373

ECONOMIC EDUCATION

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PART 1

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Extracts from the National Task Force Report on Economic Education, *Economic Education in the Schools.*

The Need for Economic Education

Economic understanding is essential if we are to meet our responsibilities as citizens and as participants in a basically private enterprise economy. Many of the most important issues in government policy are economic in nature, and we face economic problems at every turn in our day-to-day lives. Consider, for example, some of the economic issues confronting the nation and many of us as individuals in recent years: inflation, recession and unemployment, a lagging rate of economic growth, the impact of automation, the "farm problem," financing of schools and highways, medical care for the aged, foreign aid, government deficits, and taxes. Economic problems arise at every level—national, state, and local—and in both public and private affairs.

The economic role of government and the complexity of the economic issues with which it deals have grown enormously in the past fifty years. For this there have been many reasons—the increase and urbanization of our population, the sheer growth of wealth and incomes, rapid scientific and technological change, two world wars, a great depression, continuing international tensions, and changing attitudes toward government. One may approve or deplore the power of government in economic affairs, but no one can deny its existence nor that the quality of government policies is a major force in determining the performance of our entire economic system.

In the final analysis, the effectiveness of government depends on the capacity and understanding of the people. For it is the people who, through their votes and other influences, determine within broad limits the scope and nature of government policies. If they are to exercise their great political power responsibly and effectively, more of our people must know more about our economy and must learn to think about economic issues objectively and rationally. The alternative is to make decisions on the basis of ignorance and prejudice. Nor is the case for economic understanding limited to preparation for effective voting. Leaders in every walk of life—business, labor, agriculture—need to understand the American economy, as do the people who work for the businesses and who are the members of the unions.

If our citizens of tomorrow are to achieve the desired minimum economic understanding, most of them must get it in the schools. It is no good to say that they can wait until college, for less than half of them go on to college, and most of those do not study economics when they get there. Thus, most of our youth must rely on the high schools for the economics they are to learn.

How are the schools meeting their responsibility for developing economic understanding?

The understanding of the American economy developed in most high schools today is not adequate for effective citizenship. While excellent teaching of economics occurs in some schools, very few high school students take a course in economics; textbooks and other teaching materials are all too often inadequate; and most teachers in the social studies have insufficient preparation in economics to teach the subject effectively. Despite a trend in recent years toward inclusion of more economics in the schools, the existing situation is far from satisfactory.

Economics in the Curriculum

Apparently only about five per cent of all high school students ever take a separate course in economics. Perhaps half of all high school students do study "Problems of American Democracy," or a similarly oriented "problems" course, in which a substantial block of time is devoted to economic aspects of current broad social problems, such as natural resources, labor-management relations, and social security. Nearly all students take a course in American history, where some attention is given to the development of economic institutions, and legislation. Scattered attention is given to economic institutions and problems at a variety of other points in the curriculum, notably in the social studies courses throughout the grades.

Even in the separate course in economics, however, the orientation is generally descriptive and all too often dry and sterile. Little attention is given to helping students learn to think for themselves about the big economic problems our nation faces today. Few analytical concepts are developed, and fewer are used. In the problems of American democracy and American history courses, even less attention is given to the development of independent analytical thinking by students on economic problems. The flavor of these courses is often chronological and descriptive, with teachers placing primary stress on those areas where their own training is strongest, usually in history. On economic issues it appears that teachers often insert their own value judgments and "answers" on economic issues as to what the student should believe, all too often without identifying them as such.

Teaching Materials

Teaching materials are improving, but they remain generally inadequate. A recent survey of the economics content of leading textbooks for courses in economics, problems of American democracy, and American history, made by three groups of respected American economists, indicates that high school students are being given a running glance at a wide array of economic topics, but that only in rare cases are the teaching materials focused on developing fundamental economic understanding.

The treatment in textbooks is mainly descriptive; economic analysis is almost entirely absent; the reasoning is often loose and superficial; value judgments of the authors, generally unidentified as such, abound. The committees reported that these books generally fail to develop an awareness of what the fundamental economic problems are, and of how rational, objective reasoning can contribute effectively to their solution. In the American history books, to which most high school students are exposed, the treatment of economics is primarily descriptive and fails to emphasize economic analysis of the major problems involved, since the emphasis of the books is historical.

Since most social studies teachers have had little, if any, formal training in economics, they cannot reasonably be expected to add to their textbooks an objective, analytical approach to the understanding of the modern American economy. The quality of textbooks and other teaching materials thus becomes all the more important.

In addition to textbooks, there is a mass of special pamphlets and materials available to social studies teachers in the high schools. These materials, flooding the schools, come from institutions and organizations of every description, many of them with propaganda intent. Some of these publications represent sound scholarship and genuine desire to make available objective and useful information. Since most teachers are neither adequately prepared nor have the time to assess all of this printed matter, its usefulness in most high school teaching is dubious. The large volume of urgent requests from teachers and administrators for evaluation of such publications, and for lists of recommended books, pamphlets and audio-visual aids, reveals the desperate need for assistance felt by those responsible for teaching economics in the high schools.

The Teachers

Today we rely primarily on high school teachers in the social studies and American history to develop understanding of the American economy. While most of these teachers are conscientious and sincere, only a little more than half of them have ever had as much as a single college course in economics to prepare them for this important part of their teaching job. Most of these have apparently had only one or two college courses in economics. Virtually none have under-

graduate majors in economics, even those teaching special courses in economics in the high schools.

Obviously, teachers who have inadequate preparation cannot be expected to do an adequate job in the classroom. This explains why economic analysis gets virtually no attention in most history courses, and is often poorly taught in problems of American democracy and civics courses. To make this point is not to malign the training, skill, and splendid work of many able and dedicated teachers in the high schools. It is merely to be realistic about the necessity of adequate training to do a proper job.

State teacher certification requirements are intended to provide minimum standards for teachers. Yet apparently only sixteen of the fifty states require even an elementary course in economics for certification to teach high school social studies. This situation is reflected in the curricula of the colleges that train teachers in the social studies. In a recent study of social studies teacher programs in fifty selected colleges and universities throughout the country, thirty-eight were found to offer a major in social studies. Of these, only twenty-five required any economics for the major, with a median requirement of only one year of elementary economics for these teachers of tomorrow who will be largely responsible for teaching basic understanding of the American economy in our schools.

The dearth of teachers able to teach economics was dramatically illustrated recently when a large city decided to introduce economics into its high schools. The operation would have required 300 teachers, but only seventeen could be found with adequate training for the task!

The Public's Attitude

Recently, there has been a strong growth of interest in the teaching of economics in the high schools. Only with such basic public support can real improvement in this area come about. Unfortunately, it is necessary to recognize that many individuals and groups see economics in the schools as a device for stressing their own viewpoints, as an opportunity to foist on the schools their own private views. Too many do not recognize the value of impartial analysis and discussion of varying viewpoints and interpretations of controversial issues. Too many, insist, indeed, that controversial issues should be avoided in the classroom. Most important problems are controversial, and today large numbers of social studies teachers avoid controversial issues because they fear public criticism. This is not the way to train our youth to face the important problems that will confront them as citizens. It is not the way to the development of sound economic understanding.

The Role of Economic Analysis

In studying the functioning of the economic system and the relative merits of alternative economic policies, economics makes use of a set of analytical tools, just as do physics, engineering, the law, and other professions. In short, it depends upon a body of theory to provide a kit of tools with which to analyze the complexities of the real world. Some of these analytical tools and approaches are complex and difficult. But fortunately, some of the most valuable and powerful ones are simple and easily accessible without extensive formal training in economics. These are the ones that should be emphasized in the high schools.

An example is the so-called "Law of Supply and Demand." Economists have developed the concept of "demand," or "demand schedule," to refer to the different possible amounts of a product which people might buy at different possible prices during some specified period of time. (Thus, in general, more will be bought the lower the price.) There is also the parallel concept of "supply," which refers to the various amounts of a commodity that sellers would be willing to supply at different possible prices during some particular period of time. As a general rule, when more is demanded at some particular price than is being supplied at that price, the price will tend to be bid up by the excess demand until a new price is reached where the amount demanded just equals that being supplied.

Thus, economists have combined supply, demand, and price into a small "model" or "theory" of how the three will generally interact under prescribed conditions of competition. Such a model is useful for many practical problems. It tells us that if farmers grow more wheat this year than consumers are willing to buy at the present price, then the price of wheat will fall in the absence of government action. If the government wants to keep the price up, then it must be prepared to take the excess supply off the market.

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RECOMMENDATIONS

The two preceding chapters outlined the minimum economic understanding essential for good citizenship and attainable by high school students. They emphasized that this requires not only a knowledge of important facts about the economy and its institutions, but also a rational, objective way of thinking about economic issues, and certain concepts and analytical tools to help in this thinking. We turn now to the question of how such an understanding can be achieved. This requires comments on the curriculum, approach and method, teachers, teaching materials, and controversial issues.

We offer a number of specific suggestions in this chapter, emphasizing, however, that they are meant to be suggestive and illustrative, not blueprints for universal adoption. We recognize, for example, that school authorities must weigh the curriculum changes that we suggest against many competing demands. Students vary widely in ability. Some schools have teachers well trained in economics; others do not. Moreover, those charged with responsibility for creating and using specific teaching methods and materials may often be able to improve upon those suggested below. We hope, however, that the general guidelines proposed here will be helpful to those charged with this important task.

THE CURRICULUM

1. *We recommend that more time be devoted in high school curricula to the development of economic understanding.* It is unrealistic to hope that most students will learn to think effectively about economic issues and to understand the functioning of the American economy without a substantial increase in the time devoted to this purpose in high school curricula. Economic understanding may be taught in separate courses in economics. It may be taught in other courses dealing with economic institutions and issues. How it is most effectively taught will, of course, depend on the students involved, the preparation of the teachers, the amount of time available, and other such conditions. But more time and serious attention, focused along the lines outlined in Chapters II and III, are required in most schools if anything approaching the minimal competence indicated there is to be attained by most students.

In the following sections we indicate our recommendations, depending upon the amount of student time that local school boards and administrators choose to devote to economics in their curricula.

Courses in Economics

2. *We recommend that wherever feasible students take a high school course in economics or its equivalent under another title (such as Problems of American Democracy); and that in all high schools of substantial size there be at least an elective senior-year course in economics.* To attain the level of economic understanding suggested above will require at least a full semester course for high school students. For most students, even a full course may prove insufficient unless a preliminary groundwork has been laid in earlier courses, introducing both economic institutions and a logical, objective way of thinking about social problems. Thus, we believe that the equivalent of a one semester course is necessary, but not sufficient for most students, to assure the minimum level of economic understanding we recommend.

We recognize the many competing demands on the high school curriculum. Each school board, of course, must decide in view of its circumstances whether or not to *require* a separate course in economics of all its students. We see no practical alternative to assure that all high school graduates attain something like the level of understanding indicated above.[1] Where no such course is required, we do urge that it should, at a minimum, be available as an elective in all schools of substantial size.

While we recommend no particular course arrangement or teaching approach in such a course, we do urge that stress be placed on objective, careful reasoning about economic problems (as we suggest in Chapter II), on understanding the over-all functioning of the economy and on the major problem areas, institutions, and analytical concepts outlined in Chapter III. We warn against the superficial

[1] For the minority of students going on to college and already sure they will take a college course in economics, it may be desirable to take instead further high school work in mathematics, advanced English composition, or some comparable foundation course. But even for these students some degree of repetitive learning between high school and college economics may be advantageous. Most subjects are not thoroughly learned the first time they are studied. Moreover, as more students come to college with a minimal understanding of economic institutions and processes the level and effectiveness of college courses in economics can be raised as has been the case in physics, chemistry, and mathematics in recent years.

description that appears to characterize so many present high school courses, and against teaching that stresses memorization of trivial facts, dates, and unused lists of concepts. Such information is soon forgotten, and courses of this sort have little claim to the serious high school student's time.

Economics in Problems of American Democracy Courses

3. *We recommend that courses in problems of American democracy (now taken by perhaps half of all high school students) devote a substantial portion of their time to development of economic understanding of the kind outlined in Chapters II and III above.* Such courses usually cover a variety of problems, or problem areas, like social security, international relations, big business, conservation of natural resources, public finance, and agriculture. Since the course employs the "problem approach," it can afford excellent training in economic reasoning. On each problem studied, teachers can show that rational decision-making must be based not on ignorance and prejudice but on a careful process of understanding the relevant facts, of analyzing the forces that produce the "problems," of clarifying goals, and of choosing carefully among the available alternatives. Some of the essential concepts and analytical tools outlined in Chapter III can be developed in connection with each problem area.

For example, the "farm problem" leads readily to analysis of demand and supply as they interact in the market to establish prices, and to the role of markets in channeling productive resources to meet consumer demands. Government policies to deal with low farm incomes and farm surpluses pose the need to define the economic problem to be solved and the social goals to be achieved, then to list the main alternative courses of action, to evaluate the consequences of these courses, and finally, to choose the alternative which promises best to achieve the desired goals. Teaching materials for such an approach could include readings on the changing political and economic role of the farmer, data on farm incomes and living standards compared to other groups, information and conflicting views on the values of rural vs. urban living, and recent proposals for "solving" the farm problem through alternative governmental policies—in addition to the analytical materials on supply, demand, prices, and markets suggested above. Economic concepts and principles will have meaning for most students only as they are applied to concrete problems and situations.

Similarly, consideration of monopoly and big business can lead into analysis of the nature of a basically private enterprise economy; the role of competition in markets for products and for labor; the effects of monopoly power on output, prices, and incomes; and the problems of achieving simultaneously reasonable competition and low-cost mass production. The topic of comparative economic systems offers a challenging opportunity to emphasize that all types of economies must somehow deal with the three big economic problems (what, how much, and for whom), and then to compare and contrast their objectives and the methods, institutions, and incentives they employ to achieve them. We have suggested one approach for handling this area in the closing section of Chapter III.

Introduction of more economic analysis into problems of American democracy courses can help significantly to develop the economic understanding needed for good citizenship, if it is done with the objectives and flavor indicated above. We repeat that mere description of facts, institutions and situations accomplishes little of lasting value. Analytically oriented teaching materials, competent teaching, and specific focus on the goals of developing economic understanding and ability to reason independently, are all required if problems of American democracy courses are to contribute significantly to economic understanding.

Economics in History Courses

4. *We recommend that more economic analysis be included in history courses.* Almost all students take an American history course in the eleventh grade or in a two-year sequence through the twelfth grade. This course presents excellent opportunities for deepening economic understanding and for adding a new dimension to history itself. It inevitably deals with many economic events—tariffs, banking controversies, inflation and deflation, the rise of large-scale business, growth of labor unions, the growing role of government in economic affairs, and many more. If such problems are considered analytically as well as merely descriptively and chronologically, great numbers of high school students will gain in both economic understanding and historical perspective.

American history courses often attempt to cover the entire sweep of American political and social history including attention to developments in many facets of

American life. Moreover, they customarily stress chronology rather than an analytical approach to particular elements of historical development, such as the specific economic problems indicated above. Lastly, historians themselves are understandably often concerned with teaching an historical discipline itself as a major goal in such a course.

Thus, to introduce emphasis on economic understanding along the line we suggest will require, for most history courses, significant changes in approach, materials, and teaching method. We nevertheless urge that this be done, since for many students this is the only formal exposure in the high school curriculum to economic institutions and problems. Special units of economics, in addition to the usual descriptive materials on economic events, could introduce students to the elements of economic reasoning. Such units could easily be developed by economists and historians working together as we recommend below.

To illustrate, agricultural developments during the last century could readily be taught along the lines indicated above for the problems in American democracy course, by allocating some extra time and using appropriate supplementary readings. Another illustration is provided by the great depression of the 1930's. Most American history texts deal with this descriptively, with primary attention to political developments and the legislation of the New Deal, but little attention to the underlying economic forces involved, analysis of the social goals sought or effectiveness of such legislation.

To supplement this usual historical treatment, economic materials could readily be introduced showing the similarity of the basic economic developments of the 1930's to earlier depressions, and introducing a few of the simple economic concepts noted in Chapter III—for example, gross national product, money and real income, aggregate demand (spending) and its major components. A simple analysis could be introduced stressing the shortage of aggregate demand in the depression, and the relation of monetary contraction between 1929 and 1933 to this demand shortage and to falling prices. Against this background, students could be led to consider government policies to stimulate recovery through monetary expansion and budgetary policy as well as through direct measures (like NRA and AAA). While the analysis would need to be very elementary, at least students could be led to see the elements of economic reasoning, along the lines outlined in Chapter II, and could be introduced to a few of the central economic institutions and concepts outlined in the second major section of Chapter III.

Numerous other possibilities for such units exist—for example, the post-Civil War inflation and monetary collapse, the Sherman Act and its relation to the monopoly problem, and the continuing tariff controversy.

It would be unrealistic to expect that the economic understanding needed for good citizenship can be achieved through American history courses alone. But such courses can make a worth-while contribution, especially if they can build on earlier attention to economic institutions and if appropriate teaching materials are used to supplement the basic history texts.

Similar economic units could be introduced into world history courses, which typically concentrate on political and social developments. For example, comparative rates of growth in output and living standards of different nations provide a vital issue around which a unit designed to develop economic understanding can readily be built. Focus on natural resources, technology, education, labor force, form of economic organization, and other factors underlying economic growth could introduce these fundamental concepts. Data showing comparative growth rates for highly developed and underdeveloped nations could illustrate the importance of saving and capital accumulation and, at the same time, point up the different factors influencing these rates in different economies—for example, the private enterprise and the communist varieties. Consideration could also be given in this connection to the origins and development of capitalism, and the causes and significance of the industrial revolution.

Increased emphasis on development of economic understanding need not detract from the importance attached to other forces in historical development. Indeed, it can be used to enrich students' understanding of history. For this subject provides a broad framework for the understanding of social, political, and economic forces, within which increased stress on an analytical approach to economic developments can contribute to both historical and economic understanding.

Economics in Business Education

5. *We recommend that all business education curricula include a required course in economics.* A large group of high school students take special studies intended to prepare them for careers in business. These curricula include bookkeeping, typing,

office practice, and a variety of other courses focused on current businesss practice. Since few of these students go on to college we especially urge that all such curricula include a course in economics, similar to the one outlined in recommendation No. 2 above.

Minimal training in economics for these students is justified on both citizenship and career training grounds. While the high school course in economics should not be focused on business operations or personal finance, a reasonable acquaintance with basic economic institutions will prove valuable for any student entering a business firm. Moreover, many teachers in the business education curriculum have had at least one college course in economics, since this is required for teacher certification much more commonly than for teachers in the social studies.

Business education also provides other places for developing economic understanding. For example, bookkeeping courses can be given much more intellectual content by relating them to simple business accounting concepts, to the role of costs and profits in business firms, and to such concepts as gross national product and national income.

Other Opportunities

6. *We recommend that economic understanding be emphasized at several other points in the entire school curriculum.* There are many opportunities for building economic understanding from the time the child enters first grade until he graduates from high school. Interesting experiments now under way suggest that such simple notions as division of labor, prices, exchange in markets, and even profit can be grasped by elementary school children if they are built into carefully planned teaching materials and methods. Inescapably, children are exposed to such ideas in their day-to-day lives The elementary grades provide an opportunity to clarify them, and to relate them to daily problems of family living, especially in the social studies courses children take from the early grades. We commend these experiments and recommend adoption of these techniques in the earlier grades as this becomes feasible.

Geography courses, included in all curricula, provide excellent opportunities to relate the usual descriptive materials to the role of such factors as natural resources, climate, and transportation facilities to the basic economic processes of specialization and exchange. Discussion of differing rates of economic growth in relation to varying possession of natural resources can provide a lively focus for the importance of geography. So can analysis of the geographical bases for the location of different industries. Introduction of such economic issues can help to enliven courses that often become routine.

Mathematics courses offer special promise for introducing students to precise reasoning about economic problems. Although arithmetic and algebra courses typically include problems in personal finance and in business arithmetic, they could equally include use of other economic problems and concepts. For example, supply and demand curves could be employed to illustrate simple graphs. Simple relationships between income and consumption could illustrate the use of linear equations in elementary algebra. We urge teachers and textbook writers to include more such examples, and professional economists to help provide them.

Civics courses, usually taught in the ninth grade, touch at many points on economic issues and problems. Courses in home economics offer opportunities to discuss such things as the role of the consumer, personal saving, and social security in the American economy. Curriculum planners, textbook writers, and teachers in all these courses can do much to provide a foundation for the economic understanding that should be a direct focus of academic work for most students in the final years of high school work. We believe that introduction of more economic materials and concepts need not detract from the educational value of these other courses, but can instead enliven and enrich them.

APPROACHES TO TEACHING

7. *We recommend central emphasis on the rational way of thinking presented in Chapter II as a prime objective of the teaching of economics.* We are not competent to advise in detail how teachers in the schools might best develop in their widely differing students the economic understanding we suggest as needed for good citizenship. The most effective approaches and methods will vary depending on the course, teacher, and students involved. But we believe it is far more important for students to learn to think about economic situations objectively and rationally for themselves than to learn masses of institutional details, or memorize lists of unused economic concepts. Many students, perhaps most, will learn less economics

than the minimum outlined in Chapter III. What they do study, however, should be studied analytically and in reasonable depth, rather than as superficial memory work. A rational way of thinking about economic problems is the first step toward economic understanding.

For students of all ability levels, it is important to establish courses of rigor and challenge comparable to those now offered in science and mathematics. There is research evidence to substantiate the claim that analysis is beneficial to everyone, not merely to those of high ability. It is true that students of high ability can be expected to learn more in less time. But this should not mean analysis for the bright and mere memorization for the less able, though for them a greater stress on facts and institutions will generally be realistic. To aid teachers, we have indicated throughout Chapter III some of the areas and concepts which are likely to prove too difficult for lower ability students.

We wish to re-emphasize here that "objectivity" in economics does not mean merely giving equal time and attention to all competing biases. Rather it means thinking through the situation with clear recognition of the alternative assumptions being made in competing arguments. "Objectivity" implies rational analysis. It does not mean giving students the idea that any view or answer is as good as another.

Lastly, we urge that teachers emphasize getting students to *use* the economic concepts they are asked to learn. Supply and demand means little unless the student sees how he can use them in understanding why farm surpluses persist in the face of government price support policies, or in studying other such practical issues. Saving has meaning when he sees what it means for the family and the local business firm as well as for the economy as a whole. Gross national product is merely a set of technical words unless he sees how it helps him to measure the comparative performance of the American and Russian economies. These are only examples, but they suggest the importance of stressing student use of economic concepts in analyzing practical problems, and the importance of giving the concepts and institutions taught concrete meaning in relation to the student's own experience and interests.

CONTROVERSIAL ISSUES

8. *We recommend that examination of controversial issues be included, where appropriate, in teaching economics.* Economic understanding and objective analysis cannot be developed in the school if controversial issues are eliminated from consideration. The more important the economic issue, the more controversial is it likely to be. To avoid issues because they are controversial or to limit serious discussion of them will not make the problems go away or contribute to their rational solution. It will only invite decisions based on ignorance, prejudice, and passion.

The very nature of democracy implies serious discussion by the people. Limitations on discussion of important public problems are not merely infringements on the rights of teachers to teach. More important, they are infringements on the rights of students to learn, to think, and to arrive at their own conclusions. They are thus a threat to the quality of future citizens and to the success of democracy itself.

In approaching controversial issues, teachers should be responsible for leading students to use the analytical, objective approach described earlier—get the relevant facts; clarify objectives; identify, analyze and compare the various alternative courses of action; and choose among the alternatives in light of the objectives sought. In this process students will inevitably be exposed to points of view not shared by some parents and other groups in the community. They will also subject to critical analysis some points of view to which their parents and others may be devoted. It is not to be expected that such searching analysis will be universally welcomed. But to deprive students of the opportunity to think through controversial issues for themselves is to deprive them of fundamental training for good citizenship and to deny the fundamental tenets of a free and democratic society. To insist upon and defend this right of the teacher and of the students is the duty of every citizen, as well as of teachers, administrators, and school boards, even when particular groups criticize the teacher involved. Ours is a strong society which need not fear open discussion of its economic institutions and processes.

