits (Veterans' Administration), of OASI, and of OAA (old-age assistance) should integrate their programs. Duplication of benefits is not unknown.

Excessive allocations to aged veterans may be costly to other aged. There are some issues of justice and distribution involved here. As we approach universal service, the distinction between veteran and nonveteran becomes blurred. The Bradley Commission on Veterans' Benefits in the United States was eloquent on this point. Our obligations are already substantial (pp. 112-113).

"The Commission's projects indicate that under existing laws the cost of veterans' benefits to our World War I, World War II, and Korean conflict veterans for the past and the future will total \$371 billion. Of this, 52 percent would be for non-service-connected pensions, 21 percent for service-connected compensation payments, and 27 percent for medical, readjustment, bonus, and other benefits. Of the total of \$371 billion, \$306 billion yet remains to be paid.

"Assuming the enactment of service-pension legislation in the future, the aggregate disbursements for veterans' benefits, past and present, for these 3 wars would be \$762 billion. Of this sum, 77 percent would go to non-service-connected pensions.

"\* \* \* the \$306 billion of veterans' benefits outlays yet to be made would have a present value of \$140 billion. If the service pension is assumed, the present value would be \$290 billion."

#### CONCLUSIONS

Finally, let me say, how much we can afford for the old depends upon our national product, the drains on the economy of the military and other essential programs, such as education, highways, health, development of resources. There must be proportions among these programs. The more the old contribute on their own, the less the subsidies required. The less the inflation, the less the burden on the taxpayer. The more that can be put upon insurance programs, the less the cost to taxpayer. Of this I am sure: Today, given our rising income, we can afford to assure the old an income three-quarters of the national average, an amount which would roughly take care of their needs and certainly not bankrupt the Nation.

Chairman PATMAN. I would like to make one observation, Mr. Ruttenberg.

You mentioned about expenditures for new plant equipment going up and up and up, and about expenditures, consumer expenditures going down.

Now, that is a serious problem, I think; and I think it is being greatly aggravated by high interest.

Do you have one of the economic indicators here, the last ones, November? Do you have a November indicator, Mr. Moore?

You take, for instance—let me have the reference to personal interest income.

It is personal interest income—we will take for instance, in 1954 it was \$10 billion. Even in 2 years, here in 1956—I had it wrong—it was \$14,900 million in 1954, personal interest income, whereas just 2 years later, hardly 2 years have expired, September 1956, the personal interest income has increased until it is at the rate of \$17,700 million, in other words, almost \$3 billion a year increase right there, and that partly because of higher interest, of course.

And you know, Mr. Ruttenberg, as people have to pay more and more in interest and servicing the debt, why they will just obviously

have less to spend for durable goods and for comforts and conveniences of life.

That is inescapable. And I think it is a serious problem right now that the plant and equipment expenditures are going up at such a rapid rate and the consumer expenditures are leveling off.

I think it is something that we must watch carefully. I am glad you brought it to our attention.

Mr. RUTTENBERG. I think it is the fringe person, as it is the fringe company.

Chairman PATMAN. Yes, sir.

Mr. RUTTENBERG. That really is hurt by the rise in interest rates, and this is the unfortunate thing which occurs as we follow a tight money policy, that we allocate the resources, the loan resources of the country through the banking structure, and as a result it is only the best risks which get the loans, it is only those companies or those individuals who can afford to pay the higher interest rate who get them.

And the facts really show that the higher interest rate policy has not materially curtailed expenditures either on the consumer or the business side, but it has discriminated internally between the types of borrowers, and this is a very serious aspect of the tight money policy.

Chairman PATMAN. In other words, the bankers become the rationers of credit?

Mr. RUTTENBERG. That is right.

Chairman PATMAN. It is another OPA but it is handled by the bankers.

Mr. RUTTENBERG. Well, we talk about being against controls and having an indirect system of taking care of the economy, but actually we do have a system of controls but instead of being carried on by the Government they are being carried on by the banking institutions.