TEACHERS

9. *To improve the ability of teachers, we recommend several steps.* Obviously, economic understanding cannot be imparted by teachers who do not themselves

understand economics. As we pointed out in Chapter I, apparently almost half of all high school social studies teachers, and perhaps a quarter of all those teaching actual courses in economics, have not had as much as a single college course in economics. This is intolerable if we want their students to develop real economic understanding. It would be equally futile to expect teachers who had never had a college course in mathematics or physics to teach mathematics or physics effectively.

Most teachers try sincerely to do a good job. They work hard to obtain better materials for their courses and to improve their own abilities. The need is to provide n ore effective ways to help present teachers improve their own understanding, to provide better teaching aids and materials, and to be sure that new teachers obtain the needed preparation in economics during their college years. Thus:

(a) *We recommend that teacher certification requirements in all states require a minimum of one full year (6 units) course in college economics for all social studies and business education teachers.* An elementary understanding of the way our economic system functions, and of economic reasoning, is a minimum basis for reasonable teaching of economics in history, problems of American democracy, and all other such social studies and business courses in which economics has a logical place. At least another year of college economics beyond the elementary course would be highly desirable.

(b) *We recommend that school boards and administrators consider these certification standards as minimum requirements and they take steps to enforce higher standards wherever feasible.* For instructors who teach specific courses in economics we recommend, wherever feasible, at least a college minor in economics (usually about 18 units), and preferably a college major in the field. Short of a college minor, the high school teacher of economics has formal training that puts him only a small margin ahead of his best students. This is not the way to obtain teaching that stretches the minds of high school youths and leads them to thorough understanding. While small school systems may be unable to afford such a trained economist, every large school system should have at least one such person on its social studies staff, both to teach its courses in economics and, equally important, to help other teachers in selecting materials and teaching approaches where economic issues are involved.

(c) *To help present teachers improve their economic competence, we recommend increased use of summer workshops, teacher participation in a nationwide television economics course planned for 1962–63, and return to college for additional work in economics.* School authorities should encourage and assist teachers to improve their economic understanding through all these channels, including, wherever feasible, provision of financial support for further training. Summer workshops for high school teachers are available in most states through the Joint Council on Economic Education. During the 1962–63 school year, a special television program on the American economy will be presented nationwide daily, to help all interested high school teachers obtain a reasonable grasp of the functioning of the economy. It will also offer suggestions as to how economic understanding can be woven into history and problems of American democracy courses, as well as taught in courses in economics. This Learning Resources Institute television course, co-sponsored by the American Economic Association and the Joint Council on Economic Education and under the guidance of a group of distinguished economists and educators, will emphasize the approach to economic understanding outlined in the preceding chapters, and will involve many of the nation's outstanding economists and educators as teachers.

(d) *We recommend that colleges preparing teachers improve the economics courses offered for this purpose, and establish other opportunities for high school teachers to increase their economic understanding.* Colleges can help by designing improved courses in basic economics specifically for high school teachers which emphasize the kind of economic competence outlined in Chapters II and III. In many institutions, this will require a substantial change in the emphasis and direction of basic courses in economics. These colleges can also help by designing extension courses for teachers along similar lines. Furthermore, we recommend that more colleges and universities offer summer workshops in economics for high school teachers. All too often, leading university economists pay little attention to this pressing problem of secondary school teaching. Finally, we commend the establishment of university centers for economic education such as those at Iowa, Illinois, and Purdue, which focus on research and aid to the teaching of economics in the schools.

TEACHING MATERIALS

10. *We emphasize the need for more effective high school teaching materials and recommend that steps be taken by private publishers, foundations, and others to increase the supply of such materials.* Better teaching materials are essential if the minimal level of economic understanding described above is to be achieved by most students in the high schools.

As we pointed out in Chapter I, better texts are beginning to appear, but too frequently the textbooks on economics used in the schools are prosaic and uninteresting. They are devoted largely to facts and descriptions unrelated to major current public problems, lacking in careful analysis, and full of policy prescriptions based largely on the unsupported views of the authors. Materials on economics in problems of American democracy and history texts suffer from the same failings, when, indeed, any pretense of dealing with economic issues is included. The supplementary materials that pour in on social studies teachers from many different groups like business, labor, and farm organizations range from the objective and informative to sheer propaganda. Far too much of such materials falls close to the latter extreme. Most high school teachers have neither the time nor the training to sift through all this to choose what would be effective in the classroom. Thus, major steps are needed to provide better teaching materials. Better high school texts on economics and means to help teachers select from among the flood of supplementary materials available are required for all except the most sophisticated instructors.

Good teaching materials should be made generally available at modest cost if they are to be widely used. They are needed perhaps even more for problems of American democracy and history courses than for courses in economics, for almost none of the present materials for those courses appear to be aimed at developing the kind of economic understanding we urge for effective citizenship. Such materials need to be prepared as practical units for insertion into problems of American democracy and American and world history courses without the complete restructuring of such courses, for they have other important objectives as well. Joint work by economists, historians, sociologists, and political scientists will be required in producing the needed materials. As a specific example, we suggest that the Joint Council on Economic Education and the Service Center for Teachers of History cooperate in developing guides to teachers wishing to incorporate more economic analysis into history courses.

Some steps in this direction have already been taken. A group of teachers and economists has sifted through the great mass of materials on "economics" already available with a view to selecting, recommending, and making available to teachers and students those that are most objective and most useful in promoting the desired economic understanding. The Joint Council on Economic Education is assisting in the preparation of new materials to the same end. More competent professional economists are becoming interested in preparing materials for the secondary schools, and some publishers are considering publication of textbooks and supplementary materials better suited to this purpose. We commend these efforts, and urge support by businesses, private citizens, professional economists, foundations, and government agencies for steps to provide teachers and students with the very best materials for developing economic understanding. We hope that the suggestions in Chapters II and III above may prove helpful to those interested in preparing new materials for high school courses and to teachers in deciding what materials can contribute most.

THE RESPONSIBILITY OF ECONOMISTS

11. *We recommend that professional economists play a more active part in helping to raise the level of economics in the schools.* Leading economists have generally paid little attention to the teaching of economics below the college level. We consider this unfortunate. Professional economists can help significantly by assisting local teachers and school authorities in revising courses and curricula, by aiding in the preparation of more effective teaching materials, by supporting college courses for high school teachers designed to develop economic understanding of the sort described above, and by participating more actively in summer workshops and other special aids to high school teachers, arranged by the Joint Council on Economic Education or other responsible agencies. We urge our fellow economists to participate more actively in all of these ways to help improve the teaching of economics in the schools. To fail to do so is to shirk an important professional responsibility.

PUBLIC SUPPORT

12. *We urge widespread public support, both private and governmental, for the improvement of economics in the schools.* Only if the leaders of public opinion, and the public itself, support higher standards for economic understanding in the schools will significant improvement occur. Community leaders need to give active support to teachers, administrators and school boards seeking to raise standards—and to push school officials where this is needed. In doing so, they must recognize that economic understanding rests on a good grasp of economic institutions and an orderly way of thinking about economic issues, not on acceptance of some particular group interest or some "brand" of economics.

Many of the suggestions made above will cost money, though some can be achieved within present school budgets. Most of the cost of better education must ultimately be borne by the taxpayers and others who now support the schools. In lifting standards of economic understanding during the years immediately ahead, however, we urge special support, both governmental and private, for measures like those recommended above to speed this improvement.

EXHIBIT II

Extract from "Economic Education: Aspirations and Achievements" by G. L. Bach and Phillip Saunders, *The American Economic Review*, June 1965.

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Some Implications

In conclusion, we suggest the following as some implications of the findings.

1. If we want most of our future citizens to have any formal training in economics, it must be given in the high schools, barring an enormous change in the national educational pattern beyond even the large increases in college enrollment currently expected. Thus, unless the profession wishes to wash its hands of responsibility for economic understanding of the citizenry, it must take a strong, active interest in the teaching of economics in the high schools.

2. It is possible to teach a substantial amount of economic understanding to average students in the high schools. Even with present inadequate high school courses in economics, students taking such courses showed large improvements in average test scores on the simple "Test of Economic Understanding." Still unpublished experiments in particular localities confirm this possibility, and indicate that with *well-trained* high school economics teachers or with effective "programmed learning" the improvement can be much more dramatic than shown in Table 1.

3. Better-trained high school teachers are critical in improving economic understanding provided by the schools. The small test margin of the mass of social studies teachers over average high school students who have had merely a weak one-semester course in economics is dramatic evidence on this point. Superintendents and other school administrators repeatedly stress the importance of improving the basic economic understanding of their social studies teachers if real improvement is to be made in their teaching. As indicated above, recent experiments confirm this strongly. Intensive work with competent, interested, and understanding university economists, followed up by in-service help, can dramatically improve the understanding of average high school teachers, their ability to teach effectively, and the performance of their students. However, merely taking more courses in economics or going through weakly taught summer institutes or in-service programs apparently does little good for high school teachers; quality of instruction and teaching materials appear to be crucial.

4. Unless the results reported above are grossly misleading, it is clear that present (or previous) college courses in economics don't do an effective job of preparing school teachers to teach economics, even recognizing the reservations indicated above. Whatever our students do on the final exam, the several-years-after test shows little residue, even for high school teachers for whom economic issues provide a part of their day-to-day teaching responsibilities. These findings emphasize again the well-known psychological principle that "learning" unsupported by motivation and reinforcement through repeated use or other means has a very short half-life. If our college courses don't develop student interest in economics for the years to come and if the analysis we teach isn't usable *and used* by students on their own after college, there is little reason to expect much to last, however elegant the analysis or important the descriptive material in the course.

5. Since the average age of high school social studies teachers is only 33, and since about one-third of all teachers have been teaching less than five years and nearly two-thirds less than 10 years, improvement in the economic training provided in the colleges and universities could have a rapid impact on teaching in the high schools.

6. Improved textbooks and other teaching materials are critically needed as a foundation for improved teaching of economics in the schools. This includes not only materials for special courses in economics, but at least equally better materials for courses in problems of democracy, civics, American history, and the like. It is essential to remember that the great bulk of students get their exposure to eco-

nomic issues in such courses. The economic preparation of the teachers in such courses is particularly weak, and such teachers badly need the best teaching materials.

7. If we want to get more economic analysis and points of view into history, problems of democracy, and civics courses in the schools, growing experience suggests that such teaching materials must be fitted into the patterns of those courses. For example, simply preparing booklets on economic analysis or description of economic institutions to be included in courses in American history or civics is unlikely to have much influence. Conversely, carefully developed materials which fit into the pattern of the American history course and develop important econonomic concepts and ways of using those concepts within the flow of the history course have been found valuable by history teachers.

8. Over all, there is little likelihood that economic understanding in the high schools will improve greatly unless school administrators and teachers get more sympathetic and active aid from professional economists than they have had to date.

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EXHIBIT III

Extract from "Economics in the Schools", a report by a Special Study Committee of the Committee on Economic Education of the American Economic Association, *American Economic Review* (supplement), March, 1963.

INTRODUCTION

The following report of the Textbook Study Committee is one of a growing number of projects which bear witness to the increasing concern on the part of businessmen, labor leaders, educators, and economists for the improvement of economic literacy in the United States. This committee was established to examine and appriase the economic content of selected textbooks used in high school economics, social problems, and United States history courses, as indicative broadly of the economic content of these courses.

Organization of the Project

Publishers were asked to rank the books available for each course in terms of sales volume. On the basis of these reports the four "leading" textbooks in each area were selected for study. In addition, four other texts in each field were selected without reference to sales volume. Thus, eight books were reviewed for each course, twenty-four in all.

The committee of thirteen economists was organized in three subcommittees of four each, all under a director who attended every discussion meeting held by each subcommittee. Each subcommittee was assigned books for one course. All members of a subcommittee examined the four best-selling books assigned to its group, and in addition, each member reviewed one of the remaining four books selected for review by his subcommittee. Each subcommittee member wrote a single report on the five books he examined. Following discussions of these written evaluations by each subcommittee, its chairman prepared a statement of findings. On the basis of these statements, the project director prepared the present report for the committee as a whole.

Problems of Evaluation

The members of the committee are fully aware of the pitfalls involved in undertaking to evaluate texts for high school use. Clearly some standards for judgment were necessary; yet such standards are bound to be personal and in some measure arbitrary. The problem might have been avoided if the committee had been satisfied with a simple factual description of content, but, of course, only a critical analysis and description could convey meaning and be of significant use. The problem could not be avoided without making the committee's report little more than an empty gesture.

It would be improper, however, for this committee of economists, whose experience has been largely in college teaching, to undertake to design ideal high school textbooks for use as standards of comparison. The committee instead examined the selected texts as economists seeking to determine the scope and nature of the economic content of the books and to consider their adequacy in terms of that minimal economic understanding necessary to good citizenship. While "minimal economic understanding" was not formulated precisely by the committee, a standard consistent with that later set forth in the National Task Force Report, *Economic Education in the Schools*, was, in fact, employed in arriving at judgments on such matters as coverage, depth of treatment, and approach.

These criteria can be summarized as follows:

1. The principal objective of high school education in economics should be good citizenship, not the preparation of students for a college major in economics.

2. Economics is a social science and emphasis should be placed on the interdependence of decision-makers and the operation of economic systems, not on the solution of problems of the individual.

3. The economic understanding sought should concern vital matters, not trivia; and the coverage of these should be balanced, including (as examples) macro-

and microeconomics, the generation of change, in a system as well as its static operation, and international as well as domestic problems.

4. The approach to economic matters should be essentially analytical, though larded heavily with factual and descriptive material on economic institutions and their development.

5. The nature of value judgments should be explained; whenever relevant they should be identified; and the role they play in shaping economic systems, policies, and controversies should be clearly stated. Controversial issues should not be avoided, but used to stimulate interest and to distinguish between facts, value judgments, and impartial analyses as these apply to vital matters.

6. Factual and analytical errors should be kept to a minimum.

To apply these criteria to textbooks written for different courses, considerable flexibility was needed. A textbook on U.S. history should naturally pay more attention to the generation of change than to the static operation of an economic system; the economic content of a textbook on economics should be more extensive than that found in a book on problems of democracy. With this element of flexibility the committee found the criteria useful and is agreed that they are reasonable.

Summary of General Conclusions

It is the committee's considered opinion that the high school student whose knowledge of economics has been acquired through courses circumscribed by the textbooks principally used in the three social studies courses would be quite unprepared to cope understandingly with most problems of economic public policy.

1. *Most Texts Are Oriented Around the Individual.* Much of his time, particularly in economics courses, would have been devoted to "how-to-do-it" consumer education replete with advice and admonition frequently cast in a high moral tone. The apparent effort to make economic matters realistic by presenting them from the point of view of "you as an individual buyer or worker" has often been carried to such extremes that there is little space left for the economics of society. How an economic system operates is seldom a topic for analysis; the sensitivity of markets and the role of prices, profits, and wages in the allocation of resources are only occasionally paid even lip service; and where economic topics are considered, the emphasis is frequently on how they affect "you." The emphasis on the individual appears to some extent in all texts but is particularly characteristic of those written for the economics course (though the product mix varies) and least obtrusive in the texts for United States history.

2. Significant Topics Are Omitted; Others Receive Unwarranted Attention. Our budding voter would have read a good deal which must be classified as economics, but an unfortunately large part of this would probably be regarded by most economists as trivia. And even among the extensive array of economic topics to which space is devoted, there are significant gaps—topics which are either slighted or omitted entirely. Perhaps the most glaring of these is the aggregative or macro approach to economics which is inadequately presented, if touched on at all. This omission was typical of books for all three courses. The determinants of economic growth and policies designed to promote it received scant attention in economics and problems texts, and (perhaps of greater significance) in history texts as well. Certainly it is a matter of great concern to those interested in promoting economic understanding when history texts neglect the pressing economic problems which grew out of the Great Depression and World War II. Yet little can be learned from the history books examined about fiscal policy, the role of the Federal Reserve System, and policies related to growth, employment, and stability.

The failure to consider many of the economic functions and consequences of federal, state, and local governments was typical of textbooks for all courses. The books for United States history, for example, consider the regulatory activities of government in some detail, but pay little heed to the impact of government taxation and expenditures on resource allocation, unemployment, income distribution, and the institutional framework within which decisions are made. Economics texts, too, tended to avoid discussion of such governmental functions or effects as maintaining stability, furnishing services not provided efficiently by private enterprise, modifying income distribution, and achieving long-run national goals. Certainly a citizenry without an understanding of the economic roles of government at the various levels is not well equipped to vote on matters of governmental policy in the economic sphere.

Several other matters of economic import receive equally scant attention. Technological change, product differentiation and non-price competition, pro-

ductivity, the concept of welfare, and the economic role of flexible relative prices are among the topics which are scarcely discussed. In many texts, the concept of comparative advantage and the whole area of comparative economic systems are barely touched upon, the omission of some topics, such as marginal analysis, the theory of the firm, and the theory of demand, is probably appropriate for high school texts, though the basic ideas involved might be introduced without the technical apparatus.

The omission of many topics vital to economic understanding is made even more apparent by the unwarranted weight given to topics of less significance. In economics books, consumer economics and cooperatives are generally given disproportionate attention. The texts for courses in social problems devote much space to conservation (as many as ninety-eight pages in one case), social security, and housing. It is not that such topics are unimportant, but that the opportunity cost of treating them in length and detail is too great.

3. *Routine Description Dominates Analysis.* Perhaps the most alarming characteristic of textbooks in all three courses is the dominance of description over analysis in the treatment accorded those economic topics selected for discussion. Considerable description of economic institutions is clearly necessary at the high school level, but an extended parade of facts, without reference to the function and effects of the institutions and processes to which they relate, contributes little to economic understanding. Our high school graduates should know essential facts about factors of production, business organization, the banking system, labor and antitrust legislation, taxes and government expenditures, and the like, but it is at least doubtful whether they should be induced to memorize details about the routine operation of banks, miles of track, specific provisions of currency legislation and tariff acts, provisions for slum clearance, and qualifications for membership on the National Labor Relations Board.

The real offense against understanding committed by these books, however, is that the endless cataloguing of facts is often regarded as an end in iteself. Can a student be said to understand the operation of an economy when he knows the routine operations of banks but nothing about the role of money, credit, and interest; when he knows legislative acts but nothing about their purposes, effects, and limitations; when he knows about miles of track, but nothing about the impact of changes in transportation on relative prices and resource allocation. In short, when he knows trivial institutional detail but little of its significance for the structure and functioning of the economic system? The facts are that these texts do not employ simplifying assumptions or discuss their usefulness in stimulating clear thinking; they do not pose or develop hypotheses and test them with evidence; few chains of reasoning are presented and these often stop short of meaningful conclusions. "What" is detailed; "why" is ignored.

The organization and method of approach adopted in most of the texts comes close to eliminating analysis by definition. Using the impact on the individual as a focus suggests a limited analysis of interdependence; emphasis on real surroundings does not encourage abstract reasoning; the obligation to give advice often conflicts with objectivity; and organization along lines of bare chronology detracts from the analysis of relationships. Whatever the reason, it is clear that the student whose economic knowledge is derived from these texts will not have engaged in economic analysis; he will be some, but not much, better prepared to deal analytically with new economic problems with which he will be confronted than is his fellow of equal native ability who has not studied these texts.

4. *Value Judgments Are Seldom Identified or Examined.* The nature of value judgments, their role in determining the objectives of an economy and the economic system developed to attain them, how they differ from one country to another, and how they have changed and are changed over time are simply not discussed. This statement should not be taken to mean that value judgments are not employed in these texts. On the contrary, they are, though usually in a nebulous manner (something is "fair," "just," or "equitable," without definition), implicitly without identification, or by way of commandment (one "should," "ought," or "must"). Seldom is an effort made in discussing policy matters to distinguish between facts, analytic conclusions, and value judgments. On obviously controversial issues, all points of view frequently emerge with equal standing regardless of basis or merit—matters which apparently warrant little discussion. Thus true controversy is never analyzed; yet topics are often included simply because they are controversial and with little real regard for relative significance.

5. *Presentations Are Marred by Some Errors of Fact and Analysis.* Errors of fact appear in all of the texts considered, but the committee feels that they are not of a magnitude to introduce serious distortion. On the other hand, authors

frequently substituted unsupported conclusions or points of view for analysis, and where analysis was attempted it was usually superficial and often misleading if not in outright error. History books depict the main function of the Federal Reserve System as the provision of an elastic currency supply through rediscounting operations. Problems books contain many unsupported assertions such as, "wars are fought by the generations that make them, but paid for by the people who come after," and "low taxes add to the money customers can pass over the counter—they are inflationary." Errors of this kind were less frequent in economics texts, but the paucity of analysis in these books was appalling.

6. *Some Redeeming Features Exist.* While these texts do not provide the kind of economic understanding needed for the exercise of responsible citizenship, the committee is agreed that the student who reads them is on the whole better off for having done so. He should be better able to read magazine and newspaper articles with understanding and to communicate more effectively. His knowledge of some aspects of economics, such as the role of international trade, the farm problem, big business, and labor problems should be considerably improved. Some of the problems texts should be particularly successful in arousing student interest and perhaps in stimulating further reading. History books dealt with many factors of economic significance.

Despite these positive values, the principal conclusion of the committee stands: the economic analysis contained in social studies textbooks is distressing in its absence and unfortunate when attempted. It may be hoped that the ample room for improvement which clearly exists will in due course be filled, and the economic quality of the social studies courses in the high schools correspondingly improved. If so, it will require the co-operation of educators and publishers, and of authors whose training in economics qualifies them for the task at hand.

PAUL R. OLSON,
Director, Textbook Study Committee.

EXHIBIT IV

Statement submitted by Haig Babian, President, Challenge Communications, Inc.

The most persistent problem I have run across during my seventeen years in economic education, both under academic and commercial sponsorship, is: *What kind of economics* should the American people come to understand? Assuming that there is general agreement on the proposition that economic illiteracy is undesirable, a consensus on the kind of economics we want to teach or get across would go a long way toward making the life of the economic educator a great deal easier.

This is by no means a simple issue. In some school systems *home economics* is considered economics; in others, *consumer economics* is offered in fulfillment of the requirement of a one-semester course in economics. The academic economist would prefer what he calls *analytical economics*, but not all members of the American Economic Association would agree that no distinction should be made between liberal and conservative branches of their profession. Many businessmen supporting economic education efforts believe that a description of the virtues and achievements of the free enterprise system is all the economics that anyone needs to know; while many of those who teach American history believe that they are teaching enough *economic history* to take care of the economic component of the curriculum. And so it goes.

Thus the issue of *what kind of economics* becomes intertwined with *what is economics*, and the resulting confusion weakens efforts to improve the economic literacy of the nation.

In my view, economic literacy requires at least a minimal number of understandings of the principles of economics; and further, these principles, properly packaged and properly balanced with other curriculum requirements, *can* begin to be taught at the elementary level and, thereafter, with increasing refinement until a course approximating a principles course in economics is given at the twelfth grade level. This is already beginning to happen in some parts of the country.

It would happen in more places if economists, economic educators, and educators in general would stress the relevance of the distinction between the *substance of economics* and the *non-economic values of our society*. Economics is a science to the extent that it has laws, principles and immutable relationships of forces. No economic system can repeal, for example, the law of supply and demand, or of the need for investment, or of the need to have savings to make investments. To the extent that there is economic illiteracy, this illiteracy can be traced to the inability of people to understand or to reason through such basic economic verities, of which there are, of course, many more than the two or three I have mentioned. All economic systems operate on the same set of economic relationships and forces, and to that extent they are all alike. It is only when we come to the question of values that the differences appear.

I for one have long believed that if the majority of our citizens understood the basic verities and principles, the relevance of values would more sharply come into focus.

No one in this country wishes to lose his freedoms. Everyone in this country who understands how a forced draft economy operates and compares this with the usage of economic verities in a market-oriented economy would make a conscious choice for the latter. The man who appreciates economic truths would understand the choices before him, including the choice of sacrificing some short-run efficiency for the long-run benefits, such as protection of his freedoms.

Now, assuming that all of this is recognized, the next question is: Toward whom should economic education direct its greatest effort? Here we are confronted by the old economic truism that efficiency requires the arrangement of limited resources for the best fulfillment of unlimited needs. In other words, it is difficult, in fact impossible, to do everything at once. The adult needs economic education; the college student needs it. So does the youngster in elementary or secondary

school, as well as his teachers. Without a doubt, the principal need is to reach the student before he emerges from high school. And to do this most effectively, we have to assume that the student, even one who completes high school, will be a terminal student in economics.

A great deal of work is being done by professional economists to set minimal standards of economic understanding. Obviously it is the job of the economic educator—to the extent that his efforts are to be distinguished from those of other educators—to get these minimal standards into the elementary and secondary school curriculums. But to do this he must gain influence with local school boards, with curriculum committees, with the principals and the teachers. And here the role of the professional economic educator is crucial. He cannot tell the powers at the local level what they *should* do or *must* do. He can only suggest, and his suggestions are only as good as the programs that he has to offer are convincing. To be convincing, the economic education movement must make sound suggestions, get active cooperation, engage in research, and offer programs that attract attention and eventually gain acceptance.

I suggest that such efforts will not be successful unless they recognize the *total* problems in education confronting those on the local firing line People at the local level are worried about the total curriculum, not only about economics. Therefore, if economics is to be given its proper place and time in the total curriculum, what the economic educator has to offer must be put in that context—and conveniently put so that it will be adopted.

This brings up the final and most important point I can offer. There is an aspect of economic education that has been too long ignored. To fully appreciate this aspect, I would like to build a set of assumptions that follow the course of logic expounded above. First, assuming that it is widely recognized that economic illiteracy must be corrected; second, assuming that the importance of reaching students before they get out of high school is of paramount importance; third, assuming that the people who control the educational process at the local level want to improve the economic content of their curriculum; fourth, assuming that the economic education movement, unselfishly financed and pedagogically sound, offers inspirational leadership—assuming all this, what of the textbooks, the workbooks, the teachers guides, the films, filmstrips, slides, flannel boards, and other teaching aids that the teachers are to use and to which the students are to be exposed? How good are these? Who prepares them? And how do the teachers get hold of them?

The answer obviously is that the commercial publishers turn out 99.9% of the materials used in the primary and secondary schools. Whatever else the economic education movement might wish to do, nothing will be accomplished unless there is an improvement in these materials. How sensitive are the commercial publishers to the problem of economic illiteracy? How closely do the economic educators work with the publishers in the preparation of materials?

In our consideration of this question, we ought to take a look at another economic law, that of *supply and demand.* I suggest that throughout the postwar era what the teachers have actually used in the classroom has been determined by what was in supply. And what was in supply has not always been what the economic educator would consider the best. But I also suggest that the wording of the law can be rearranged to read *demand and supply,* which means that the commercial publishers will turn out and make available that which is demanded. The economic education movement can render a great service by seeing to it that those engaged in the preparation of teaching and study materials are kept informed of the latest developments and needs in economic education. Good materials will inspire informed and sophisticated demand. Conversely, informed and sophisticated demand will inspire the supply of good materials.

I would therefore conclude that economic education can render its greatest service to the cause of economic literacy by seeking to influence the materials that are prepared and distributed by the commercial publishers. This is the final payoff, in more ways than one, and, I might add, the only proper one in a market-oriented society.

Respectfully submitted.

HAIG BABIAN,
President, Challenge Communications, Inc.

EXHIBIT V

Letter to Senator William Proxmire, Chairman, Joint Economic Committee, from Dr. William N. Leonard, professor of economics, Hofstra University.

HOFSTRA UNIVERSITY,
DEPARTMENT OF ECONOMICS,
Hempstead, Long Island, N.Y., April 19, 1967.

Senator WILLIAM PROXMIRE,
Chairman, Joint Economic Committee,
U.S. Congress, Washington, D.C.

DEAR SENATOR: In the New York Times of April 15, 1967, I noted an article headlined "Economic Education Termed Inadequate by Two Congressmen" which referred to testimony before the Joint Economic Committee by Senator Long and Representative Mills on the glaring lack of economic education among our citizens. Their comments were in line with my experience and the impressions most economists have.

However, a third witness, Professor Duesenberry of Harvard, presently a member of the Council of Economic Advisers, is quoted as saying that college economics instructors preferred students who have had no high school education in the subject because there was then "less need to uproot misconceptions and misinformation."

I cannot agree with Professor Duesenberry on this score. The misconceptions and misinformation referred to stem from the entire student environment—home, church, school, friends, etc.—and if they are to be corrected, it is the school's function to do so. Since at least half of these students will not go on to college, yet will vote on important economic issues, they must receive accurate and up-to-date information and interpretation of the American economy. We cannot assume that economics is merely a "discipline" or "higher learning" that cannot be distilled and taught in its basic aspects at the high school level.

Professor Duesenberry implies that the high school teacher reinforces misconceptions in handling economics, or social studies courses which include economics. This may be true where the high school teacher does not know modern economics and merely repeats current folklore about taxes, debt, profits, tariffs, the role of government, and other matters on which considerable misunderstanding exists. But if the teacher receives some training in economics—in a course, workshop, institute, or other accepted medium—he or she is less likely to propagate myths and misunderstanding.

For more than 13 years on Long Island I have been concerned with economic education, working with schools, labor, industry, and other groups. As professor of economics at Hofstra, I helped organize the Long Island Council on Economic Education which sponsors conferences, workshops, in-service courses and other means of communicating the new economics to teachers. Dr. John Miller, Superintendent of Schools in Great Neck, has served as Chairman of the Council since its inception. When we began our work, only 15 per cent of the schools had distinct half-year courses in economics; now 70 per cent do, according to a survey we took a year ago. Local teachers have also been aided by the Joint Committee on Economic Education and the New York State Council on Economic Education.

Over the years there has occurred a decided improvement in understanding by teachers in our area. Hofstra University takes 90 per cent of its students from Long Island (including New York City where economics is a required high school subject), and the understanding of economics by students trained in local schools has risen permitting us to raise the level at which we give the beginning college course in economics. My firm impression is that economics in the schools has moved forward in recent years, just as the teaching of mathematics and foreign languages in elementary and high schools has benefited from the work of NDEA institutes.

I am sure that you and the members of the Joint Economic Committee are well aware of the crucial importance of raising the level of economic understanding in this country. Our ability to maintain a growing and stable economy, to tackle

problems of structural unemployment and poverty, to settle industrial disputes with a minimum loss of time, to play a role in economic development consonant with our economic strength and know-how and the needs of underdeveloped nations, to solve urban problems, to promote world trade, all depend upon better understanding of economics. The contributions being made by the Joint Economic Committee to economics are a testimonial to the high purpose of your committee in the field of education.

We do need more financial assistance from government to carry on programs which meet local needs. The money for NSF institutes and HEW-supported programs is limited. Although Hofstra (and the Long Island Council on Economic Education) has undertaken three workshops (two of them in the summer) in which teachers paid a substantial part of their way, we have been turned down by NSF for a six-weeks summer institute for 1967 in which tuition and other expenses of teachers would have been fully underwritten. It is increasingly difficult to induce teachers to give up part of their summer to take workshops unless they find the terms financially attractive, which means full compensation for their expenses.

Each year our Long Island Council raises money from industry, education, and labor for our work, but this is not easy to do, and lack of finances requires us to carry on a limited program of economic education. Some of our well-to-do and progressive local school systems, such as Great Neck and Manhasset, can engage in special programs to enrich the economic knowledge of their social studies teachers, and have done so, but these cannot be undertaken on ther own by the majority of school districts. It is my hope, shared also by Dr. Miller, that the activities of the Joint Economic Committee can alert Congress and the Executive Branch to the need for more federal support of local and regional programs of economic education.

Sincerely yours,

Dr. William N. Leonard,
Professor of Economics and Secretary,
Long Island Council on Economic Education.

PART 2

Materials submitted with reference to national programs in economic education.

EXHIBIT I

The Joint Council on Economic Education, 1212 Avenue of Americas, New York, N.Y.

Fact Sheet 1967

Origin, Purpose, Board of Trustees, Executive and Advisory Committees.—The Joint Council on Economic Education is an independent, non-profit, non-partisan, educational organization incorporated in 1949 to coordinate, service, encourage and improve economic education. The Joint Council provides national leadership for the economic education movement under policies from its Board of Trustees and administrative directives from the Executive Committee. Members of standing committees—finance, publications, public information—serve as advisors to the staff. Leadership in the Joint Council comes from educators, economists, business, organized labor, farm groups, foundations, professional bodies, research organizations and government agencies. This diversity of support has been a crucial factor in the success of the Joint Council.

Financial Support comes from foundations, business, organized labor, and farm groups. The 1967 budget is $750,000. A detailed budget is available upon request.

Affiliated and Cooperating Organizations.—The Joint Council is the only organization in the field that is formally affiliated with the American Economic Association and the professional groups within the National Education Association concerned with economic education. Thirty other organizations actively cooperate in the work of the Joint Council.

Affiliated Councils.—The Joint Council's principal medium for improving economic education is the network of 45 state and local councils. The councils were developed and modeled after the organizational pattern of the Joint Council. Each has its own board of trustees and does its own funding. Leadership is provided by the educational profession. The federated structure of the national council and of its local councils makes possible the maximum amount of local community support for the introduction and improvement of economic education in the schools.

Centers for Economic Education.—The Joint Council has assisted in the establishment of 33 Centers for Economic Education on college and university campuses. The Centers are independent of outside direction. Centers emphasize research, publication, pre-service education of teachers, and the selection, development, evaluation and dissemination of materials. Councils and Centers reinforce and complement each other.

Projects and Services.—The Joint Council program has three facets; (1) cooperation with school boards, community groups, educational leaders, and teachers in stimulating the inclusion of economic understanding in the curriculum; (2) cooperation with universities and colleges in improving the preparation in economics for teachers; (3) materials evaluation and development.

Projects and Services

The following are brief accounts of selected projects and services of the Joint Council. Detailed information appears in the *Annual Report* and descriptive brochures available upon request.

DEVELOPMENTAL ECONOMIC EDUCATION PROGRAM

One-third of the Joint Council's 1967 budget is earmarked for the Developmental Economic Education Program (DEEP) now in its third year. DEEP's

objective is the development of "prototype"—kindergarten through twelfth grade—economic education programs which foster greater economic literacy.

This is a cooperative endeavor of the Joint Council, the affiliated councils, consulting economists, colleges and unversities and—most important—the local school systems.

Twenty-nine school systems with 4.4 million students taught by 174 thousand teachers have been phased into DEEP. Professional educational organizations have recognized the experimental program as being the biggest of its kind in the behavioral science field. In keeping with the experimental objectives behind DEEP entrants have been selected for both geographic and organizational diversity. The project now includes two parochial systems (dioceses of Chicago and Trenton), a State Department of Public Instruction (Wisconsin), three suburban schools (Downey, Calif.–Manhasset, N.Y.–Quincy, Mass.), clusters of schools around a central city (Des Moines, Duluth, Portland), four county districts (Contra Costa, Calif.–Dade, Fla.–Jefferson, Colo.), and the city school systems of Atlanta, Minneapolis, Omaha, Pittsburgh, Seattle, Tulsa, Wichita, Baltimore, Chattanooga, Lansing, New York, Richmond, Gary, Granite District (Utah), Little Rock, and New Orleans.

Effective teacher education is a key to effective economic education. During 1965–1966 over 4,500 DEEP teachers were provided with some formal training in economics and the art of communicating subject matter to teachers. Guides for teachers and learning materials for students are important products of the DEEP effort. Constructive evaluation is part of the developmental process—data are continuously fed back into the system to effect a better product.

THE COLLEGE AND UNIVERSITY EXPERIMENTAL PROGRAM

This program is designed to be a systematic, long-range, nationwide, series-of controlled experiments with alternative teaching techniques in the college introductory course in economics. The first phase is the development of "before and after" standardized test for both semesters of the introductory course. The tests will be completed in 1967. They will be used as research tools for comparative analysis and for testing hypotheses about teaching of elementary economics at the college level. In the second phase the Joint Council will begin experimental programs with selected colleges and universities in the fall of 1967. These projects are being undertaken with the advice and participation of the Economic Education Committee of the American Economic Association.

SUMMER WORKSHOPS AND INSTITUTES

The Joint Council and the affiliated councils co-sponsor summer programs in economic education for classroom teachers and administrators. 50 workshops and institutes attracted 2,313 participants in 1966. The Joint Council provides study materials, workshop libraries, films and consulting services.

MATERIALS DEVELOPMENT PROGRAM

The Joint Council has commissioned distinguished economists to prepare 14 monographs for use in Problems of Democracy, U.S. History and General Business courses. A teacher's guide and filmstrip will accompany each. Six of the monographs will be published by Scholastic Magazine, Inc. and eight by McGraw-Hill Book Co., Inc.

MATERIALS EVALUATION COMMITTEE

The Joint Council's Materials Evaluation Committee reviews supplementary materials, weighs these against basic criteria and recommends selected items. Annotated reports were published in 1961 and 1963. The committee is being reactivated in 1967. This is a cooperative effort involving affiliated councils, centers, consulting economists and educators. The reports of the Materials Evaluation Committee is part of the Joint Council's multi-phase program to assist the schools in their efforts to expand and strengthen the teaching of economics.

THE KAZANJIAN FOUNDATION AWARDS PROGRAM

The Joint Council administers an Awards Program for the Teaching of Economics under a grant from the Calvin K. Kazanjian Economics Foundation. The Awards Program provides recognition for outstanding economic education teaching practices. Each year the Joint Council publishes *Economic Education*

Experiences of Enterprising Teachers—a synopsis of the individual projects. A national depository and distribution agency for the award winning teaching materials has been established in the Center for Economic Education at New York University.

SERVICES

Newsletters: The Joint Council publishes *The Curriculum Director's Newsletter, The College and University Newsletter, DEEP Ideas* and the *JCEE Newsletter.*

Materials: Selected materials in economic education are available at cost plus handling. A *Check List* of publications and filmstrips will be furnished on request.

Films: The TV series *The American Economy* may be borrowed from affiliated councils. *Part of The Main* a film describing the Council's role in extending economic education will premiere in April, 1967.

PART 3

Materials submitted with reference to school programs in economic education.

EXHIBIT I

"Organizing a Curriculum Around Social Science Concepts" by Lawrence Senesh, Purdue University, reprinted from *Concepts and Structure in the New Social Science-Curricula*, Social Science Education Consortium, Inc., 1966.

For years professional associations and social science educators have defined and redefined the objectives of social studies education. Volumes have been written about the behavioral changes, the skill objectives, and the changes in attitudes that social studies education is expected to achieve. Many of the statements emphasize that the purpose of social studies education is indoctrination of values. The National Council for the Social Studies has emphasized for years in its publications that the ultimate goal of education in the social studies is the development of desirable socio-civic behavior and the dedication of youth to the democratic society. Fundamentally, nobody would object to these goals if the students could achieve this behavior through the rational analysis of society. But in most of the statements indoctrination of values is emphasized at the expense of analysis.

THE NEED FOR ANALYTICAL THINKING

The primary function of the development of analytical thinking is to help our youth understand the structure and the processes of our society. With possession of analytical tools, our youth will be able to understand the dynamic changes of our society and the problems created by science and technology. In the final analysis, the purpose of social science education is the development of problem-solving ability. By acquiring the analytical tools and the skill to apply the tools to the problems, our youth will feel that, as adults, they can participate intelligently in the decisions of a free society. The development of the problem-solving ability will help our young people to gain respect for social sciences as an organized body of knowledge and will motivate them to choose social science as a professional career. This emphasis is neglected in the guidance programs in our schools.

The correct use of analytical tools and the discovery of the ideas underlying the social process require a particular mode of analytical thinking. The development of analytical thinking requires a long process of conditioning. Such conditioning should start in grade one of the primary grades.

The present social studies program does not offer the proper intellectual framework to develop the analytical faculties of our youth. Social studies educators who have tried to identify generalizations for the social studies curriculum have suppressed the unique characteristics of the individual social science disciplines and formulated concepts so general that they are without analytical content. Since social scientists have not yet achieved a unified theory of society, economists, sociologists, political scientists, and anthropologists observe society from different points of view, and their findings have to be superimposed on each other before social change can be understood. Since all the social science disciplines are nec-

essary to explain social phenomena, the fundamental ideas of all the disciplines should be introduced in the school curriculum. Why not in grade one?

GRADE PLACEMENT OF THE SOCIAL SCIENCES

Some academicians interested in the social science curriculum have raised the question many times whether social science instruction should not begin with geography and history. In an article, "The Structure of the Social Studies,"[1] Professor Scriven recommends that social science education start with geography and history in grade one. He justifies beginning with history and geography because the generalizations are less "high-falutin' " and nearer to common sense. He would rather introduce a "low-falutin' " approach in the lower grades, hoping that "high-falutin' " understanding will develop later. The history of the social studies curriculum indicates that a curriculum begun as "low-falutin' " will remain "low-falutin'."

Professor Scriven does a disservice to geography and history when he assumes that a geographic or historical phenomenon can be explained meaningfully without the aid of the various social science disciplines. Primary school children study Indians and the colonial period, but since they do not possess the fundamentals of economics, political science, sociology, and anthropology, their learning is trivial. It would make more sense if geography and history were culminating courses in high school. In the intervening years the children could have learned the fundamental ideas of the various social sciences, thereby enriching the geography and history courses.

THE ORGANIC CURRICULUM

A team of social scientists has worked with me during the last two years to outline the fundamental ideas of the various social sciences. This team includes Professor David Easton, Political Science Department, University of Chicago; Professor Robert Perrucci, Sociology Department, Purdue University; Professor Paul Bohannan, Anthropology Department, Northwestern University; and Professor Peter Greco, Geography Department, Syracuse University. These fundamental ideas of the various social sciences represent:

a. a logical system of ideas;
b. the cutting edge of knowledge; and
c. an organization of ideas that can be used at every grade level.

Presenting the structure of knowledge in this way challenges popular curriculum practices based on minimum understandings broken up and parceled for different grade levels.

Our team has been guided by the awareness that we are training children for an age which we don't even foresee. We are giving the children knowledge that we want them to use in the 21st century. A hundred years ago the idea that our children are a generation ahead was a platitude. Today it is a drama. No longer can parents understand their children when they come home from modern mathematics or modern science classes. The stage where parents will not understand their children when they talk about the nature of society will soon be reached.

After we had formulated the fundamental ideas of the social sciences, I visited first grade classes to find out how many of these ideas could be related to the first graders' experiences. I found that the children's experience in social matters is potentially so meaningful that the fundamental structure of knowledge can be related to their experience.

After we found this out, we formulated the next question. If we teach all these fundamental ideas in the first grade, what can we teach in the second grade? The same structure of knowledge, only now with increasing depth and complexity. And in the third grade we teach the same structure but with still greater depth and complexity, as the child's experience grows.

On the scope and sequence chart, all concepts are listed vertically, and all grades are shown horizontally. Since every concept is taught in every grade, the scope and sequence chart should show in the first column, for the first grade, very pale checkmarks. In each grade the intensity of the checkmarks is increased until the darkest color is used for the twelfth grade, indicating that the same concept has been taught with increasing depth and complexity. The question arises as to how this can be done.

How can political science, sociology, economics, and anthropology be taught all in one grade, particularly the first grade? This is a new art, I think, which I call

[1] In G. W. Ford and Lawrence Pugno, *The Structure of Knowledge and the Curriculum* (Chicago: Rand McNally, 1964).

the orchestration of the curriculum. Units have to be constructed in such a way that different units give emphasis to the different areas of the social sciences. In some units the sociologist plays the solo role while the other social scientists play the accompaniment; then the economist is the soloist, then the anthropologist, and so on.

The first element of my approach, taking the fundamental concepts and teaching them with increasing depth and complexity, I call the organic curriculum because these concepts are not presented atomistically between grade one and rade twelve. They are introduced all at once and grow with the child, as he moves from grade to grade. I call the second element the orchestration of the curriculum. The child may not know that the sociologist is talking to him, or the economist, or the political scientist, nevertheless he will be exposed to the social science disciplines in an undiluted form.

FUNDAMENTAL IDEAS IN ECONOMICS

The solo role of the economist can be illustrated by the following development of fundamental economic ideas. The same ideas and relationships are shown in chart form in Figure 1.

1. The central idea of economics is the scarcity concept, namely, that every society faces a conflict between unlimited wants and limited resources.
2. Out of the scarcity concept a family of ideas emerge. Because of scarcity, man has tried to develop methods to produce more in less time, or more with less material and in shorter time. Various types of specialization were discovered in order to overcome the conflict between unlimited wants and limited resources. We specialize geographically, occupationally, and technologically. The third family of ideas grows out of specialization.
3. Because of specialization, we are interdependent; interdependence necessitates a monetary system and a transportation system. The fourth idea emerges from the first, scarcity, and from interdependence.
4. Men had to discover an allocating mechanism and this is the market, where through the interaction of buyers and sellers price changes occur. Prices determine the pattern of production, the method of production, income distribution and the level of spending and saving, which, in turn, decide the level of total economic activity. The fifth family of ideas grows out of the fact that the economic system is a part of political society.
5. The market decision is modified by public policies, carried out by the government, to assure welfare objectives. These welfare objectives are determined in the United States through the political interaction of 200 million people which generates thousands of welfare objectives which I have reduced to five: our attempts to accelerate growth, to promote stability, to assure economic security, to promote economic freedom, and to promote economic justice.

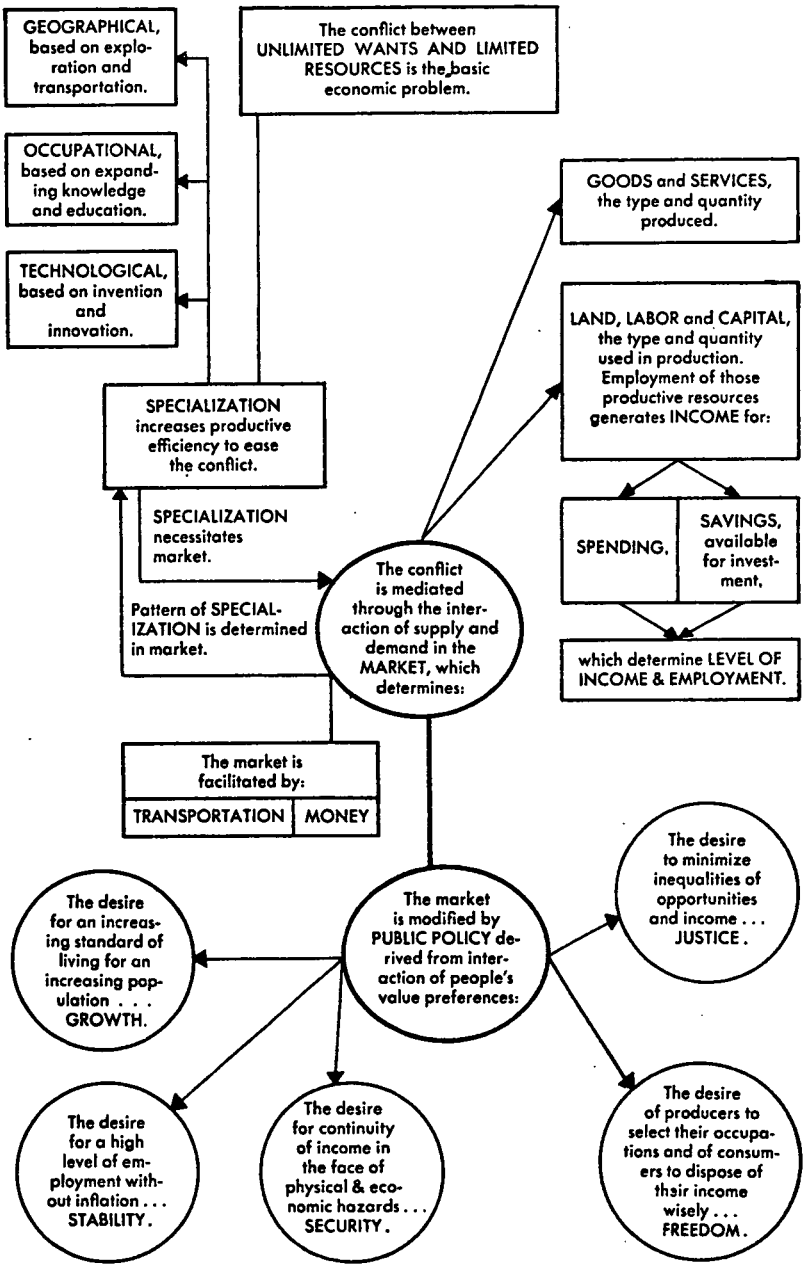
These are the fundamental ideas of economic knowledge which we try to incorporate at every grade level, always with the objective in mind that these analytical tools should help the students analyze the cause of a problem, to measure its scope, to develop some solutions, and to measure the dislocations which have been caused by the attempt to solve it. We try to put the problem in a dynamic context and then see what other dislocations are created.