Chairman PATMAN. That is right. No question about that.

Now, of course, there is a reason why these expenditures are going up for plant and equipment. The large concerns are able to fix their own prices, and even when the excess-profits tax was repealed, although Members of Congress were told and the people of the country were told that that would cause a lowering of prices, it didn't cause any prices to go down.

We were told that if we took off controls the free market, competitive market would cause prices to go down, but prices did not go down.

And by reason of these high prices, and I can see why a lot of the manufacturing concerns were not anxious to lower prices, and looking at it from their side, why they have a lot on their side.

They have been caught before, you know, with frozen prices down low, and the atmosphere was favorable for emergencies all the time, and they didn't know when another emergency might come along, and they didn't want to reduce their prices and have their prices frozen low. I can see their point.

Nevertheless, prices remained high, and in remaining high, they have been able to collect enough from the public not only to pay all their expenses and everything in connection with their operations and to pay liberal, generous dividends, but to set aside in retained earnings generous amounts.

In other words, these excess earnings to the extent that they are excessive earnings, I don't claim that all retained earnings are excessive,

but those that are excessive, are there because the people have paid higher prices to make it possible.

So in that way they are getting their capital for plant and equipment expenditures from prices, higher prices. They have taken it from the consumers. Instead of the concern going into the free market and selling stock in the concern, and letting these people buy stock and become a part of the private enterprise system or buy bonds of the company or debentures, this is an involuntary investment.

Mr. RUTTENBERG. I like to call that, Congressman Patman, costless capital.

Chairman PATMAN. That is a good name for it. That is what I have called it over the years. I think it is just that, costless capital, because it is costing nothing, it is taken from the consumer. I mean, the person who bought the goods, of course, the consumer. It has been going on all the time and going on right now.

Well, you take that kind of earnings, retained earnings and depreciation allowance account for about two-thirds of the expenditures for plant and equipment.

You know that is pretty large. Out of 35 to 40 billion dollars a year, two-thirds of it is coming from those two sources, and therefore, they are not retarded the least by this high interest policy.

They can go into the banks because large concerns are naturally affiliated with large financial institutions, and they can get loans, short term from the banks, and they can anticipate a rise in interest, and they will go in in advance and get their funds a year ahead, and that makes it harder on the little people who are scrambling to get the necessary funds to stay alive, to stay in business.

So that hard money policy is hitting us terribly right there, and I think it is devastating to our economy at this time, and I think you point out mighty well just exactly what the score is when you said that while new plant and the expenditures are going up, consumer expenditures are not.

Mr. RUTTENBERG. I would just like to make one comment in connection with this.

Chairman PATMAN. Yes, you may.

Mr. RUTTENBERG. Actually the tight money policy in moving interest rates up tends to create a situation in the equity market whereby less interest is shown in securing funds from equity because the dividend payments or the return or yield on the equity stock is getting to be in many instances less than the yield that can be gotten from bonds, and, therefore, people are not—are moving out of the equity market, corporations have not really moved into the equity market, so that it tends to even discourage those few who want to go into the equity market from even going there for sources of funds.

I do agree with you fully, and the steel industry is the very best example. They have publicly said within the past year, one executive after another, with the exception of the officials of the United States Steel, and they have taken a slightly different tack, but the officials of most of the big steel corporations have said they intend to raise their prices in order to increase their profit so that they will have enough retained earnings to finance the cost of doing business.

I think this is a serious, most serious, development in the economy and runs contrary to the concept of most conservative economists, sir.

Chairman PATMAN. I thought that was wholly bold and brazen

when I saw it in print, people admitting that they are raising prices for the purpose of getting more expansion capital.

Not only the steel companies but others admitted it which, in effect, is saying, "We are going to make the consumers pay more than they should really pay for the products they are buying in order to have excessive retained earnings so that we can use those earnings to put into plant and equipment expenditures."