TEACHING APPLICATIONS OF ECONOMICS

Now I would like to present a few ideas on how I relate these economic concepts to the child's experience. The first grade child recognizes the scarcity concept because he lives it. He goes to the A&P and he recognizes that he cannot have everything which is on the shelves. The "three wish" fairy tales reflect men's yearning to close the gap between unlimited wants and limited resources. Cutouts from the *National Geographic Magazine* and other pictorial material can dramatize the different degree to which nations have satisfied their people's wants.

Division of labor can be dramatized with the children by using simple experiments in the classroom. The class may organize two teams. One team executes a production process, such as making gingerbread boys on an assembly line, while the other makes them without using the division of labor. The time keeper decides which of these teams has been able to produce a given amount in less time and with less waste of tools and materials. Children discover division of labor in the home (where each family member does a particular job), in the neighborhood, in the city, in the nation, and in the world. Children discover the division of labor between men and machines. All these kinds of specialization

Figure 1
FUNDAMENTAL IDEAS OF ECONOMICS



introduce to children the ideas of international trade and mass production. In many classes, the teacher associates the children's discoveries with those of Professor Adam Smith and Mr. Henry Ford. Such identification of the child's experience with the experience of the big society is necessary to the success of this program.

Children's literature is full of delightful stories that can underpin specialization and the resulting interdependence. Through stories and games the children learn that trading would be much more complex if we could not use money, as a medium of exchange.

In the second grade, the children can develop models for perfect and imperfect competition, and they can simulate the operation of the market. To dramatize the principle of perfect competition, the children may become wheat farmers one morning. Each child can represent the farmers of the different wheat-growing countries. The teacher can play the role of the broker whose task is to sell the farmer's wheat at the best possible price. At the end of the harvest the farmers report to the broker how much they have produced. The weather was good throughout the world, and since the game limits each country's production to two truckloads, the farmers from Australia, Canada, U.S., U.S.S.R., and Argentina ask the broker to sell their two truckloads at the best possible price. The broker starts an auction among the rest of the class who are the buyers. Their ability to bid has been limited by the toy money the teacher has given them. The bidding starts at a low price and as the buyers bid for the ten truckloads, the price moves up toward an equilibrium price at which all the wheat that has been offered for sale can be sold. The children discover the most important characteristic of perfect competition—the lack of control of the market by producer and consumers. The class may extend to another period when the harvest was twice as good as before. The children will be surprised to learn that the equilibrium price will be so low that the farmers' earnings will be smaller than previously when the farmers brought the smaller quantity to the market. This activity introduces to the children the concept of elasticity of demand without its being identified as such.

To dramatize imperfect competition, some children in the class may play the role of inventors, manufacturers, and owners of grocery stores. The game will help children discover that all these producers can control the market in different degrees. The class discussion can bring out how these different degrees of control affect the producers' power to set prices.

Discussion finally gets to public policy, where the children decide what goods and services will be purchased together. Many goods and services are not purchased by each family but purchased together. The Mayor, the Governor, and the President of the U.S. each prepare a long shopping list. Discussing the lists, some people think they are too long and others think they are too short. When they agree upon the proper length of these shopping lists, taxes are collected. The people may decide to pay for a part of the list from tax monies, and to pay for the rest by borrowing money. If they don't want to pay taxes, they have to go into debt to buy goods and services together.

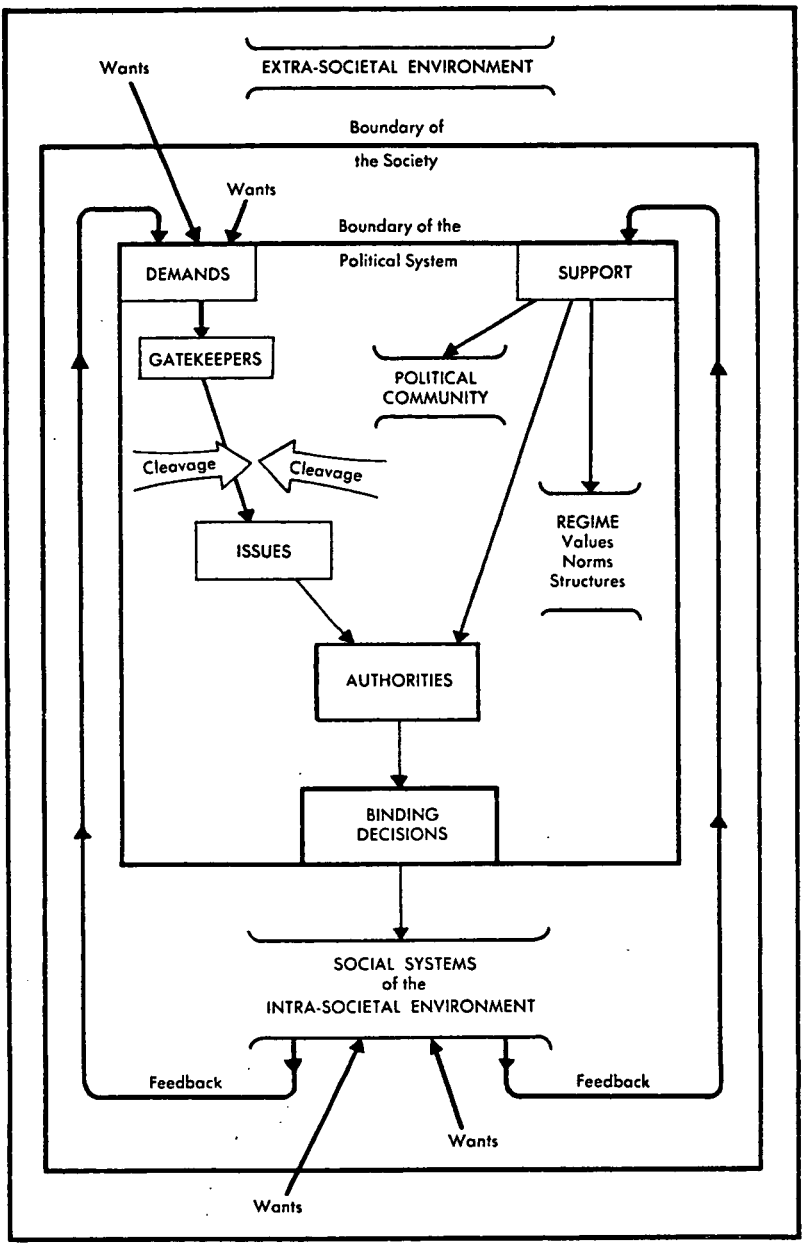
FUNDAMENTAL IDEAS IN POLITICAL SCIENCE

The important idea relationships of political science were defined just as with economics. Figure 2 shows the systems analysis of political life which Professor David Easton of the University of Chicago has developed. This chart contains the following ideas:

1. Members of society have many wants which they hope to satisfy.
2. Some of these wants will be satisfied through the economic system, family system, educational system, and religious system. Wants that cannot be satisfied by any of these systems are channeled to the political system.
3. As the people's wants enter the political system for satisfaction, they become demands. These demands are screened.
4. The screening process operates through formal or informal organizations. These organizations act as gate keepers. Some of the demands vanish. Others become issues debated in the political community (a group who share a desire to work together as a unit in the political solution of problems).
5. The issues are molded by cleavages in the political community and by the authorities which translate these demands into binding decisions.
6. The binding decisions affect the social systems and the participants in them, generating positive or negative support.
7. The support may be directed toward the political community, toward the regime (a political system which incorporates a particular set of values and

Figure 2

SYSTEMS ANALYSIS OF POLITICAL LIFE



norms, and a particular structure of authority), and/or toward the authorities (the particular persons who occupy positions of political power within the structure of authority).

8. The binding decisions generate new wants which appear again at the gate of the political system asking for recognition.

9. The source of the support for the political community, regime, and authorities may originate from the social systems in the form of education, patriotism and other mechanisms.

TEACHING APPLICATIONS OF POLITICAL SCIENCE

In the same way that the fundamental ideas of economic knowledge can be related to the child's experiences, we can also relate the fundamental ideas of political science on every grade level. The home is a good example of how the innumerable wants of the family are satisfied through the various institutions, and of how many of the wants are exposed to the political scrutiny of the members of the family before they become the rules of the home. The discussion about the various forces which keep the family together has a striking resemblance to the different types of supports which keep the political society together. Looking upon the political system in this way is a fundamental departure from the present civics curriculum where the main emphasis is on description of the legislative, judicial and executive branches of the government.

FUNDAMENTAL IDEAS IN SOCIOLOGY

Professor Robert Perrucci of Purdue University has developed a fundamental structure of sociology which is already in use in experimental classrooms. The core idea is that of values and norms. The system is illustrated in Figure 3.

1. Values and norms are the main sources of energy to individuals and society.
2. Societies' values and norms shape social institutions, which are embodied in organizations and groups, where people occupy positions and roles.
3. People's positions and roles affect their attitudes toward society's values and norms, and result either in support of the existing values and norms, or in demands for modification of them, and the circle starts again.

TEACHING APPLICATIONS OF SOCIOLOGY

The conceptualization of sociology makes is possible to develop units in the primary grades which will make children aware of the importance of predictable behavior among people. Units may show how the ability to predict human behavior creates orderliness in the family, neighborhood, city, and the world. The teacher can demonstrate through experiments how unexpected situations have both very funny and very sad consequences. Children's plays can bring out that the school, business and family could not exist without predictability and order in human behavior.

The many positions men take in society can be observed at home. The children may prepare charts showing the different positions fathers, mothers, and children take and the difficulty of fulfilling all the expectations attached to the positions. The children can show that, depending on which positions we think more important, and depending on our ability, we can fulfill some positions better than others. The story of *The Ant and the Grassshopper* [2] points out effectively the value preferences of the two. The children can also observe and experiment in the classroom how men's positions, due to science and technology, and due to change in ideas, have changed during history.

Laying the foundation of sociological concepts in the primary grades helps children to understand later how interplay between values and institutions brings about social reforms.

FUNDAMENTAL IDEAS IN ANTHROPOLOGY

Fundamental ideas of anthropology have been developed by Professor Paul Bohannan of Northwestern University. Figure 4 shows the following idea relationships.

1. Man may be looked upon as a—
   a. mammalian animal,
   b. social animal, and
   c. cultural animal.
2. Man, in these three capacities, has needs.

[2] *The Ant and the Grasshopper; A Georgian Folk Tale*, translated from the Russian by Fainni Solasko (Moscow: Foreign Languages Publishing House, no date).

Figure 3

FUNDAMENTAL IDEAS OF SOCIOLOGY

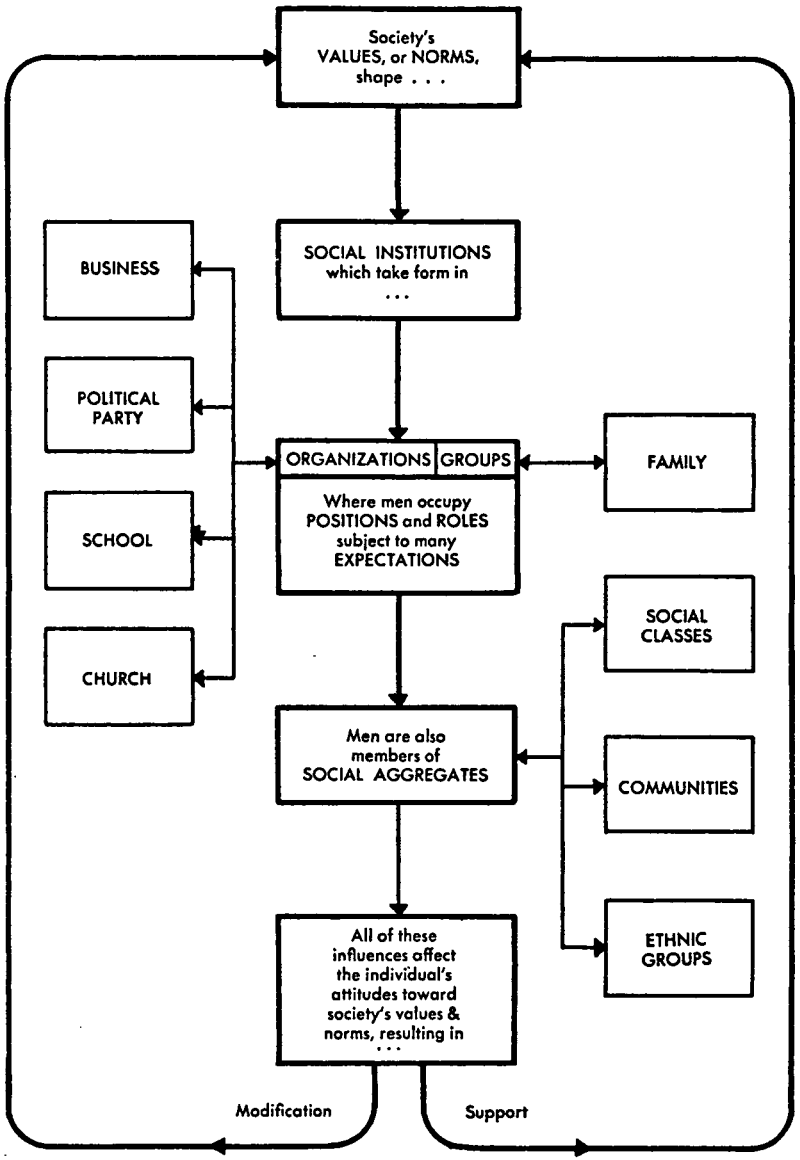
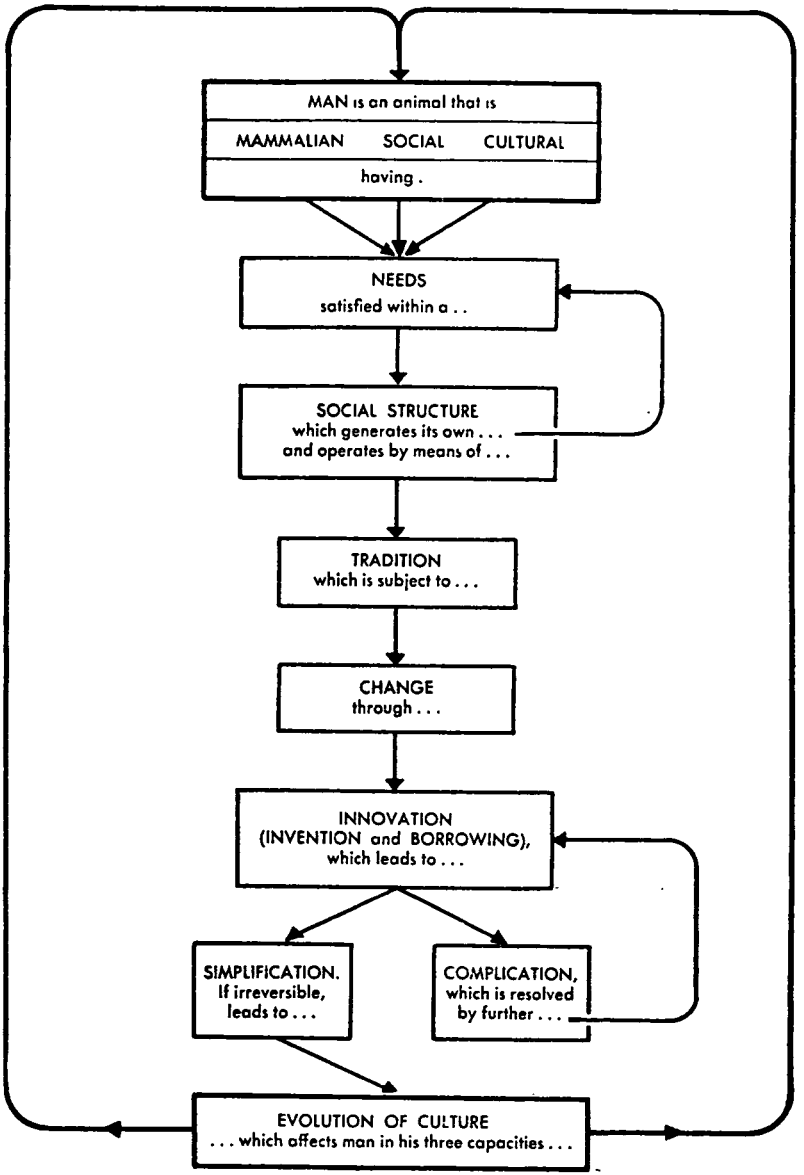


Figure 4

FUNDAMENTAL IDEAS OF ANTHROPOLOGY



3. Man's needs are satisfied within a social structure.
4. Social structure itself has needs (called "requisites") which must be satisfied if it is to persist.
5. Needs are satisfied within a particular set of patterned behavior: tradition.
6. All traditions leave some wants unsatisfied.
7. Dissatisfaction leads to changes in traditions.
8. Changes take the form of invention and borrowing: innovation.
9. Innovation leads to complication and simplification.
10. Complication leads to social dislocations. Problems caused by dislocations may be resolved through further innovations.
11. If simplification is of such a magnitude that it forms an irreversible base for man's behavior (for example, the use of fire), it leads to evolution of culture.
12. The evolution of culture affects man in his three capacities as a mammalian, social, and cultural animal.

TEACHING APPLICATIONS OF ANTHROPOLOGY

The conceptualization of anthropology in this way will enable the elementary school curriculum builder to develop meaningful units on such conventional subjects as the Eskimos and the American Indians.

A unit on the Eskimos, for example, demonstrates how acceptance of the idea of money changed the life of the Eskimo. The Eskimo in our unit acquired his food, clothing, and part of his shelter from caribou. The scarcity and his nomadic life affected his value system. Then he found out that far away there was a trading post where Eskimos could trade silver fox pelts for articles which he had never had before. Our Eskimo family stopped hunting and started to trap silver fox to use as a medium of exchange. The family settled down near the trading post in an Eskimo village. There was less uncertainty here. This story presents to the children evolution in the Eskimo culture. Living together with other Eskimos created new problems. The family's needs changed. Their desire for learning increased. The changes came about because money as a medium of exchange had been accepted by the Eskimo family.

In the higher grades, the conceptualization of anthropology will help the curriculum builders to develop units which will show how the development of underdeveloped areas and the pursuit of nationalism affects people's tribal loyalties and changes their physical, social and cultural needs.

These are the four areas of social science in which we have tried to formulate the fundamental idea relationships. Deliberately, we are leaving the areas of history and geography to the last stages of our inquiry. The reason is that these two areas have a different character from the other social sciences. They have to borrow many of the analytical tools of the other areas of the social sciences to explain a geographic area or the processes of history. Until now history and geography in the elementary and secondary school curriculum have been mostly a narrative of men's actions and a description of their environment. Now, our team of social scientists hope to use their analytical tools to explain cause-effect relationships in man's actions in time and place. Using the analytical tools of social scientists, the children can begin to simulate the historians' and geographers' methods of inquiry.

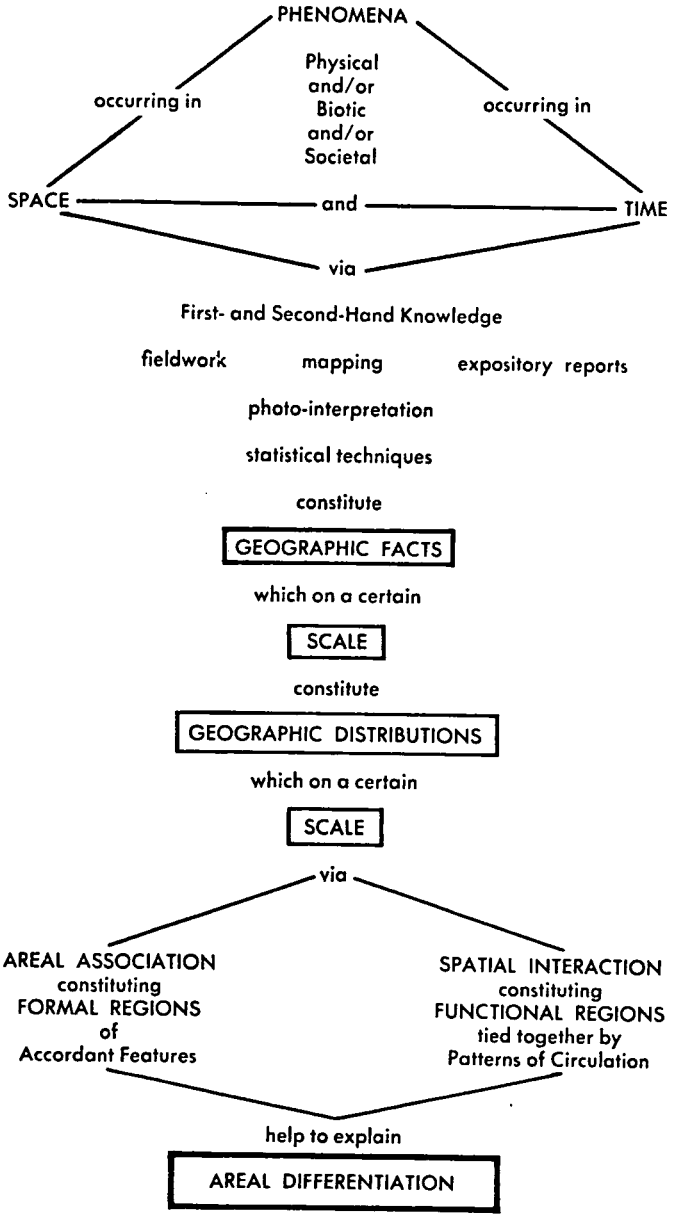
FUNDAMENTAL IDEAS IN GEOGRAPHY

The scope of the geographers' inquiry has been worked out by Professor Peter Greco of Syracuse University. The fundamental ideas in geography are shown in Figure 5, and described below.

1. Every geographic area is affected by physical, biotic, and societal forces.
2. The impact of these forces on a geographic area creates similarities among areas. These similar areas are called uniform regions. They are static in character.
3. The similarities among different areas have been brought about through different combinations of physical, biotic, and societal forces.
4. An area may be kept together through a pattern of circulation binding the area to a central place. This area is called a nodal region, held together by functional relationships. The nodal region is dynamic in character.
5. Uniform and nodal regions are often related to each other through gravitation to the same central place.

Figure 5

FUNDAMENTAL IDEAS OF GEOGRAPHY



TEACHING APPLICATIONS OF GEOGRAPHY

The classroom applications of geography are now in preparation. Activities are being constructed to show the many ways in which the surface of the earth may be divided by geographers, depending upon the objectives of their inquiries. Units are also being constructed to show how the shape and size of the divisions of the earth's surface are influenced not only by natural forces but also by the state of science and technology. Deserts and cold lands, which in the past have been unproductive, may now become productive through scientific progress; for example, irrigation or the discovery of oil can make a desert productive, and the discovery of minerals in Alaska and the Antarctic can increase the usefulness of those frigid lands.

In defining and studying regions, geographers are concerned with physical, economic, sociological, anthropological, and political facts. The regions defined by physical, economic, sociological and anthropological factors seldom coincide with the boundaries of the political systems that men have set up to solve some of the most important social problems. The resulting dissimilarities between political and non-political regions have been the cause of many problems. For example if a river basin or an ethnic group is bisected by a political boundary, serious political tensions may result. Such problems may be "solved" by war, by international agreements, or by other social mechanisms. The approach we are taking, as shown by this brief description, provides a partial synthesis of political science, economics, sociology and anthropology with geography.