In other words, they will get the profits from what is made by reason of those expenditures, and the person who made that involuntary investment will get nothing.

So that is destructive to the private enterprise system, isn't it, Mr. Ruttenberg?

Mr. RUTTENBERG. I should think so.

Chairman PATMAN. It is not going in the direction of private enterprise.

Mr. RUTTENBERG. I think further the concept of retained earnings for expansion is a monopolistic practice because it tends to keep the same number of shareholders participating in a greater value per share of stock by the retained earnings, rather than to go into the public and enlarging their holdings, and enlarging the number of individuals who are participants in the corporation through the equity market.

It does just the opposite. And I think in a big corporation it tends to be a monopolistic practice.

Chairman PATMAN. Thank you very much, Mr. Ruttenberg.

Before closing, there are two matters which I believe ought to be put into the printed record of these hearings.

One is a letter from the Washington Plate Printers Union in response to our request as to the outcome of the consequences of the case of technological displacement which was brought to our attention last year. I am afraid the record is not a very happy one, but serves to bring forcibly to the attention of the Congress and everyone else the severe personal hardships and dislocations which follow forced reductions. I would like to remind all of those interested that, in its report last year, this subcommittee suggested that Government itself try to be a model employer in this respect, and urged that the executive departments and agencies while seeking economy and efficiency ought also to keep a special watch over the personal problems occasioned by displacement of this sort.

The other item for inclusion is a letter from Mr. Robert T. Sheen of the Milton Roy Co., describing a feature of his company's pension and retirement system which he believes to be extremely helpful and might serve as a pattern for others in minimizing the employment discriminations against older workers because of pension considerations.

(The letters referred to are as follows:)

WASHINGTON PLATE PRINTERS UNION,  
Washington, D. C., December 15, 1956.

HON. WRIGHT PATMAN,

Chairman, Subcommittee on Economic Stabilization.

DEAR CONGRESSMAN: Referring to previous correspondence which you will find in the hearings of October 14 to 28, 1955, in which we reported on the case of craftsmen in the Bureau of Engraving and Printing, of whom over 80 had been reduced in force because of technological advancements and increased production, we would like to report, after 1 year, on the present economic status of the last

48 plate printers who were reduced in force or otherwise downgraded on October 31, 1956.

Primarily, I believe that you should know that plate printers are paid a comparatively high hourly rate because of their unique skills and training: (\$3.86 per hour or approximately \$8,000 per year). Of these 48 plate printers only 3 could find a market for their skills in private industry, 4 elected to take reduced retirements, 25 still are working in the Bureau in downgraded positions, specifically, 1 as a carpenter (\$6,240 per year), 13 have GS-3 guard jobs (\$3,685 per year), 7 have level 3 unskilled labor jobs (\$3,328 per year), 1 has a GS-5 clerical position (\$4,480 per year), 3 have semiskilled positions (about \$4,000 per year). Of the others not in the Bureau of Engraving, 2 have transferred to other Government agencies, salaries unknown, 4 are working at various printing jobs in private industry, 1 is an automobile salesman, 1 is an insurance agent, and the others have left Washington, D. C., and their present economic status is unknown.

It can easily be seen from the survey made by our union that in this case the economic setback for these displaced personnel was not temporary, and it seems unlikely that any or very few of these highly skilled craftsmen who have lost their jobs because of new machinery and technological improvements will ever again regain their former economic status.

The Bureau of Engraving and Printing is at this time planning to buy presses from a foreign manufacturer, that could conceivably replace 75 percent of the remaining personnel in the plate printing or currency division and would adversely affect all other auxiliary personnel in the Bureau.

Although the Director of the Bureaus, Mr. Holtzclaw, has made observations to employee representatives that these presses could be introduced with very little impact on personnel, both craft and noncraft, we can only look back to 1952 when these same observations were made to us.