CONCLUSION

The development of the organic curriculum and its orchestration is not a crash program. It is a lifetime commitment. It is the job of the academic departments of universities to stimulate more social scientists to pay attention to the problem of structuring the knowledge of their own discipline. Such logical patterns of ideas will serve the social scientist as a map to identify new areas of research, and will serve the curriculum worker as a guide to build a curriculum which can be adjusted to incorporate new ideas as the frontier of knowledge expands.

EXHIBIT II

"The Economic World of the Child" by Lawrence Senesh, *Instructor*, March 1963.

THE ECONOMIC WORLD OF THE CHILD*

The launching of Sputnik awakened the scientists who awakened the government who awakened the schools to the necessity of improving the science training of our youth. The unified efforts of scientists, government, and schools started a new reaction. But scientific progress is not an unmixed blessing. The social scientists, being mindful of the rapid dislocations which come in the wake of scientific advances, are urging the improvement of the social science curriculum in the public schools.

Economics, among all the social sciences, is one of the most underdeveloped areas of the public school curriculum. Before the Great Depression, many people looked on the economic system as a perpetual-motion machine in which balance was assured by the interaction of consumers and producers. As long as the mechanism worked smoothly, only a relatively few specialists were curious enough to study the mechanism; therefore, economics as an organized body of knowledge was not a part of the school curriculum. Also, curriculum builders had their own notions about the scope of economics. Some still think that economics is identical with personal money management. Others think it is simply a matter of value judgment.

Recognizing the need for improvement of economic education in the public schools, the American Economic Association organized in 1960 the National Task Force, which a year later produced a report, "Economic Education in the Schools." The Task Force has alerted the public schools to the existence of an organized body of economic knowledge and urges schools to incorporate this knowledge into the curriculum.

Unfortunately, the Task Force's scope of economics education is too narrow, and therefore useless for curriculum building. Its recommendations are limited to high schools. Having ignored the learnings and intellectual conditioning which do and could take place in the elementary and junior high schools, and having isolated the high-school program from the rest of the curriculum, the National Task Force had no other choice but to limit the objectives of economic education to minimum understandings for citizenship.

Minimum understandings may be adequate today, but will they be sufficient tomorrow as new horizons open, and the economic system is put to new tasks? Minimum economics will not excite youth, will not gain respect for analysis, nor motivate youth to consider careers in the economic world.

Can the economic world be made as exciting as the world of numbers or of atoms? Yes, if the child's experiences are related to the larger economic world, and if children are helped to understand the principles underlying their experiences. A common motif in children's fairy tales is in the granting of wishes. The fulfillment of the wishes often leaves the wishers unhappier than before because as humans they can never be satisfied and because they do not know how to make wise choices. The conflict between unlimited wants and limited sources plagues families and nations as well as individuals. Since men cannot have everything, they must learn how to make wise choices.

Simple exercises can help children to appraise available resources and make the best choice. The teacher could use "pretend" situations for practice in choice-making. For example "Pretend you have cut your finger. What would you want most? Chewing gum? A yo-yo? A Band-Aid?" "Pretend you are in the woods where there are lots of mosquitoes. What would you want most? An electric fan? A story book? A mosquito net?"

The range of choices depends on man's ability to produce goods and services. The important discovery of the first-grade child is that when men do useful work they are producers. When Mother cooks, she produces goods; when Father

*By Lawrence Senesh, professor of economic education, Purdue University, Lafayette, Ind. Reprinted from the Instructor, March 1963.

drives a truck, he produces a service. Everyone, so long as he does useful work, provides himself or others with goods and services wanted.

First-graders can realize that the faster and better men can produce goods and services, the more wishes and dreams can be fulfilled. They will discover various ways by which goods and services can be produced faster and better. The teacher decides to clean the classroom. She may assign the whole class to clean the chalkboard, then the whole class to sweep the floor, then the whole class to empty the wastebasket. What confusion! Or she may divide the labor among the children. Individuals do certain chores, and if each does his job, the work is done quickly and well.

In one first-grade class, two teams produced gingerbread boys. One team worked on the assembly-line principle—one child rolled the dough; another cut the forms; the third pressed in the candy eyes; the next child put in raisin buttons; the last child put cookies on the cooky pan. In the other team, each child did all the jobs by himself. The waste of material, duplication of equipment, slowness of execution, were obvious. The discovery of the division of labor will help children to understand the advantages of assembly-line production and specialization according to occupations, and the production patterns of the world as they are affected by climatic and geological differences—a basis for comprehending the theory of international trade.

But the division of labor has disadvantages, too. People and nations become interdependent. The children can discuss what would happen to gingerbread-boy production if the child cutting the cookies refused to work, or if, in the cleaning of the classroom, the child assigned to chalkboards would not do the job.

Besides the division of labor, the invention of new and better tools and production methods enables men to produce faster and better. The comparisons of tools used in the past with present-day tools, a class experiment of working with and without tools, the observation of big machines—all these can convince children of the importance of tools in producing goods and services.

Children can be shown that making tools is a roundabout way of producing goods. Time and materials are needed for tools, but once they are made, more can be produced and in shorter time. The years children spend in school are a roundabout way of producing goods and services. Who can deny that more education leads to a higher standard of living? When children understand this, then they will realize why people who live from hand to mouth cannot afford to take time out to go to school or produce tools.

With men needing each other's products, a mechanism had to be designed by which goods and services could be distributed. The children can experiment with barter. A baker with a toothache might be willing to give five loaves of bread to the dentist to fix his teeth, but since the dentist needs rather a pair of shoes, trade is frustrated. If the children "invent" money, they will discover the importance of price.

To discover how income, price, and tastes determine what people buy, the children might decide which ice cream they would buy if they had ten cents and if vanilla, strawberry, and chocolate all cost ten cents. After children have made their choices, they may be asked what flavor they would choose if the price of chocolate dropped to five cents. Finally, would they spend their dime on an electric train or a coloring book, assuming that the train cost fifty dollars and the coloring book ten cents? The rule can be formulated that people's spending depends on tastes, incomes, and the prices of goods.

Does the economic system function smoothly? Last year, one first-grader said that his father took his piggy-bank savings and promised to repay them if he got his job back. The child asked why his father lost his job and when he would get it back. The teacher had the problem of introducing the employment theory in an understandable form.

A game started with three children going to the "pretend" bank, applying for, and receiving loans for opening new businesses. They bought raw materials, hired labor, purchased tools, and started to produce food, clothing, and houses. After the goods were produced, and wages paid, the wives of the workers purchased all the food, clothing, and houses produced. The businessmen were encouraged to produce again. But now no one bought houses, as they already had them. The construction workers had to look for other jobs, which they eventually found in the clothing industry since the workers' wives bought more clothing than before.

These examples, all related to first-graders' experiences, and the principles abstracted from them represent the fundamental ideas of economic knowledge. These same ideas have to be discovered and rediscovered in succeeding grades, each time with greater depth and complexity. By the time children enter high school, they will be ready, not for minimum understandings, but for sophisticated economic generalizations.

EXHIBIT III

Statement of John W. Letson, superintendent of schools, Atlanta, Ga.

APRIL 19, 1967.

Hon. HERMAN E. TALMADGE,
U.S. Senate Committee on Finance,
Washington, D.C.

DEAR SENATOR TALMADGE: This is to acknowledge and thank you for your submission of April 17 on the Atlanta public schools.

I shall be most pleased to place this in the record of our hearings on economic education.

Sincerely,

WRIGHT PATMAN, *Vice Chairman.*

U.S. SENATE,
COMMITTEE ON FINANCE,
April 17, 1967.

Hon. WRIGHT PATMAN,
Chairman, Economic Progress Subcommittee, Joint Economic Committee, Congress of the United States, Washington, D.C.

DEAR MR. CHAIRMAN: The Atlanta, Georgia, school system has been one of the outstanding school systems in our nation. In conjunction with the hearings that you are presently conducting on economic education, I would appreciate your including in the record that you are compiling on this subject the economic education program that is presently being conducted in the Atlanta public schools.

With best wishes and kindest personal regards, I am

Sincerely,

HERMAN E. TALMADGE.

ATLANTA PUBLIC SCHOOLS,
Atlanta, Ga., April 10, 1967.

Senator HERMAN TALMADGE,
Senate Office Building,
Washington, D.C.

DEAR SENATOR TALMADGE: It is my understanding that a Subcommittee of the Joint Economic Committee of the Congress, of which you are a member, will hold hearings on economic education beginning Friday, April 14. In order that you may know of the Atlanta School System's efforts to improve economic education I am enclosing a brief statement of recent activities. Hopefully this information will be of some value to you as the Joint Congressional Committee pursues its assignment.

Sincerely,

JOHN W. LETSON, *Superintendent.*

ECONOMIC EDUCATION PROGRAM

ATLANTA PUBLIC SCHOOLS

Since 1957, Atlanta Schools have required a semester of economics at the senior level. In addition, an extensive business education program has been and is available to every student in regular high schools or in the vocational schools.

In 1964 some members of the Atlanta business community, through the Chair of Private Enterprise at Georgia State College, enabled the Departments of Economics and of Business at Georgia State and selected teachers from Atlanta and Fulton County Schools to produce curriculum materials emphasizing economic concepts in the social science curriculum, grades 8 through 12, and in business education, grade 9. Selected pilot teachers were trained and they classroom tested these materials.

This fruitful dialogue between the schools and professional economists at Georgia State College has produced revised curriculum materials with identified economic concepts and materials for practical applications as well as a quality teacher education program to support them.

In 1964, Atlanta was selected by the Joint Council on Economic Education as one of the first ten pilot projects in their Developmental Economic Education Program. Fulton County Schools have been a part of this program throughout the three years. This has resulted in a three-pronged attack on the improvement and expansion of sound economic education in the Atlanta and Fulton County Schools. It is a joint program receiving the approval and support of the business and professional community.

1. TEACHER EDUCATION

No curriculum is better than the teacher implementing it. In cooperation with the Center for Business and Economic Education at Georgia State College 292 high school and 100 elementary teachers from 120 Atlanta area schools have completed the 40-hour workshops in Economic Education. In addition 78 teachers have received tuition scholarships financed by the Chair of Private Enterprise to study economics as a part of their graduate program at Georgia State College.

The staff in the Departments of Economics and Business Management have instructed our teachers in special in-service sessions in economic education and have rendered consultative and editing services.

The Atlanta Coordinator of Economic Education has held 18 elementary faculty workshops in economic education as an important part of the elementary curriculum during 1966–1967. A number of high school teachers have completed NDEA and NSF Economic Education Institutes.

In the fall of 1967 the Atlanta Schools will conduct a three-day economic curriculum development workshop in cooperation with the Center on Business and Economic Education at Georgia State and the Joint Council on Economic Education.

2. CURRICULUM

The pilot curriculum materials produced in 1964 and 1965 have been classroom tested and rewritten. The 8th grade social science curriculum, Changing Culture, which stresses economic knowledge and urban economics as related to Georgia and the southeast is now being studied by approximately 12,000 students and teachers. A detailed resource manual was written in the summer of 1966 and will be revised this year. A small Project Grant from Southeastern Educational Laboratory, Inc. has made possible the development of instructional methods and materials to help educationally deprived 8th graders to understand these economic concepts.

Atlanta began a complete revision of the K–12 social science curriculum this year which involves the integration of economic concepts throughout the grades.

The General Business and Management courses covering the 9th and the 12th grade commercial curriculum have been revised and pilot tested this year. They emphasize the practical application of economic concepts.

3. MATERIALS

All the Atlanta high schools have acquired the economics references deemed basic for supporting instruction for adequate economic literacy. Many schools are in the process of acquiring the maximum references to enrich and support improved economic education. Classrooms have been supplied with some basic references and current high school economic publications and periodicals. A sound, up-to-date text is available for every senior student in the Atlanta Schools. We are recognizing that improved teaching materials are a crucial element of the foundation for improved economic education.

Atlanta has launched this three-pronged attack on improving economic literacy. Each must be expanded and intensified to have impact.

Consultative services, in-service training, and classroom resource assistance need to be expanded. A minimum of two courses in economics should be required of every social science teacher. Those who teach economics in our high schools should have professional training of much greater depth. More adequate support will accelerate this needed teacher education. There is also need for more personnel to be released to plan, to develop and to implement curriculum revision which would more adequately attack the problem of economic illiteracy.

EXHIBIT IV

Statement in support of teaching economics in the public schools by S. P. Marland, Jr., superintendent of schools, Pittsburgh, Pa.

Until very recently the teaching of economics had been greatly neglected on all levels of American education. Pupils had been gaining a limited knowledge of our economic system in their elementary and secondary social studies courses, but we needed to give them a sharper focus on a number of basic economic concepts. Various studies in the early 1960's reported on the crisis existing in the area of economic education.

The National Task Force on Economic Education, which had been commissioned by the Committee for Economic Development and the American Economic Association, seemed to summarize most clearly the national problem. It stated in its now famous report that if our citizens of tomorrow were to achieve the desired minimum economic understanding, most of them must acquire it in the schools. It is no good, the report said, to say that students can wait until college, for less than half of them go on to college, and most of them do not study economics when they get there. Thus, most of our youth must rely on the high schools for the economics they are to learn.

The National Task Force study explained that while excellent teaching of economics occurs in some schools, very few high school students take a course in economics; textbooks and other teaching materials are all too often inadequate; and most teachers in the social studies with the responsibility to teach economics have insufficient preparation in economics to teach the subject effectively.

Even today, nearly six years after the National Task Force findings, studies show that many of the same problems remain. Where economics is being taught it is generally descriptive, non-analytical, and all too often dry and sterile. Little attention is given to helping students learn to think for themselves about the big economic problems our nation and its citizens presently face and will face in the future.

Following the release of the Task Force Report, a survey of the Pittsburgh Public school system showed that despite the constant efforts of our curriculum and classroom supervisory personnel to provide the best possible education for our youngsters, Pittsburgh was confronted with many of the same problems of economic education which the report called national problems.

We needed classroom economics materials which were readable, which had sparkle and bounce, and which would involve the student in economic problems rather than have him sit in the classroom as a disinterested observer of academic situations far removed from himself, his home, and his neighborhood.

We needed teachers who knew enough economics to teach the subject with confidence and enthusiasm.

We needed the services of university economists who could advise us which economic principles we should attempt to teach and which ones we need not and should not concern ourselves with.

But to do such things obviously takes money. We were convinced of the need for action but limited by our ever present problem of attempting to run an urban school system with insufficient state appropriations.

However, in the summer of 1964, Pittsburgh was one of three school systems fortunate to receive a generous three-year grant from the Joint Council on Economic Education in New York and its Western Pennsylvania affiliate. Without their financial aid and educational leadership we still would be facing most of the problems in the teaching of economics that we faced three years ago. We still have much to do in the area of economic education, but over the last few years our progress has been steady, and we take a certain pride in the work we have done and the recognition we have received.

In announcing our new program in June, 1964, we knew that in developing new economics curriculum it was not our intent to foster a particular "school" of economics. We believed there were fundamental economic processes as in mathematics or grammar that are universal. Our approach was intended to instill these learnings, without the bias of liberal or conservative persuasion.

The ultimate aim of our economics project is to help the student acquire a better understanding of the complex and confusing world around him, and thus provide him with a balanced background for future pocketbook and ballot box decisions.

We began work by examining the social studies curriculum in grades eight through twelve to determine where certain economic concepts might best be taught. We did this with the invaluable assistance of economists from Carnegie Institute of Technology who cautioned us to put a premium on doing a few things well rather than attempting to have our youngsters become economics majors.

When we knew which concepts we wished to develop, we faced the agonizing task of developing classroom materials to supplement our existing social studies materials. We found that once a person is located who understands economics and can write at a level that youngsters understand, that person must be set free from all other school duties except the writing of lessons and the checking of those lessons with a university economist for the accuracy of economic content. Lesson writing is not a part-time, extra duty job. To have a reasonable chance of producing something of value, a person with writing ability needs to be released from the classroom for a fairly long period of time to engage in research, writing, and rewriting.

We found that in addition to developing materials for students much attention has to be given to the teachers who are asked to present it. At each grade level where we have developed economics materials we have written a detailed teacher's manual setting forth what we hope is a clear general explanation of the economic principles to be taught at a particular grade level plus a detailed lesson plan for each specific economics lesson at that grade level.

It should be carefully noted that an imaginative teacher should feel free to add to, or subtract from, our suggested lesson plans. In truth our lesson plans were written mainly to help those teachers who had been struggling in an attempt to carry out their assigned responsibility to teach economic content. Our lesson plans were not written to represent the last word, but rather they were written to supply the often needed meaningful first word.

After the student and teacher materials for a particular grade level were prepared, we selected a small number of teachers, usually no more than ten, to do the initial "field testing" of the materials in classrooms. Before these teachers were sent into the classrooms they were instructed by a university economist on the economic principles embodied in the new material, and they worked with the lesson writer and a few expert classroom teachers regarding teaching strategy. Only after field testing and follow-up meetings with the field-test teachers were large numbers of teachers invited to training sessions and then sent into numerous classrooms with a revised edition of our material.

We realize that time and money will eventually limit our ability to continue giving this special training to all teachers before they use our materials. Therefore, we attempt to make the teacher's manual as detailed and as clear as possible.

I would like to emphasize here again that, wherever we can, we adhere to the inductive, or discovery, method of teaching. The student is encouraged to analyze, not memorize. He needs to feel he has a reason for answering the questions posed and taking part in the classroom activities.

In grades eight and eleven, where we teach United States history, we attempt to develop only one major economic theme at each grade level. In grade eight a package of twenty-two lessons on economic growth is presented. In grade eleven a unit of fourteen lessons dealing with business cycles has been prepared. We are constantly aware of the fact that a history course is not an economics course, but we do feel that youngsters will have a better understanding of history if they have some understanding of economic conditions which often affect the flow of historical events.

For grade ten, where we teach world cultures, a unit on international trade will receive its first trial this coming fall.

Grades nine and twelve each set aside twelve weeks of social studies time for economics. Here it is possible to develop a number of economic principles. In ninth grade we deal with economic scarcity and the necessity of choosing how to use resources, the interdependence of resources, comparative economic systems, economic decision makers, and the problem of poverty in the United States.

In grade twelve we focus mainly on the complexities of our United States economic system. We look at the pre-market period of history and how the market system developed. Our attention is given to both the theory and the reality of our

economic system. Lessons cover topics such as the public vs. private debate, and the problem of inflation.

All of our students are required to take each of the social studies courses described above with the exception of the twelfth-grade course, which presently is an elective.

Let me mention here the fact that our project staff has also made an unrehearsed thirty-minute teacher training film with a ninth-grade class of youngsters. The film illustrates an inductive approach to teaching a lesson on comparative economic systems. Numerous high schools have used this film at teacher training sessions and a number of universities have shown it to those of their students who are studying to become teachers.

Extensive before and after testing of students who used our eighth and ninth-grade material in 1965–66 showed a substantial increase in the students economic understanding. We hope for similar results later this year when testing of other grade levels, using our material for the first time, is completed.

One of the happy by-products of our economics project has been our ability to open our teacher training sessions and share the use of our new materials with county and parochial schools. This has been possible because the Western Pennsylvania Council on Economic Education was willing to bear the added expenses this entailed. We feel that our experience working with others from Western Pennsylvania who face many of the problems we face has enabled all of us to better appreciate the work the others are doing. It has also clearly shown each of us the multiple benefits of engaging in cooperative regional efforts.

It is impossible and impractical for each school system to attempt the development of all the new student and teacher materials for which they feel a need. Yet, even though we in Pittsburgh have developed many ideas and materials in which many school systems are interested, those school systems still face the problem of financing new acquisitions. This is one of the major unsolved problems facing our nation's school systems. After quality materials are developed and identified, where do we find the money to purchase them? Years of educational poverty have created a crowded agenda of financial problems to be tackled. Even the Pittsburgh public school system is now hard pressed to find the funds needed to spread our own proven products into all of our own classrooms.

The Pittsburgh Public Schools deeply appreciate the role which the Joint Council on Economic Education is playing in helping us take another step towards our primary goal of quality education. We thank the Joint Council and its Western Pennsylvania affiliate for the funds to do our developmental work and the freedom to do it in the manner we choose. The Joint Council has the distinction of being one of the first organizations in the nation to advocate and sponsor a sensible approach to economic education, an approach which recognizes that it takes years to cure a neglected area of the curriculum.

Those of us who live and work in the big city want to be proud of our urban area. We want the best education possible for the children in our classrooms. Our economics project in Pittsburgh has fulfilled all of its ultimate goals in its few years of existence. Yet it is wonderful to see a new, positive attitude about economics developing among the many and varied people touched by our efforts.

EXHIBIT V

Statement by Dr. Ronald O. Smith and Mr. Albert Y. Ouchi on economic education in the Portland, Oreg., schools.

PORTLAND PUBLIC SCHOOLS,
Portland, Oreg., May 9, 1967.

Mr. JAMES W. KNOWLES,
Director of Research, Congress of the United States, Joint Economic Committee, Washington, D.C.

DEAR MR. KNOWLES: This is in response to your letter of April 12 in which you suggest that we might give you a statement describing what has been done in economic education in Portland and what success we have had.

Inclosed is a statement prepared by Dr. Ronald Smith, supervisor of social studies. I hope this reaches you in time to be useful in your hearings.

Sincerely,

MELVIN W. BARNES,
Superintendent of Schools.

ECONOMIC EDUCATION IN PORTLAND, OREGON

In the curriculum of the Portland, Oregon, Public Schools economic education has been more than a token effort during most of the post-war years. Since 1953 curriculum guides and units in all grades have specifically identified basic economic concepts and relationships. A special "Economic Concept" curriculum guide has been used in the development of teaching units and guides for all teachers in the Portland system. Emphasis on economic education was evident during the 1960–61 curriculum revision project. Committees of teachers prepared a special 12th grade guide for economics. Also significant portions of the 11th grade American history guide were oriented to stress the importance of economic forces. Teacher interest and participation in Portland's in-service class programs in economics, presented every year, have been increasing. The number of teachers taking advantage of summer institutes or sabbatical leaves for study in economics has also grown. Just last summer teachers from the Northwestern states, including Alaska, came to Portland to attend a Portland sponsored workshop designed to show how economics can be taught in the elementary schools.

Most current, and probably the most publicized effort in economic education, has been Portland's participation in the Joint Council on Economic Education's project DEEP. In 1965 in cooperation with her neighboring school districts of Parkrose and Banks, and the Oregon Council on Economic Education Portland submitted a proposal covering three years. It was both unique in its organization and ambitious in its scope. This "Metropolitan Portland" proposal sought to carry out the objectives of the Joint Council in a manner not formally presented by the other school districts in the United States. The feature which differentiated this proposal from the other "model" and "pilot" cities was the fact that his plan was organized to meet the needs of an entire state. Participating teachers were drawn from Portland, representing the large school district (urban); Parkrose, representing the medium sized school district; and Banks, representing the small school district (rural). Dr. Hugh Lovell of the State System of Higher Education was the coordinator of the Project with supervision in Portland under the direction of Dr. Norman K. Hamilton, Assistant Superintendent; Dr. Ronald O. Smith, Supervisor of Social Studies, and Albert Ouchi, Coordinator of the Portland Economic Education Program. Mr. Max Brunton, Curriculum Director of Parkrose and Mr. Frank Smith, Superintendent of Banks, served as the supervisors in their respective school districts.

Financing the DEEP project has been a cooperative effort involving the schools, the Oregon Council on Economic Education and the Joint Council on Economic Education. Except for the original $3,500 contribution by the Joint Council, the Oregon Council and the three School Districts involved have been primarily

responsible for meeting the proposed budget. They were as follows: 1965, $64,700; 1966, $75,000; 1967, $65,200 and for 1968, $11,000. A breakdown of the actual and proposed budgets shows the educational agencies as responsible for $32,800, $42,000, $49,600 and $8,000 during the years 1965–68. Contributions from the educational agencies are mainly for released time for supervisors, coordinators and staff personnel; clerical help; supplies; and office space. The remaining funds are obtained by the Oregon Council on Economic Education through contributions from local businesses, foundations, and interested individuals. The current success of the fund raising efforts reflects the real concern for economic education in the Metropolitan Portland area.