Our union is of the opinion that more than oral promises, no matter how well intentioned, are necessary to protect the jobs of all employees, both in Government and private industry, who may be replaced and their economic status affected by technological improvements.

We feel that the Congress of the United States should set an example for industry by passing some legislation to protect the jobs of Government employees who have over 10 years of satisfactory service. A recommendation of this nature by you or your committee would be a most humane and progressive step.

I hope that this report on the economic status of replaced personnel, and the future outlook for craftsmen and other employees in the Bureau of Engraving and Printing will be of value to you and your committee. It is comforting to know that the Congress and a committee of this nature is concerned about the impact of automation on the workers of this country.

I am, respectfully yours,

THOMAS G. GILL,  
President, I. P. P. D. S. & E. N. A. No. 2.

PHILADELPHIA, PA., December 19, 1956.

Re hearings before the Subcommittee on Economic Stabilization of the Joint Economic Committee, December 12, 13, 14, 1956.

Representative WRIGHT PATMAN,  
Chairman, Subcommittee on Economic Stabilization, Joint Economic Committee, House of Representatives,  
Washington, D. C.

DEAR MR. PATMAN: In the course of the hearings, just concluded, you queried several of the witnesses extensively on what plans were being made to utilize older workers. You seemed particularly interested in their role in the advances of instrumentation-automation.

Milton Roy Co. has recently started a second plant operation in St. Petersburg, Fla. We have a research and development group working there now and have just started a small amount of light manufacturing. As our operations become larger, we plan to make available work to older people, possibly on a 4-hour shift basis, which seems to be particularly desired. We understand that a number of other industries locating in Florida have already started such operations claiming that a 4-hour shift on light work is particularly attractive for this type of worker.

Several years ago we carefully studied our obligations to our employees in establishing a plan that would build the necessary fund for retirement. One

of our objectives in this plan was to avoid any program that would make it any more costly for us to hire older workers. We believe that we have found the happy solution to that problem in establishing the "Milroy retirement savings plan." This is a profit-sharing plan so designed that the employee assists in determining just how large his retirement fund may be. This takes the place of any pension fund where the age of the employee at the time of joining us would have an effect on the thinking of the company because of the expense of contributing to such a plan.

Briefly, this retirement savings plan calls for a minimum contribution of each employee of 1 percent of his total wages or salary. In addition, any member may elect when he enters the plan, or before the beginning of any later year, to contribute up to 5 percent of his total compensation. The company contributes twice the amount of each employee's contribution provided the percentage of profits available for distribution will permit. Over the several years that this plan has been in operation, the company has consistently had available from its profits a sufficient fund to meet this requirement in full.

At the time we started this plan several years ago, 102 employees were eligible to join the plan and 100 percent of them did. Any employee has a 100 percent interest at all times in his own contribution and any earnings on it. Each employee has a vested interest in the company's contribution equal to 5 percent multiplied by the number of full years of service. After 20 years of service, or upon reaching retirement age, whichever comes first, the employee is entitled to 100 percent of the company's contribution and any earnings on it. Thus, an employee joining the company at age 55 would have 10 years in which to build his own retirement fund on this liberal basis that will give him a substantial fund to supplement social-security payments. We have found this plan to be most satisfactory to date and believe that it is an excellent answer to the encouragement of the hiring of older workers. We have no bar on the hiring of older workers and in fact welcome them wherever their training and aptitudes will permit their association with our organization.

I'll be happy to send you any further information that you may desire on the details of this plan and hope that this information will be of some value for your records. I'm also enclosing for your information a copy of the Philosophy of Milton Roy Co.

Sincerely yours,

MILTON ROY Co.,  
ROBERT T. SHEEN,  
*President.*

Chairman PATMAN. The subcommittee will stand in recess, subject to the call of the Chair.

(Whereupon, at 11:40 a. m., the subcommittee adjourned.)

×