The Metropolitan Portland DEEP program is now well into its second year of scheduled development. Each major phase of the original proposal has been carried out with one exception; that is, the curriculum development of the final guides will be published to grade 8 instead of through grade 12. Work is progressing on grades 9 through 12, but it is felt that concentration of talents and funds on the first eight grades is wiser for this coming year.

In accord with the three year program outlined in the DEEP proposal, the following training and curriculum development program is being accomplished:

Spring 1965—40 teachers, grades K12 participated in a full 11 week graduate college course in economics.

Summer 1965—Same 40 teachers spent two weeks developing units in economics applicable to their own teaching situation and within the context of the existing school curriculum. Relative freedom was encouraged so that new and imaginative approaches to the teaching of economics might be attempted.

1965–66 School Year—Same 40 teachers experimented with their written units in their own classrooms. Saturday meetings were held monthly so that teachers could discuss their experiences and formulate some common techniques at each grade level.

Summer 1966—One teacher from each grade level combined the varied work and experiences of the teachers from their grade level and wrote a tentative teacher's guide for publication by the Oregon Council.

Summer 1966—Upon publication of the tentative guides, 40 additional teachers and administrators from nine more cooperating school districts met for a one week workshop in economics and an introduction to the new teacher's guide. Representatives from La Grande, Oswego, McMinnville, The Dalles, Independence, Riverdale, West Linn, Springfield, and South Umqpua School Districts participated.

Fall 1966—40 additional teachers from the same and other schools of Portland, Parkrose and Banks attended and completed a full 11 week graduate college course in economics.

1966–67 School Year—120 teachers are now trying the new teacher's guides to economics in the classroom—at each grade level. Two meetings of the entire group have been completed where discussions and evaluation of the tentative guides took place.

Summer 1967—Rewrite of the tentative guides is to take place. Teams of three teachers 24 in all, representing grades 1–8 and wherever possible, representing school districts of large, small, and medium population, will write the final draft of the economic education guides. The State Department of Education will then re-edit and publish for use by all school districts in the state.

Most of the class meetings, workshops and grade level meetings have been held on Saturdays. Honorariums and salaries have been paid for Saturday and summer meetings or writing sessions. Many of the meetings held in the Portland system have been held after school in place of or in addition to regularly scheduled professional meetings and have thus been part of the regular school day. Administrative personnel from the various districts have served without additional compensation.

In Portland, Dr. Ronald O. Smith, Supervisor of Social Studies, has not relied entirely on the DEEP project to develop economic understandings within the total social studies program. During the past two years in-service classes have been designed to take advantage of materials developed in DEEP and have been taught by teachers participating in the Project.

Workshops and professional meetings have been regularly scheduled by Area Directors in many of the disciplines and economics has been prominent in most situations. Well organized teaching modules have been written so that Portland teachers now have a choice of using the relatively scarce tentative guides in eco-

nomics or the new modular teaching units which focus on similar economic concepts and provide suggested activities for an inductive approach to them.

A comprehensive film slide series illustrating most of Portland's varied economic projects has been developed through the cooperation of Dr. Hamilton, Dr. Amo DeBernardis, President of Portland Community College, Dr. Smith, and Mr. Ouchi. These slides have been extremely helpful in explaining the economic education program of Portland to business groups, PTAs, and especially to teachers both in Portland and outside of Portland interested in DEEP economic education.

A limited but important testing program was undertaken in 1965 in relation to the DEEP project. The objective of this testing program was to provide some objective measure of the effect of the DEEP program on students who came into contact with teachers who had participated in the program. This testing program is presently restricted to the Grant neighborhood district because the original two years of DEEP in Portland was centered in that neighborhood.

The testing program follows:

Fall 1965—Tested 521 entering freshman (77% of total class) to establish a norm for freshman who attended elementary schools before the DEEP project was started.

Fall 1965—Also tested 30% of the seniors at Grant to establish a norm for seniors.

Fall 1966—Comparable sample of entering freshmen tested. 584 tested, this represented 78% of the entering freshman class. This year, each freshman was identified as to the elementary school he had attended and this information in turn was classified according to the teacher he had had (trained in economics) or whether there had been an in-service class in economics at that school.

Spring 1967—At teacher's option, a few classes were tested again after a unit stressing economic relationships was used. (At present, a 20% increase in average test scores is indicated.)

Fall 1967—Similar test of freshmen students at Grant and possibly another high school is planned. Students tested will be identified again according to the economics exposure of their previous teachers.

Fall 1968—Similar test of entering freshmen. Students tested will be identified again, this time to see if their 6th, 7th or 8th grade teachers have had training in economics.

Spring 1968—Test those seniors who had been tested as freshmen in 1965. Comparison will be made between national norms and the norm established by Grant seniors in 1965.

At present, the SRA, Test of Economic Understanding, Forms A & B are used. We are fully aware that the test is not designed for freshmen in high school and that the test results have been subject to questions and criticism—however, it is the only test available for such work and it was necessary to start in 1965.

An item analysis of the 1,105 Grant freshmen tests provided some interesting results. Grant high school freshmen students in 1965 and 1966 did the best on questions 6, 9, 11, 12 and 28 (form A). 58% to 61% of the students correctly answered each of these questions. Each of these questions dealt with price—such questions as the role of supply on price, demand and its effect on price and the effect of taxes on price. These same students did poorest (12% to 22% accuracy) on questions which asked about monopolies, international trade, comparative economic systems and how to interpret graphs and charts. These test results are important as a beginning point for teacher training and curriculum development. The tentative guides have been found to be heavy in their emphasis on money, specialization and division of labor while quite limited in their treatment of trade, comparative systems and governments role in the economy.

The reactions of teachers, students and the public seem to best evaluate the present state of economic education in the Portland Schools. These reactions may be difficult to quantify or record in its entirety, but they do indicate much of importance to us.

Teachers have quickly exhausted the available supply of DEEP tentative guides and the other economic materials made available. They report how the inclusion of basic economic relationships have given more meaning to their units on home, school, Latin America, U.S. History or Geography. Students, especially these in the lower elementary grades, are enthusiastic as they use economic concepts and vocabulary to relate their social studies to the real world. Parents of primary children have written notes to their teachers thanking them for their new "helpers" at home—the principle of specialization and interdependence applied to the

child and his home had convinced him that everyone at home had a special job to do and that the welfare of his home depended on everyone doing his part.

The public, parents, businesses and local organizations have been cooperative and appreciative of Portland's continued emphasis on economic education in her schools. Several of our teachers and our administrative personnel are serving on the Board of the Oregon Council on Economic Education, while Dr. Melvin Barnes, Superintendent, is presently serving on the Board of the Joint Council on Economic Education and Assistant Superintendent Amo De Bernardis is a past member. There is full agreement between educators and public that competence in economics is necessary for intelligent citizens, a growing economy, and a good society.

Dr. RONALD O. SMITH,
Supervisor of Social Studies, Portland Public Schools.
ALBERT Y. OUCHI,
Coordinator, Economic Education Project, Portland Public Schools.

EXHIBIT VI

"Foreword" and "Introduction" from *Economic Education for Washington Schools, Kindergarten Through Grade Six,* Office of the State Superintendent of Public Instruction, 1966.

FOREWORD

Social, political, scientific, and technological forces in this nation and the world offer ample evidence of the need for a high degree of "economic literacy" on the part of our citizenry. It is toward meeting the responsibility of the schools for advancing such knowledge and understanding that *Economic Education for Washington's Schools* has been developed.

The ultimate success of this project lies neither in this publication nor in the resources which are available to the schools. It's fullest success will be realized only through the ability of the teacher and the local school to rally all available resources and bring them to bear within the existing curriculum. We believe these guidelines and activities will support such a program rather than burden the teachers and the children with a course or unit expected to adequately "cover" economics concepts. The program found here should, indeed, "uncover" economics concepts and their inherent relationship and importance within different areas of the curriculum.

It is our desire that the boys and girls of the schools of the State of Washington achieve a high degree of economic literacy. This must include the ability to think critically toward the solution of economic problems which will face them as individuals, and the nation as a whole.

Five basic beliefs underlie the activity and concern of our office:

1. The schools share a responsibility for the development of economic literacy on the part of the citizenry.
2. We have an obligation to promote an understanding and appreciation of our system of capitalism and free enterprise.
3. It is our duty to help students develop an appreciation for the economic and social achievement made possible by the operation of a free people in a free society.
4. We must help youth understand that just as we have not as yet resolved all the problems of our democratic-republican form of government, neither have we resolved all of our economic problems.
5. Most importantly, we believe that we must strive toward the development of an attitude among students that as citizens they have a *right* and a *responsiblity* to *actively* participate in the solution of economic problems.

INTRODUCTION

These guidelines and activities in economics education represent the combined efforts of hundreds of teachers over a period of three years. Sponsored and financially supported by the Joint Council for Economic Education, the project involved teachers from twenty-three school districts in the State of Washington and one school district in Montana. Through a series of summer workshops maintained by the Northwest Council for Economic Education and pilot projects carried out by participating schools, this program was field tested and revised to its present form.

The Executive Committee of the Northwest Council for Economic Education has played a major role in this project. To give recognition to these individuals and to the diverse organizations they represent we list them as follows:

President: Dr. Lyle Stewart, Seattle School District.
Vice President: Mr. E. C. Ruble, Pacific Northwest Bell.
Secretary-Treasurer: Mr. Ray Cowen, Federal Finance Corporation.
Other Members of Committee:
Mr. Harry L. Carr, AFL–CIO.
Mr. P. A. Strack, Peoples National Bank of Washington.
Mr. Walter Kee, The Boeing Company.

EXHIBIT VII

Extract from *Econ 12 Instructor's Guide* (Test Edition, Spring 1967), Contra Costa County (Calif.) Department of Education.

What Is Econ 12?

ECON 12 IS A GENERAL HIGH SCHOOL AND JUNIOR COLLEGE ECONOMICS CURRICULUM FOCUSED ON THE ECONOMY OF THE UNITED STATES AND ON COMPARATIVE ECONOMIC SYSTEMS

The curriculum described here was originally planned as a one-semester, twelfth-grade course. Recognizing that schools have different requirements or desires for economics, a broad range of subject matter and materials have been designed. They can be organized into a general introduction to economics or into more specialized courses. The material provides for a year-long course, or parts can be extracted for a six- to nine-week unit. They can be adapted to other grade levels, including junior college, and because the course does not necessarily require a high level of reading ability, it is appropriate for a wide range of students.

IT INTEGRATES THE ANALYTIC AND PROBLEM-SOLVING APPROACHES TO STUDYING ECONOMICS

ECON 12 trains students to make economic decisions. They learn and apply the fundamental tools of economic analysis in order to study and to make judgments about the pervasive public policy issues of the day. This facility with the tools of analysis will help students understand how our economy operates and thereby understand their own economic roles. It is our hope that such knowledge and skills will help them become more effective in pursuing their own economic objectives. The designers of ECON 12 have tried to adapt those innovations in science education which have emphasized the development of reasoning powers to the social studies curriculum where the broad educational goal is not to create scientists but to prepare students for their social, economic, and political responsibilities.

Unit I. An Introduction to Economics shows the relations of economic activities to the over-all organization of societies. Students learn to apply a relatively simple conceptual and methodological framework to answer or discuss important questions about the economic organization of the United States and other societies. The concept of system is the primary descriptive model used; the students learn to think of an economy as a system of economic institutions (organizations) performing functions related to the use of scarce resources to satisfy wants. They learn to study an economic system in parts and as a totality.

Unit II. The U.S. Market System investigates the parts of our own economic system—the basic economic institutions and the major economic conflicts arising from the institutional structure. The unit concentrates on problems related to the effects of competition, market concentration and government intervention on production efficiency and income distribution (microeconomics).

Unit III. Growth and Stability of the U.S. Economy studies the system as a whole—the effect of the government sector, the banking sector, and international trade on the general health of the economy. It focuses on the effectiveness of the economy in achieving the goals of economic growth and stability (macroeconomics).

Unit IV. Other Economic Systems allows students to analyze the effectiveness of planned economies in achieving their goals and the problems of promoting economic growth and stability in developing economies (Comparative Systems, and Economic Growth).

IT EMPHASIZES THE DEVELOPMENT OF VERBAL SKILLS AND ECONOMIC REASONING

The course tries to prepare students for more effective economic action in later life. If students are to learn to use economic reasoning to solve their personal

economic problems and to take part in effective political action, they must be able to and want to discuss economic matters. They must be able to express themselves orally and in writing; but more important, they must be able to *converse* intelligently about economic problems. This requires a vocabulary, a command over simple tools of logical analysis, a frame of reference for evaluating issues, a respect for the use of relevant evidence and scientific inquiry, and a willingness to discuss controversial economic issues.

Class discussion among students is a primary means of learning to "talk economics." But to provide enough class time for student discourse, the other necessary learning must be organized efficiently. The instructional materials (particularly the text, programmed instruction and visual-aid materials) are designed to facilitate communication and the initial learning of the required knowledge and skills without using too much class time.

IT PROVIDES A FREE ENVIRONMENT FOR DISCUSSING AND JUDGING CONTROVERSIAL ISSUES

If students are to learn to make reasoned judgments about controversial issues, they must have practice in an environment free of adult domination where they are encouraged to investigate alternative solutions to problems. In ECON 12, conflict over economic goals is treated as a normal consequence of economic scarcity; that is, the fact that there are not enough resources to satisfy wants means that there will be disagreement over how they should be used. Resolving conflict through rational inquiry means identifying and clarifying the issues and then investigating them. The course provides the environment and the back-up material to enable students to evaluate public controversy and private decisions and thereby to form their own reasoned judgments. Students are encouraged to state their own judgments and to test to what extent stated preferences actually conform to their own value positions. The role of values (morals and ethics) is discussed as candidly as possible, and all positions are considered equally valid if they are logically derived.

IT IS A TEACHING SYSTEM

We have chosen to design a *teaching system* because we have long recognized the enormity of the problem of educating everyone. Students fail to learn for many reasons; therefore the course designers must take everything into account—the individual student, the students as a class, the teacher, the instructional materials, the physical environment, the social and political milieu. The designers have drawn from many academic disciplines and talents to integrate new techniques with traditional methods. Our goal is to provide sufficient materials to help the teacher incorporate the new findings and approaches with his own teaching methods so that he will be able to reach more students than he has in the past.

ECON 12 has four characteristics which distinguish it as a system. *Course objectives are stated as "behavioral objectives,"* that is, they specify an expected level of student performance. The instructor has options in choosing objectives for written exams or papers and oral performance in class, but *minimum* levels of performance are set to insure that most students achieve the objectives. These minimum levels are determined empi ically; they describe the performance level students achieved in the trial use of the materials.

It provides for self-correction in learning and teaching. Students and the instructor evaluate themselves and each other to determine whether or not students have achieved the behavioral objectives. This provides the necessary feedback on the effectiveness of instruction. The evaluation must be extensive enough to indicate where and why learning has been ineffective, and the system must provide alternative learning procedures for achieving the objectives.

It is a set of integrated teaching materials and teaching strategies. Each component of the system has specific functions. Materials and methods are chosen pragmatically on the basis of what worked in experimental classes; therefore, they are practical solutions to known problems in learning and instruction. The system has the following components:

The instructional guide describes the course and explains its proper use. It contains practical suggestions on how the instructor can best adapt the course to his own needs.

Unit and final examination questions test the effectiveness of the course.

A summary text states the basic economic content.

Correlated readings are used for class debates, discussions, case studies and problem solving.

A statistical abstract provides data for problems and case studies.

Short programmed instruction modules tutor students in the learning of definitions, theories, or skills which require step-by-step instruction and practice.

Special exercices, case studies, or problems are provided for individual or small group work, or for class discussions.

Lesson criteria tests are for the student's own use to indicate how completely he has achieved the lesson objectives.

Photographic essays provide visual information for individual or group learning.

Overhead transparencies present graphic or tabular data and diagramatic statements of economic theory.

Short films present dynamic economic models, teach a specialized subject, or provide a new visual experience related to a given learning experience.

All of the instructional materials are organized into three books and a package of audio-visual transparencies and films. The Instructional Guide includes the examination questions. A hard-bound book houses the text, the readings, the photographic essays and the statistical abstract. The student workbook includes the programs, exercises, problems and criteria tests. The films are the only completely optional parts of the system; they enrich or facilitate learning, but are not essential to the success of the lesson of which they are a part.

It is a model, a changing system. The Instructional Guide suggests ways of teaching economics; it is not a blueprint. Within specified minimum objectives, the instructor designs his own lessons and course, at first using primarily ECON 12 system materials and strategies, but gradually substituting his own ideas, thereby creating his own teaching system.

IT IS A FLEXIBLE TEACHING SYSTEM

The course behavioral objectives describe the capabilities of the students in the trial use of the course, and the teaching strategies suggest effective approaches for achieving this level of student performance. But the "how to do it" part of instruction is left to the instructor because this is his special competence and prerogative and because we believe that there is no "best way" to teach ECON 12. Each instructor brings a unique background and approach to teaching, and we encourage him to tailor the course to his students and to his own style of teaching. It is important for the instructor to understand and utilize both the system and flexibility of the characteristics of the curriculum. If he does not use ECON 12 as a system he will not be able to teach the course (he may teach something else, but it will not be ECON 12), and if he is not flexible in organizing learning experiences around student needs and interests, he will not teach much at all.

Course flexibility shows up in three ways:

The system allows for flexibility in course organization. The four units provide a basic course with many options. Unit I is the core; it contains most of the minimum course objectives and provides the prerequisite learning of vocabulary and thinking skills for the remaining units. From it a class can branch to any other unit. By itself it provides a complete introduction to the economist's way of thinking; it can constitute the course for slow classes or for a six to nine weeks unit.

Each lesson in Unit I presents concepts and then provides learning experiences in which students use new skills to apply the concepts to specific situations. Because the learning is carefully sequenced to develop increasing, student competence, it is important to follow the Unit I lesson order. Nevertheless, there is flexibility in that alternative readings and materials are provided.

Each of the succeeding three units contain lessons on the basic economic principles of the unit followed by other lessons in which students apply the principles to particular economic problems or conditions. A choice of problems is provided in alternative lessons. Not only is it possible to choose between lessons in a given unit, but to a certain extent the order of lessons can be varied within the unit. Furthermore, the introductory lessons on economic theory can be simplified or eliminated.

It is adaptable to different teaching styles and methods. This means that the instructor who favors a didactic teaching approach, using a core text, can use the ECON 12 materials as successfully as he can a traditional text. However, the instructional guide encourages experimentation by describing successful ways (developed during field tests) to reach lesson objectives through the use of induction, inquiry and discovery.

It can be used by instructors with different training and teaching experience. The materials and unit organization orient and train instructors to teach economics. They give the instructor new to economics teaching a course organization and the necessary instructional materials and, therefore, the confidence which will make him effective. They give the experienced instructor new ideas and methods, thereby allowing him to develop additional pedagogical skills as well as a facility with the new teaching strategy innovations. The system can be thought of as an instructional program for the instructor as well as for his students. The first time through the course the inexperienced economics instructor might have rough going, but his efforts should pay off in both his own and student learning.

IT WORKS

The system incorporates the findings of three years of experimental development and classroom use. It was developed in the Contra Costa County schools with grants from the Joint Council of Economic Education and the U.S. Office of Education awarded the Contra Costa County Department of Education and San Jose State College. The system has been used for three consecutive semesters by approximately twenty teachers in forty classes. It has been revised continually to conform to new information about its effectiveness in different kinds of classes, and the course of study reflects this pragmatic development.

EXHIBIT VIII

Statement by Richard W. Lindholm, Dean of the School of Business Administration, University of Oregon.

UNIVERSITY OF OREGON,
SCHOOL OF BUSINESS ADMINISTRATION,
Eugene, Oreg., April 25, 1967.

Mr. JAMES W. KNOWLES,
Director of Research, Joint Economic Committee,
Washington, D.C.

DEAR MR. KNOWLES: While in Purdue the other day I had breakfast with my old friend Larry Senesh.

It was then that he offered to contact you to determine your interest in a statement from me.

Later in the day he left a note for me saying you would welcome a contribution—but make it quick.

Attached to this note is my statement which I have titled *The Capstone High School Economics Course.*

Thank you for this opportunity.

Sincerely,

RICHARD W. LINDHOLM, *Dean.*

THE CAPSTONE HIGH SCHOOL ECONOMICS COURSE

As Dean of the School of Business Administration of the University of Oregon I continue to recommend, as I did when a Professor of Economics at Michigan State University, that a Capstone Course in Economics in the Senior year of high school should be available to all. The high school Seniors of the future will have been exposed to economic concepts throughout their school experience. Under these conditions the major job of the Capstone Economics Course will be to draw together all of the economic concepts and information relative to business and government economic oriented institutions. The drawing together of these strands will, of course, provide each student with a clearer conceptual picture of the functioning of the economy of the United States and also of the world wide economic interrelationships, which are so important to an understanding of economic public and private policy.

In the past the efforts to offer an effective one semester course in economics to high school Seniors has been hampered by the necessity of developing a course that drew only on *actual* student economic experiences, this was necessary because *intellectual* economic experience was nearly completely lacking. In the future the typical Senior in high school will have benefited from participating in intellectual economic experiences throughout his school life. This permits the Senior Capstone Course to be a much more sophisticated and realistic area of study than was previously possible for the vast majority of high school Seniors. The result of this will be the possibility of developing, for the first time, a nation of economic literates in the United States.

The improvement of primary and secondary education permits the presentation of a very fundamental and useful economics course in the Senior year of high school. The course, above all, can now explore the basic decisions the student as a citizen will participate in making. The principal features and basic underlying skills and conceptual approaches, as I see it, of such a Capstone Economics Course are as follows:

(1) Instead of relying on student experience in the market place, rely on his experience in intellectual activities, i.e. history, mathematics, literature, where economics is now being given considerable emphasis. This approach avoids the errors of attempts to look at the economy from too limited a vantage point and a very narrow experience base.

(2) Integrate the experiences and approaches of other countries with those of the U.S. The exclusion of international comparisons in the general discussion and leaving the international elements to a separate chapter or group of chapters fails to convey the world-wide similarity of economic problems and the close interties existing between the national economies of the world.

(3) Consider the ways in which good and bad national economic policies have developed rather than being satisfied with description of existing procedures. It is only if this type of analysis is carried out rather carefully that the high school economics course really performs the function of developing intelligent citizen reaction to economic policy proposals.

(4) The methods of measuring what takes place in the economy and the usefulness of the information must be developed more completely. The additional knowledge of numbers possessed by high school students today makes this possible now. Also this knowledge will be very helpful to the students who go on to college or become involved in business activities.

(5) Organizations, institutions and legislation should be discussed in relation to economic impact rather than in terms of powers and privileges. This is consistent with the goal of development of intelligent economic citizenship and keeping all discussions in the main stream of economic principles and pointing the analysis toward the future.

PART 4

Materials submitted with reference to college and university programs in economic education.

EXHIBIT I

The Joint Council on Economic Education, The College and University Program.

BACKGROUND

The evidence is at hand to prove that economics can be taught effectively to students in the elementary and secondary school. Continued success in the Developmental Economic Education Program (DEEP) has given assurance that significant numbers of teachers and their students will have benefited from enhanced economic learning. But what experiences in economics await those students—including prospective teachers—who go on to institutions of higher learning?

They will first take the traditional introductory course in economics. For many years the American Economic Association has attempted to evaluate this course. Various committees have made reports. Each report reflected the profession's dissatisfaction with the existing program. Until 1965 the evidence documenting the need for a program of revamping the basic course had been largely subjective. Subsequent significant research and investigation show:

1. The introductory courses in economics offered at colleges and universities have had little or no effect on the student after graduation even though he presently is teaching in a secondary school. (G. L. Bach and Phillip Saunders, "Economic Education: Aspirations and Achievements," *American Economic Review*, June 15, 1965.)

2. Despite accelerating progress in economic education, insufficient preparation in economics of future (as well as present) teachers in our schools is still a critical bottleneck. (California State Department of Education, *College Preparation for Teaching Economics*, November, 1966.)

3. In February 1967 the Joint Council published Professor Bernard F. Haley's *Experiments in the Teaching of Basic Economics*. This report, cosponsored by the American Economics Association, indicates an interest among collegiate institutions in trying to modify existing course content and teaching techniques. However, very little has been done in carefully designing and controlling current experimentation. Hence, at the present time, there is little in this area which is of use to the profession at large.

If colleges and universities are to respond to deficiencies in economics instruction it is apparent that more effective means must be devised to strengthen the introductory courses. Working in a partnership with the American Economic Association, the Joint Council has developed plans to meet this need.

THE JOINT COUNCIL COLLEGE AND UNIVERSITY PROGRAM

A. IMPROVING THE INTRODUCTORY COURSE

1. Objectives

(*a*) To develop courses whose perspective and content provide a firm understanding of basic analytical concepts and principles.

(*b*) To develop courses which create the ability to apply economic analysis to major economic problems.

(*c*) To develop courses which foster proficiency in using and evaluating qualitative and quantitative evidence.

(*d*) To develop courses that identify effective methods of instruction.

(*e*) To develop courses that have broad applicability to the diverse character and personality of institutions of higher learning.

2. The Experimental Programs:

The JCEE proposes to begin, in a small way, to contract with three or four colleges and universities to take a fresh look at the introductory course and conduct experiments to test the relative effectiveness of new designs in content and method to provide a basic knowledge of economics that can be retained and applied. Such courses will be characterized by an emphasis on developing the ability to provide economic analysis and reasoning. No attempt will be made to pre-determine the structure of these experiments but an over-all pattern will be established as follows:

(*a*) Experimental projects will deal with all or the major part of either the one or two semester course in elementary economics.

(*b*) The hypotheses which are to be tested in the experimental work will be stated clearly.

(*c*) The instruments that have been or will be developed to test the hypotheses will be identified.

(*d*) The transferability of the results of the experimentation to other institutions will be demonstrated.

(*e*) Both the department of economics and the school of education will cooperate in conducting the project.

It is to be hoped that a by-product of the experiment will be a minimum requirement in economics for future teachers depending on their major areas of study. Another aspect of the preparation of the teacher is the improvement in programs for teachers presently in the classroom. Courses being conducted to improve the efficiency in economic education for these teachers basically are in introductory economics. Improvements made in the courses on campus would be the forerunner of more effective in-service work.

3. Evaluation

The Joint Council in conjunction with the American Economic Association has commissioned a special committee of distinguished economists and psychometricians, aided by The Psychological Corporation, to develop a college-level *Test of Economic Understanding* which can be used by institutions to evaluate the success of their elementary courses. These tests will be primarily a research tool, useful for comparative analysis and for testing hypotheses about the teaching of the basic course. "Before and after" standardized tests for both semesters will be ready for classroom use in the academic year 1967–68.

B. EXPANDING COLLEGIATE CENTERS FOR ECONOMIC EDUCATION

The Joint Council has been instrumental in establishing 33 Centers for Economic Education on college and university campuses. The nation-wide economic education movement has led to increased demand for Center services. The Joint Council has assigned priority to the expansion of Centers. Centers mobilize college and university resources to improve economic education. The characteristics and functions of a typical Center include the following:

1. Characteristics

(*a*) The organization of a Center and its placement in the institution's table of organization must meet the requirement of autonomy for the Center in policy, function, and operation.

(*b*) Economic education is the responsibility of several subject matter areas and a Center reflects this inter-divisional relationship.

(*c*) An economist or educator with a keen sense of interest in the economic education movement serves as director of the Center on a full-time basis.

(*d*) Centers are affiliated with the State and Regional Councils on Economic Education. Centers and Councils reinforce and complement each other and together provide a wide-range of services to the academic community, the schools, and the public.

(*e*) Centers draw upon Joint Council resources for consultation, conferences, liaison with national crganizations, stimulus for research, library materials, and inter-Center communications exchange.

2. Functions

(*a*) Improving instruction in economics is a major concern of Centers. Centers work toward improvement of the typical undergraduate curriculum in order to give future teachers a solid preparation in basic content and also in classroom techniques. Centers have been instrumental in establishing graduate programs in

economic education. Courses, seminars, and workshops or institutes in economic education are provided for teachers from school systems in the area. Centers design and carry on extension-type programs that serve the needs of school systems, industry, labor groups, and others.

(*b*) Centers initiate research on the current status and practices of economic education. They investigate and test various hypothese about economic education. Centers evaluate programs and activities to improve economic education.

(*c*) Centers develop, evaluate and distribute curriculum materials for use at the elementary, secondary, and undergraduate levels. Centers introduce teachers to valuable supplementary publications and audio-visual aids that otherwise might not be used because of the teacher's lack of time or confidence to appraise materials.

(*d*) Service is an important function of the Center. Consultation is provided for school systems. Conferences and institutes are organized.

Conclusion

These Joint Council activities are an important part of a multifaceted approach designed to achieve the goal of economic literacy as defined by the National Task Force. These projects will meet the increasing demands for teachers trained in economics that have grown out of the Developmental Economic Education Program and raise the sights of those students who have been taught economic analysis prior to reaching their freshman year in college.

EXHIBIT II

Letter to Senator Herman E. Talmadge from Dr. Theodore C. Boyden, Director, NDEA Summer Institute in Economics and Center for Business and Economic Education, Georgia State College.

GEORGIA STATE COLLEGE,
Atlanta, Ga., April 13, 1967.

Hon. HERMAN E. TALMADGE,
U.S. Senate, Washington, D.C.

DEAR MR. SENATOR: Although I have known for some time that the Subcommittee on Economic Progress, of which you are a member, is holding hearings tomorrow and April 17 and 21, I have held off writing you until we completed our selection of participants for the NDEA Summer Institute in Economics at Georgia State College. I have held off so that I could provide you with the latest information available, as well as information already at hand.

When we wrote our NDEA proposal a year ago, we were doubtful that we could fill the 30 places in it, since the institute was to be focused rather narrowly—southeast teachers of economics at the twelfth grade. We are both pleasantly surprised and somewhat concerned by the large number of inquiries we had—350—and then the large number of actual applications—147. The difference in numbers is explained in large part by the fact that many inquiries were from persons outside the Southeast and therefore not eligible. Notices to candidates and alternates have just been mailed.

We are pleasantly surprised by the sheer sizes of the numbers but we are very much concerned, because the applications reveal that many schools offer an economics course but lack teachers who have enough education in the subject to teach it well. Our concern is that we could offer admittance to the institute for only 30 out of the 147 applicants—an indication of the importance of the NDEA program and of the need for an enlarged program. Of particular importance to us was that out of the 147 applicants, 88 were from the state of Georgia

In addition to the NDEA Summer Institute in Economics, Georgia State College has been (1) conducting economic education in-service courses for teachers in the metropolitan Atlanta area, (2) members of the college's economics education and other faculties have served as consultants to the school systems in the area, (3) economic education scholarships have been made available to the teachers, and (4) I have been serving as consultant to the Atlanta-Fulton County Schools DEEP project of the Joint Council on Economic Education. The college's Center for Business and Economic Education is affiliated with the Joint Council.

The total number of teachers directly involved in these efforts is about 400 from 120 schools, while the number of economic education scholarships is about 80.

These in-service, consultant,. and scholarship programs have been financed jointly by the college, the college's Chair of Private Enterprise, the Atlanta-Fulton County Schools, and the Joint Council. It is a happy combination of both public and private support, which we find most welcome and wish to continue.

Although we think we have been doing a commendable amount of work, we know that much more is needed. This opinion is based not only on the NDEA flood of inquiries and applications, but also on the testing of teachers we have conducted in connection with our economic education in-service courses. We have used Forms A and B of *The Test of Economic Understanding,* sponsored by the Joint Council on Economic Education for use at the twelfth grade. The median score at the beginning was 58 and at the end 72. These scores show that much is being accomplished, but much more remains to be done.

I hope the above will be useful to you during the hearings. If you feel that we might provide more information, please call on me.

Sincerely,

THEODORE C. BOYDEN,

EXHIBIT III

National Science Foundation economics program grants, fiscal years 1962–66.

NATIONAL SCIENCE FOUNDATION

Economics program grants, fiscal year 1962

Institution	Investigator	Title	Amount	Duration
University of Michigan	A. Eckstein	Study of Economic Fluctuations	$9,900	August 1961 to August 1962.
National Industrial Conference Board	D. Creamer	Statistical Analysis of Location of Manufacturing 1947 to 1958.	45,900	August 1961 to August 1963.
University of Southern California	A. L. Grey, Jr	Productivity in the Construction Industry	37,900	September 1961 to September 1963.
University of Rochester	R. S. Merrill	Economic Significance of Engineering Design Advances	12,500	Do.
University of Rhode Island	E. Rayack	Economic Analysis of the Supply of Physicians Services	9,200	February 1962 to February 1963.
Yale University	M. C. Lovell	Fluctuations in Inventory Investment	30,500	February 1962 to February 1964.
University of Washington	E. M. Horwood	Mapping Technology for Urban Studies	32,500	January 1962 to January 1963.
University of Illinois	V. L. Bassie	Government Subsidies in Developed Countries	10,800	December 1961 to June 1963.
Purdue University	R. L. Stucky	Inter-University Seminar Series in Quantitative Economics.	34,700	January 1962 to January 1965.
Duke University	F. A. Hanna	Relationships of Economic Variables	153,000	February 1962 to February 1965.
University of Minnesota	J. Schmookler	Investment in Partial Obsolescence	9,400	June 1962 to June 1963.
Harvard University	W. W. Leontief	Basic Research on Input-Output Analysis	250,000	June 1962 to June 1967.
Massachusetts Institute of Tech	M. A. Adelman	The Lognormal Distribution	10,800	February 1962 to February 1963.
Southern Illinois University	W. Zelinsky	Population Geography of Middle America	15,000	March 1962 to March 1965.
University of Rochester	R. W. Jones	General Equilibrium Analysis in International Trade	19,800	June 1962 to June 1965.
University of Buffalo	N. K. Choudhry	Interindustry Structure in Under-developed Economies	16,400	June 1962 to June 1964.
University of California (B)	D. W. Jorgenson	Capital Theory and Investment Behavior	55,550	September 1962 to September 1965.
University of Minnesota	L. Hurwicz	Resource Allocation Mechanisms	98,800	July 1962 to July 1965.
Northwestern University	R. Eisner	The Investment Function	56,700	August 1962 to August 1964.
Harvard University	A. Daniere	Specification of Regression Structures	8,100	July 1962 to July 1963.
Cornell University	B. G. Jones	The Shapes of American Cities	30,000	June 1962 to September 1963.
Harvard University	J. Pratt, H. Raiffa, R. Schlaifer.	Statistical Decision Theory	83,600	July 1962 to July 1964.
Ohio State University	R. A. Tybout	Conference on Factors in Technological Research and Development.	2,000	June 1962 to June 1965.
University of Texas	D. S. Huang	A Multi-Cross-Section Investigation of Demand	12,900	September 1962 to September 1963.
Princeton University	F. Machlup	Economic Aspects of Technological Innovation	38,400	July 1962 to July 1965.
Wayne State University	J. C. Harsanyi	Bargaining Solutions for Games	20,100	August 1962 to August 1963.
Purdue University	V. L. Smith	Behavior in Competitive Markets	39,500	July 1962 to July 1964.
Iowa State University	K. A. Fox, E. Thorbecke	Formulation and Use of Quantitative Models	82,900	September 1962 to September 1965.
Michigan State University	B. P. Pesek	Simulation of Economic Growth Effects	13,600	September 1962 to September 1964.
Northwestern University	R. H. Strotz	Methods of Simultaneous Equation Estimation	96,300	September 1962 to September 1965.
Do	A. H. Rubenstein	Project Selection in Research and Development	75,800	July 1962 to July 1965.

Economics program grants, fiscal year 1962—Continued

Institution	Investigator	Title	Amount	Duration
Princeton University	W. J. Baumol	The Dynamics of the Firm	$124,100	July 1962 to July 1965.
Wayne State University	T. Y. Shen	Production Functions in Manufacturing	27,200	June 1962 to June 1963.
University of Illinois	H. Brems	Nonlinear Models of International Growth	4,900	July 1962 to July 1963.
Cornell University	G. H. Hildebrand, Ta-Chung Liu.	Manufacturing Production Functions	77,500	September 1962 to September 1964.
University of California (LA)	K. Brunner	Quantitative Research in Monetary Theory	55,500	July 1962 to July 1965.
University of Illinois	R. Ferber	Methods of Measuring Consumer Data	210,000	Do.
National Bureau of Economic Research, Inc.	I. B. Kravis R. E. Lipsey	Comparative Study of Prices and Price Trends	120,500	July 1962 to July 1964.

Economics program grants, fiscal year 1963

Institution	Investigator	Title	Amount	Duration
University of Rochester	R. N. Rosett	Investigation of Household Economic Behavior	$3, 550	February 1963 to February 1964.
National Industrial Conference Board	D. Creamer	Statistical Analysis of Location of Manufacturing 1947 to 1958.	1, 700	August 1961 to August 1963.
Carnegie Institute of Technology	E. Mansfield	Econometric Studies of Research and Development	113, 600	September 1962 to September 1963.
University of Michigan	J. A. Sonquist, J. N. Morgan	Methods of Survey Data Analysis	27, 700	August 1962 to August 1963.
University of Virginia	G. Tullock	Models of Collective Decision	30, 300	September 1962 to September 1965.
Associated Rocky Mountain Universities, Inc.	N. Wollman	Economic and Technical Coefficients of Water Use	68, 500	September 1962 to September 1964.
Princeton University	O. Morgenstern	Mathematical Methods for Time Series Analysis	80, 500	September 1962 to September 1964.
University of Pittsburgh	G. Tintner	Stochastic Theory of Economic Development	43, 300	January 1963 to January 1966.
Grinnell College	J. C. Dawson	Savings-Investment Fluctuations	10, 400	January 1963 to January 1964.
Stanford University	H. Uzawa	Two-Sector Model of Economic Growth	44, 300	January 1963 to January 1965.
Kansas State University	W. D. Fisher	Aggregation-Partition Problem in Economics	28, 700	January 1963 to January 1966.
Johns Hopkins University	C. F. Christ	Econometric Study of Liquid Assets	46, 300	Do.
University of Chicago	A. Kahan	Russian GNP and National Income, 1855–1913	32, 600	January 1963 to January 1965.
University of California (B)	T. A. Marschak, C. B. McGuire.	Information Technology and Organizations	51, 300	Do.
Johns Hopkins University	K. J. Lancaster	Utilization of Data in Econometrics	41, 400	Do.
University of Michigan	W. H. L. Anderson	Econometric Model of the United States	68, 900	July 1963 to July 1966.
Yale University	T. C. Koopmans	Mathematical Economic Models	124, 200	Do.
University of Illinois	D. R. Hodgman, R. W. Gillespie.	Micro-Analytic Simulation of the Banking System	80, 200	January 1963 to January 1966.
Massachusetts Institute of Technology	A. K. Ando	Economic Growth of the United States	140, 300	Do.
Harvard University	A. H. Conrad	Empirical Study of Technological Change	12, 200	April 1963 to April 1964.
Iowa State University of Science and Technology.	B. R. Holdren	Theory of the Multi-Product Firm	20, 400	June 1963 to June 1965.
Stanford University	M. Nerlove	Methods of Analyzing Economic Time Series	130, 400	September 1963 to Spetember 1966.
University of Wisconsin	A. Zellner	Bayesian Inference and Aggregation and Specification in Econometrics.	107, 000	July 1963 to July 1966.
University of North Carolina	G. S. Tolley	Area Population Adjustment and Economic Activity	40, 000	July 1963 to July 1965.
Yale University	J. Tobin	Financial Institutions and Capital Markets	115, 000	July 1963 to July 1966.
University of Rochester	S. C. Tsiang	Theory of the Forward Exchange Market	24, 200	July 1963 to July 1965.
University of Chicago	J. H. Lorie	Research in Security Prices	68, 300	May 1963 to May 1965.
Harvard University	E. Mansfield	Econometric Studies of Research and Development	16, 100	September 1963 to September 1964.
University of Michigan	J. N. Morgan	Testing of Economic Theories on Investment	98, 000	July 1963 to July 1965.
University of Washington	E. M. Horwood	Electronic Mapping Development	73, 100	Do.
Carnegie Institute of Technology	M. C. Lovell	Fluctuations in Inventory Investment	10, 800	July 1963 to February 1964.
National Bureau of Economic Research, Inc.	H. G. Georgiadis, I. Mintz	Economic Performance in International Competition	72, 600	June 1963 to December 1965.
The Brookings Institution	L. R. Klein	An Econometric Model of the United States Economy	248, 400	September 1963 to September 1966.
Cornell University	Ta-Chung Liu	A Recursive Monthly Econometric Model	40, 000	September 1963 to September 1965.
Rice University	S. N. Afriat	Analysis of Consumers' Preferences and Construction of Index-Numbers.	38, 400	July 1963 to July 1965.
Michigan State University	T. R. Saving	Relationship of the Demand for Educational Facilities to Relative Wage Changes.	25, 900	July 1963 to October 1963.
University of California (B)	D. W. Jorgenson	Electronic Computation in Econometrics	21, 850	September 1963 to September 1964.
Haverford College	E. Smolensky	Model of Urban Economic Growth	10, 700	July 1963 to October 1964.

Economics program grants, fiscal year 1964

Institution	Investigator	Title	Amount	Duration
University of Southern California	A. L. Grey	Productivity in the Construction Industry	$2,424	October 1963 to October 1964.
Pennsylvania State University	W. Zelinsky	Population Geography of Middle America	5,700	July 1963 to October 1964.
University of Virginia	J. M. Buchanan	Conference on the Theory of Collective Decision Processes, Oct. 11–12, 1963.	5,100	August 1963 to February 1964.
Carnegie Institute of Technology	J. F. Muth	Decision Making and Dynamic Economic Models	45,400	September 1963 to September 1965.
University of California (B)	J. B. Michaelsen	Measurement of Yields on Securities	32,100	July 1963 to July 1965.
Do	G. Debreu	Informational Efficiency of Prices	40,600	January 1964 to January 1967.
University of Chicago	C. D. Harris	Urban Structure of the Soviet Union	23,900	January 1964 to January 1965.
Carnegie Institute of Technology	A. H. Meltzer	Theoretical and Econometric Monetary Studies	59,400	January 1964 to January 1967.
University of Southern California	G. Tintner	Stochastic Theory of Economic Development	34,200	January 1964 to January 1966.
Cornell College	R. L. Bunting	Changes in Employer Concentration in Local Labor Markets.	15,200	Do.
Los Angeles State College Foundation	R. C. Eidt	Pioneer Settlement and Economic Growth	25,400	June 1964 to September 1965.
University of Wisconsin	C. C. Holt	Fluctuations in Complex Economic Systems	64,400	January 1964 to January 1967.
University of Pennsylvania	R. Summers	Measurement of America's Economic Potential	50,000	February 1964 to August 1966.
University of Texas	G. W. Hoffman	Regional Differences and Economic Development	42,100	February 1964 to February 1967.
Do	W. C. Neale	Institutional Study of Economic Development	14,000	February 1964 to September 1965.
University of Chicago	L. G. Telser	Econometric Analysis of Imperfect Competition	68,300	February 1964 to July 1967.
University of Texas	D. S. Huang	Quantitative Studies of Consumer Durables	49,700	June 1964 to September 1966.
Purdue University	V. L. Smith, W. H. Starbuck.	Studies of Bargaining and Decision Behavior	63,800	July 1964 to July 1966.
University of Pennsylvania	J. B. Crockett, I. Friend	Determinants of Consumption and Saving	88,500	September 1964 to September 1967.
University of Chicago	D. V. Bear	Distributed Lags in Economic Models	9,400	July 1964 to October 1965.
University of Rochester	E. Zabel	Theory of Capital and Production for the Firm	19,900	June 1964 to June 1967.
Do	N. Kaplan	The Role of Capital Formation in Soviet Economic Growth.	21,700	June 1964 to June 1966.
University of North Carolina	H. A. Latane	Investigation of Returns from Assets	95,100	June 1964 to June 1967.
University of Rochester	R. G. Penner	Variables in Investment Demand Functions	16,200	June 1964 to June 1966.

University of Washington	J. E. Floyd, J. A. Hynes	Economic Growth, Price Trends, and the Balance of Payments.	5,700	June 1964 to June 1965.
University of New Mexico	B. T. Bower	Industry and the Water Environment	28,400	July 1964 to July 1965.
University of California (B)	D. E. Laidler	Demand Equation for Money Balances	7,500	Do.
Carnegie Institute of Technology	R. E. Lucas	Economic Theory of Technological Change	17,400	July 1964 to October 1965.
Regional Science Research Institute	B. H. Stevens	MetropolitanTransportation Analysis	50,000	May 1964 to May 1966.
Purdue Research Foundation	R. L. Basmann	Exact Finite Sample Distributions	31,800	July 1964 to October 1965.
Cornell University	B. P. Stigum	Application of Stochastic Processes to Dynamic Economic Theory.	10,600	July 1964 to July 1965.
University of Connecticut	J. W. Kendrick	Concepts and Estimates of Total Investment	37,400	September 1964 to September 1966.
National Bureau of Economic Research, Inc.	I. B. Kravis, R. E. Lipsey	Comparative Study of Prices and Price Trends	80,400	July 1964 to October 1965.
University of Chicago	H. Uzawa	Two-Sector Model of Economic Growth	19,300	April 1964 to April 1965.
Columbia University	A. G. Hart	Expectational Economics	69,200	June 1964 to June 1967.
University of California (B)	O. E. Williamson	Discretionary Behavior of the Firm	19,300	September 1964 to September 1966.
Columbia University	I. O. Scott, Jr	Study of Capital Flows	1,440	September 1964 to September 1965.
University of Wisconsin	R. H. Day	Recursive Programming Analysis of Production	49,900	July 1964 to July 1966.
Michigan State University	M. E. Kreinin	Empirical Testing of International Trade Theory	18,300	October 1964 to April 1965.
Duke University	J. S. McGee, C. E. Ferguson.	Dynamic Viability in a Competitive Market	48,100	September 1964 to June 1966.
University of Wisconsin	G. H. Orcutt	Simulation Models of the United States Economy	248,400	July 1964 to January 1967.
University of Michigan	G. Katona, E. Mueller	Impact of the Tax Cut on Consumer Behavior	75,000	June 1964 to December 1965.
National Bureau of Economic Research, Inc.	L. H. Seltzer	Analysis of Capital Gains Statistics	16,300	September 1964 to June 1965.
University of Pennsylvania	E. Mansfield	Econometric Studies of Research and Development	69,900	September 1964 to September 1967.
University of Minnesota	J. S. Chipman	Theory of Preference	39,500	July 1964 to July 1966.
Harvard College	J. Pratt, H. Raiffa, R. Schlaifer.	Statistical Decision Theory	99,000	September 1964 to September 1966.
Princeton University	O. Morgenstern	Mathematical Methods for Economic Time Series Analysis	130,100	September 1964 to September 1967.
Stanford University	H. M. Wagner	Mathematical Programming and Mathematical Economics	141,700	July 1964 to July 1968.

Economics program grants, fiscal year 1965

Institution	Investigator	Title	Amount	Duration
Los Angeles State College Foundation	R. C. Eidt	Pioneer Settlement and Economic Growth	$7,900	June 1964 to September 1965.
University of Wisconsin	J. G. Williamson	Quantitative Study of American Industrialization	31,400	September 1964 to September 1966.
Utah State University	N. K. Roberts	Determining Marginal Valuation of Water	50,500	October 1964 to October 1966.
University of Pennsylvania	A. K. Ando	Role of Financial Markets in Economic Growth	96,600	September 1964 to September 1967.
Research Foundation of State University of New York (Buffalo).	D. I. Fand	Econometric Test of Return Relationships	17,500	September 1964 to September 1965.
Do	M. Gort	Technical Change and Capital-Output Relations	24,400	Do.
George Washington University	M. Brown	Empirical Study of Technological Change	26,400	Do.
Pennsylvania State University	W. Zelinsky	Population Geography of Middle America	15,900	August 1964 to February 1965.
Carnegie Institute of Technology	J. Bossons, K. J. Cohen	Equilibrating Processes in Capital Markets	82,600	September 1964 to September 1966.
Iowa State University of Science and Technology.	D. G. Luckett	Empirical Study of Credit Availability Doctrine	24,700	Do.
University of North Carolina	R. E. Gallman, W. N. Parker.	Efficiency in an Agricultural Export Region	51,100	Do.
Massachusetts Institute of Technology	G. Black	Impact of Federal R and D Expenditures on Industry	17,200	January 1965 to August 1965.
University of California at Los Angeles	R. F. Logan	Regional Appraisal in South West Africa	8,500	January 1965 to January 1966.
Regional Science Research Institute	W. Isard	Aspects of Urban Place Systems	64,300	October 1964 to October 1966.
University of Tennessee	T. H. Lee	Determinants of the Demand for Money	32,900	September 1965 to September 1967.
Purdue University	J. S. Day	Inter-University Seminar Series in Quantitative Economics.	15,700	January 1965 to April 1966.
University of Kansas	R. E. Nunley	The Distribution of Population in Central America	70,900	February 1965 to August 1967.
University of Oregon	G. O. Bierwag, M. A. Grove.	The Term Structure of Interest Rates	27,600	June 1965 to October 1966.
University of Wisconsin	L. W. Weiss	Optimal Scale and Merger in Industry	34,000	February 1965 to August 1966.
American University	C. T. Morris	Quantitative Study of Determinants of Economic Performance.	50,400	January 1965 to January 1968.
Pennsylvania State University	P. R. Gould	Accessibility on Developing Transportation Networks	36,500	May 1965 to July 1967.
University of California (LA)	W. R. Allen	Studies in International Economics	8,100	September 1965 to September 1966.
Wesleyan University	R. A. Miller	Relationship of Concentration and Profit in Manufacturing.	4,700	June 1965 to June 1966.
University of Michigan	A. Y. C. Koo	Multi-family Preference Ordering	55,100	June 1965 to September 1967.
University of Chicago	Z. Griliches	Econometric Investigations of Technological Change	72,300	July 1965 to July 1968.
Northwestern University	R. Eisner	Investment Theory and Technical Progress	120,000	May 1965 to May 1968.
University of Washington	D. F. Gordon, J. A. Hynes	The Rate of Change of Prices	26,800	June 1965 to June 1966.
University of California (D)	T. Mayer	Disaggregated Demand Function for Money	6,000	July 1965 to July 1966.
University of California (B)	J. C. Harsanyi	Problems in Game Theory	27,100	June 1965 to June 1968.
University of Rochester	L. W. McKenzie	Optimal Growth Paths in MultiSector Models	21,000	July 1965 to July 1967.
Cornell University	F. H. Golay	Doctoral Dissertation Research in Economics	1,400	April 1965 to April 1966.
Ohio State University	H. S. Parnes	Doctoral Dissertation Research in Economics	1,550	Do.

Yale University	M. J. Peck	Doctoral Dissertation Research in Economics	3,900	Do.
Brown University	M. J. Brennan	Doctoral Dissertation Research in Economics	700	Do.
University of California (B)	L. Ulman	Doctoral Dissertation Research in Economics	2,100	March 1965 to April 1966.
Occidental College	J. E. Haring	Money and Development in an Export Economy	4,000	July 1965 to July 1966.
University of Pennsylvania	B. Harris	Location and Structure of Housing Demand and Supply	43,900	Do.
University of Wisconsin	J. S. Earley	Doctoral Dissertation Research in Economics	3,300	April 1965 to April 1966.
Harvard University	P. Taubman	Comparative Study of Consumption Functions	23,500	September 1965 to June 1968.
University of Washington	Y. Barzel	Measuring the Output of Non-Manufacturing Industries	12,400	July 1965 to July 1966.
University of California (B)	D. W. Jorgenson	Predictive Performance of Econometric Investment Models.	56,100	June 1965 to September 1966.
Northwestern University	D. F. Marble	Doctoral Dissertation Research in Geography	2,800	April 1965 to April 1966.
University of California (B)	D. E. Laidler	The Demand for Money	8,000	July 1965 to July 1966.
University of Chicago	H. Uzawa	Theory of Economic Growth	51,000	July 1965 to July 1967.
Yale University	H. E. Scarf	Economic Applications of Game Theory and Dynamic Programing.	111,200	July 1965 to July 1968.
University of North Carolina	R. E. Gallman	Doctoral Dissertation Research in Economics	1,500	April 1965 to April 1966.
University of Pennsylvania	F. G. Adams, L. R. Klein, I. B. Kravis.	Econometric Study of World Commodity Markets	183,600	July 1965 to July 1968.
University of Minnesota	J. Schmookler	Pilot Survey of Comparative Patent Statistics	4,300	June 1965 to December 1965.
Do	O. H. Brownlee	Doctoral Dissertation Research in Economics	7,900	April 1965 to April 1966.
Cornell University	R. W. Kilpatrick	Equalization of Profit Rates	13,200	July 1965 to October 1966.
University of California (B)	D. McFadden	Development Programs in a General Linear Model	11,600	June 1965 to September 1966.
Michigan State University	V. E. Smith, D. C. Cederquist.	Components of Food Expenditure	44,200	Do.
Cornell University	B. P. Stigum	Application of Stochastic Processes to Dynamic Economic Theory.	13,900	July 1965 to October 1966.
Princeton University	E. J. Kane, B. G. Malkiel	Stock and Flows in Bank Portfolio Management	12,500	Do.
Iowa State University of Science & Technology.	K. A. Fox, E. Thorbecke	Formulation and Use of Quantitative Models	92,500	September 1965 to September 1968.
Ohio University	L. Soltow	Distribution of Wealth, 1860–1870	46,400	June 1965 to June 1968.
Yale University	M. Nerlove	Methods of Analyzing Economic Time Series	52,500	September 1965 to September 1967.
Princeton University	W. J. Baumol	The Dynamics of the Firm	112,700	July 1965 to July 1968.
Brown University	G. H. Borts, P. D. Cagan, J. L. Stein.	Analysis of Growing Economies	164,900	Do.
Kansas State University of A. & A. S.	W. D. Fisher	Aggregation-Partition Problem in Economics	18,200	January 1966 to August 1967.
University of California (B)	R. Radner	Theory of Resource Allocation Planning	39,500	July 1965 to July 1968.
Vanderbilt University	R. Fels	Upper Turning Points of Business Cycles	56,000	May 1965 to August 1967.
Princeton University	F. Machlup	The Production and Use of Technology	65,200	July 1965 to July 1967.
University of Southern California	G. Tintner	Stochastic Theory of Economic Development	31,200	January 1966 to June 1967.
University of California (B)	P. A. Diamond	Microeconomic Models of Business Cycles	2,800	July 1965 to October 1966.
Kansas State University	M. J. Emerson	Stability of Trade Coefficients in Open Input-Output Models.	26,400	July 1965 to July 1967.

Economics program grants, fiscal year 1966

Institution	Investigator	Title	Amount	Duration
University of Rochester	N. Kaplan	The Role of Capital Formation in Soviet Economic Growth.	$6,200	June 1964 to December 1966.
University of California (D)	T. Mayer	Disaggregated Demand Function for Money	2,100	July 1965 to July 1966.
University of North Carolina	G. S. Tolley	Econometric Analysis of Changes in Consumption Habits	43,400	July 1965 to July 1967.
University of Pennsylvania	O. E. Williamson	Discretionary Behavior of the Firm	13,100	September 1965 to June 1966.
Harvard University	H. S. Houthakker	Studies in U.S. Consumption and Savings	69,600	September 1965 to September 1968.
University of North Carolina	J. C. Ingram	European Capital Markets and Balance-of-Payments Adjustment.	76,800	Do.
University of Pennsylvania	R. A. Easterlin	Economic Development in Historical Perspective	27,300	September 1965 to September 1966.
University of Michigan	R. M. Stern	Factors Affecting Exports	15,900	Do.
Southern Methodist University	D. S. Huang	Quantitative Studies of Consumer Durables	31,600	September 1965 to June 1967.
University of California (LA)	R. M. Williams	Regional Economic Analysis	46,500	August 1965 to January 1968.
University of California (LA)	K. Brunner	Economic Studies of Monetary Processes	56,100	August 1965 to August 1968.
Purdue Research Foundation	S. N. Afriat	Analysis of Consumers' Preferences and Construction of Index Numbers.	14,900	September 1965 to September 1966.
University of Virginia	J. M. Buchanan	Decision Rules and Institutional Organizational Forms	63,000	September 1965 to September 1967.
Purdue Research Foundation	R. L. Basmann	Exact Finite Sample Distributions	63,600	October 1965 to September 1967.
Stanford University	T. Amemiya	Spectral Analysis and Econometric Theory	24,100	October 1965 to October 1967.
Wayne State University	R. F. Kosobud	Time Series Study of Consumer Behavior	30,300	Do.
University of Pittsburgh	C. Goodrich, J. Rubin	Comparative Economic History	24,300	September 1965 to September 1966.
University of Wisconsin	R. F. Miller, M. H. David	Micro-Economic Data Preparation	153,900	October 1965 to October 1967.
University of Virginia	A. Whinston	Quadratic and Nonlinear Programing for Economics	34,500	February 1966 to February 1968.
University of Michigan	W. F. Stolper	Doctoral Dissertation Research in Economics	2,500	January 1966 to January 1967.
Washington University	T. Rader	General Economic Equilibrium Theory	28,600	February 1966 to February 1968.
University of Rochester	R. N. Rosett	Sampling Distribution of Probit Analysis and Related Techniques.	28,000	Do.
Wesleyan University	R. C. Vogel	Corporate Demand for Liquid Assets	12,800	April 1966 to October 1967.
University of Rochester	R. N. Rosett	Doctoral Dissertation Research in Economics	660	February 1966 to February 1967.
University of California (B)	J. W. Garbarino	An Analysis of the Salaries of Scientific and Academic Personnel.	19,200	July 1966 to October 1967.
Massachusetts Institute of Technology	P. Temin	Econometric Study of Inflation in the 1830's	8,700	June 1966 to June 1967.

Duke University	T. H. Naylor, W. H. Wallace.	Computer Simulation Experiments for Economic Systems.	77, 100	July 1966 to July 1968.
University of California (B)	D. E. Laidler	The Demand for Money	17, 000	July 1966 to October 1967.
University of Michigan	D. B. Suits	Quantitative Economics	91, 600	August 1966 to August 1968.
Do	E. Mueller	Doctoral Dissertation Research in Economics	2, 500	May 1966 to December 1967.
Yale University	D. D. Hester	do	2, 000	April 1966 to April 1967.
University of Kansas	J. P. Quirk	Scope of the Correspondence Principle in Comparative Statics.	18, 400	July 1966 to July 1967.
Iowa State University of Science and Technology.	W. R. Maki, J. R. Prescott.	Simulation Studies of Rural-Urban Development	76, 500	September 1966 to September 1968.
Brandeis University	J. S. Berliner	Innovation in the Soviet Economy	52, 600	Do.
University of Pennsylvania	E. S. Phelps	Price-Wage Behavior and the Inflationary Process	57, 100	Do.
University of California (B)	D L. McFadden	Doctoral Dissertation Research in Economics	800	June 1966 to June 1967.
The Brookings Institute	G. Fromm, E. Kuh, L. R. Klein.	An Econometric Model of the United States Economy	226, 300	July 1966 to July 1968.
University of Pennsylvania	O. E. Williamson	Analytical Research in Industrial Organization	30, 500	June 1966 to June 1968.
University of California (LA)	J. Marschak	Economics of Information and Organization	90, 600	July 1966 to July 1968.
University of Minnesota	A. O. Krueger	A General Equilibrium Analysis of Balance of Payments Theory.	35, 000	September 1966 to September 1968.
Yale University	T. C. Koopmans	Mathematical Economic Models	101, 100	July 1966 to July 1968.
University of California (B)	G. Debreu	Measure Spaces of Economic Agents	33, 600	Do.
University of Hawaii	H. T. Oshima	A Tri-Sector Model for Economic Development	43, 100	Do.
Ohio State University Research Foundation.	K. Brunner	Econometric Studies of Monetary Processes	49, 100	July 1966 to September 1967.
Yale University	D. D. Hester, J. Tobin	Financial Institutions and Capital Markets	110, 900	April 1966 to July 1968.
University of Minnesota	C. Hildreth	Econometric Models in Statistical Decision Making	53, 000	April 1966 to April 1968.
The National Industrial Conference Board.	D. Creamer	Statistical Analysis of Location of Manufacturing	3, 000	June 1966 to June 1967.
Northwestern University	I. Adelman	Optimizing Models for the Planning of Investment in Education.	93, 500	June 1966 to June 1968.
University of Pennsylvania	N. D. Baxter	Empirical Study of Corporate Financing Decisions	49, 200	July 1966 to July 1968.
Brown University	M. J. Beckmann, H. E. Ryder, Jr.	Dynamics of Stability and Growth	55, 300	September 1966 to September 1968.
University of California (B)	J. W. Garbarino	Doctoral Dissertation Research in Economics	1, 900	July 1966 to January 1967.
University of Wisconsin	R. E. Baldwin	Determinants of the Structure of International Trade	43, 800	September 1966 to September 1968.
Wesleyan University	R. A. Miller	Relationship of Concentration and Profit in Manufacturing.	9, 900	June 1966 to October 1967.

EXHIBIT IV

National Science Foundation support of projects in teacher education in economics, 1966.

DIVISION OF PRE-COLLEGE EDUCATION IN SCIENCE

TEACHER EDUCATION SECTION

SUPPORT OF PROJECTS IN ECONOMICS, FY 1966

Institutes

California:

San Diego State College, In-Service Institute in Economics for Secondary School Teachers, Dr. Robert E. Barckley, 40 participants, $9,040.

University of Santa Clara, Summer Institute in Economics for Secondary School Teachers, Prof. Mario Belotti, 40 participants, $41,000.

Illinois:

University of Illinois, Summer Institute (Sequential) in Economics for Secondary School Teachers, Prof. Donald W. Paden, 40 participants, $54,350.

Massachusetts:

Assumption College, Summer Institute in Economics for Secondary School Teachers, Prof. George A. Doyle, 36 participants, $36,160.

Minnesota:

University of Minnesota, Summer Institute in Economics for Secondary School Teachers, Dr. Roman F. Warmke, 30 participants, $23,970.

Oklahoma:

Oklahoma State University, Summer Institute in Economics for Secondary School Teachers, Dr. Clayton Millington, 40 participants. $53,850.

Pennsylvania:

Pennsylvania Military College, Summer Institute in Economics for Secondary School Teachers, Dr. Robert L. Hamman, 40 participants, $33,900.

Tennessee:

The University of Tennessee, In-Service Institute in Economics and Geography for Secondary School Teachers, Dr. Lawrence O. Haaby, 15 participants, $3,840. (Total grant: 30 participants, $7,680).

Texas:

University of Dallas, In-Service Institute in Economics for Secondary School Teachers, Rev. Damian Fandal, O.P., 25 participants, $4,830.

North Texas State University, Summer Institute in Economics for Secondary School Teachers, Prof. Kendall P. Cochran, 30 participants, $31,590.

Washington:

University of Washington, Academic Year Institute in Economics for Secondary School Teachers, Dr. J. Richard Huber, 10 participants, $56,500.

Total: 11 institutes, 9 states, 346 participants, $349,030.

SSTP program:

Grant to University of Missouri, Columbia, Dr. Clayton H. Johnson, 50 secondary school students, students take Economics and one of either Earth Science or Chemistry, $10,540 for Economics portion of project only (total grant $21,080).

Visiting scientist program:

Out of 51 grants for $438,775, we estimated that 5 projects offered visits in Economics for $5,000.

College Teacher Programs, Fiscal Year 1966

Grants in economics

Illinois: American Economics Association, Visiting Scientists (Colleges), P. Saunders, 30 visitor-days	$5, 750
Iowa: Iowa State University, Research Participation for College Teachers, J. J. L. Hinrichsen, 3 participants (out of a total of 20)	2, 850
Missouri: University of Missouri, Summer Institute in Analytical Concepts, Theory and Quantitative Economics, J. M. Kuhlman, 60 participants	75, 720
Pennsylvania:	
Lehigh University, Academic Year Institute, E. C. Bratt, 10 participants	76, 400
University of Pennsylvania, Research Participation for College Teachers, L. R. Klein, 4 participants	10, 250

Undergraduate Research Participation Program, Fiscal Year 1966

Grants in economics

California:	
Occidental College	
Undergraduate Research Participation, Joseph Haring, 6 participants	$6, 300
Undergraduate Research Participation, Joseph Haring, 6 participants	6, 300
Connecticut:	
Yale University, Undergraduate Research Participation, P. Mieszkowski, 7 participants	8, 400
Illinois:	
University of Chicago, Undergraduate Research Participation, A. C. Harberger, 16 participants	16, 800
Massachusetts:	
College of the Holy Cross, Undergraduate Research Participation, J. J. Reid, 3 participants	2, 100
Ohio:	
The Ohio State University, Undergraduate Research Participation, B. M. Fleisher, 10 participants	10, 500
Pennsylvania:	
University of Pennsylvania, Undergraduate Research Participation, R. Summers, 6 participants	8, 400
Wisconsin:	
University of Wisconsin (Madison), Undergraduate Research Participation, R. L. Andreano, 12 participants	12, 600

Instructional Scientific Equipment Program, Fiscal Year 1966

Grants in Economics

Illinois: Loyola University, Instructional Scientific Equipment, L. W. Martin, instructional equipment	$800
Iowa: Graceland College, Instructional Scientific Equipment, F. S. Hough, instructional equipment	200
Michigan:	
Michigan State University, Instructional Scientific Equipment, R. R. Hough, instructional equipment (Oakland)	2, 600
Western Michigan University, Instructional Scientific Equipment, W. Sichel, instructional equipment	4, 000
New York:	
Hofstra University, Instructional Scientific Equipment, J. Weissman, instructional equipment	2, 000
New York University, Instructional Scientific Equipment, E. Stein, instructional equipment (Washington Square)	4, 600
Ohio:	
Antioch College, Instructional Scientific Equipment, I. A. Lakos, instructional equipment	1, 000
Kenyon College, Instructional Scientific Equipment, A. B. Batchelder, instructional equipment	3, 600

INSTRUCTIONAL SCIENTIFIC EQUIPMENT PROGRAM, FISCAL YEAR 1966—Con.

Grants in Economics—Continued

Pennsylvania: Allegheny College, Instructional Scientific Equipment, J. B. Henderson, instructional equipment $2,900
South Dakota: Augustana College, Instructional Scientific Equipment, E. H. Thoreson, instructional equipment 3,000

SUPPORT OF SCIENCE EDUCATION IN ECONOMICS

A. Fellowships and traineeships

Name of program	Awards offered	Estimated amount
Graduate	106	$516,432
Cooperative graduate (Continuation of 2-year fellowships awarded in fiscal year 1965; no competition for new awards)	17	90,967
Teaching assistants	52	56,576
Postdoctoral	5	34,350
Senior postdoctoral	2	22,790
Science faculty	5	63,805
Senior foreign scientist	1	13,187
Total	188	798,107

The following table summarizes the traineeship activities in economics during the fiscal year:

	Departments applying	Departments assigned traineeships	Number of trainees	Estimated amount
Economics	85	42	52	$269,516
Agricultural economics	13	6	6	31,098
Total	98	48	58	300,614

B. Undergraduate programs

The following table summarizes the proposal and grant activity of economics projects submitted in these programs during fiscal year 1966:

Program	Proposals received			Grants awarded		
	Number	Amount requested	Number participants	Number	Amount	Number participants
College teacher programs	10	$349,945	136	5	$170,495	77
Undergraduate research participation	21	291,515	296	8	71,400	66
Instructional scientific equipment	16	65,254	----------	10	24,700	----------
Curriculum improvement	0	----------	----------	0	----------	----------
Special projects	0	----------	----------	0	----------	----------

C. Pre-college programs

The following table summarizes the proposal and grant activity of economics projects submitted in these programs during fiscal year 1966:

Programs	Proposals received			Grants awarded		
	Number	Amount requested	Number participants	Number	Amount	Number participants
Institutes	26	$756,685	[1] 941	11	$349,030	[1] 346
Student and cooperative programs	10	110,360	[2] 114 [1] 122	6	15,540	[2] 50

[1] Teachers. [2] Students.

PART 5

Materials pertaining to recommendations for Federal Government support of economic education.

EXHIBIT I

A statement by Dr. Suzanne E. Wiggins, consultant for economics education, Contra Costa County (Calif.) Department of Education.

An Assessment of the Problems of Economics Education

The rationale for improving economics education has been set forth and documented in a series of monographs and articles. The justification for current and future programs rests on (1) the importance of knowledge of economics facts and analysis to permit American citizens to pursue their own economic interests and to participate effectively in our democratic political process; (2) the general absence of formal economics training in elementary and secondary social studies curricula; (3) the inadequate training of social studies teachers in economics; (4) the inadequacy of the college introductory courses for preparing teachers to teach economics or interesting them in further economics training; (5) the difficulty of designing effective courses which train teachers and youngsters to use economic analysis. This rationale is the basis for specifying the objects which must be achieved if such improvement is to occur.

Clearly, innovation in all aspects of economics education is required, but it is usually not sufficiently appreciated that the intellectual task of educational innovation is formidable, and the cost of innovation is enormous. Effective curriculum development requires talented scholars, teachers, writers, artists, and administrators working with substantial student populations. One of the main problems here is to interest such people in the work of economics education. At present, there are no established methods to apply to the task of curriculum development. Each project must create its own methods both for developing and disseminating its own curriculum. Substantial innovative work has been carried on over the past five years but much more is needed if we are to achieve substantial improvement in national economic literacy.

The three projects cited in my letter—the Senesh Project for grades 1–6 at Purdue University, the Lowenstein Project for the 9th grade at Ohio University, and the ECON 12 Project at San Jose State, have undertaken this task of innovation to produce economics courses and materials which fit the objectives of economics education and which are practical for schools. The problems of dissemination, adaptation for particular schools and classes, and teacher preparation in the use of these courses have not been tackled systematically except by the curriculum developers themselves. This is the case, despite the fact that Federally sponsored teacher training programs have been developed in economics and despite the creation of two new sets of educational bureaucracies whose job it is to speed change in the public schools. I am referring to the U.S. Office of Education financed Regional Educational Laboratories and the PACE (Programs to Advance Creativity in Education) Centers set up under Title 3 of the Elementary and Secondary Education Act. This lag between the development of courses and government programs to implement them is understandable but unfortunate. It would seem imperative to take action to reduce this lag and in addition to try to determine what is causing the delay in effective adaptation and dissemination programs.

The efforts to innovate and disseminate need support on the National level, and those organizations best able to offer such support are the U.S. Office of Education, the American Economics Association, and the Joint Council on Economic Education. The U.S.O.E. must, of course, take the major role in

funding curriculum and dissemination projects, but its work would be made more effective if there were a National policy for the support of economics education, and if the U.S.O.E. could give financial support to private organizations capable of making major contributions in this area.

The American Economics Association did pioneering work on economics education through the work of its National Task Force on Economics Education. The *Report of the Task Force; Economics Education in the Schools,* and *Study Materials for Economics Education in the Schools,* established the current frame of reference for curriculum work in economics education. This report set forth a recommended economics content for the schools, together with a recommendation that analysis, rather than institutional description, be stressed. The Report also called for a major effort to upgrade the economics competence of the teachers.

The major curriculum projects for elementary and secondary grades have given substance to these recommendations. Content has been chosen appropriate to the grade level, cognitive objectives have been specified, learning sequences established, and teaching strategies suitable to the task have been recommended to the teachers. Also included in these new curricula are recommendations for teacher training.

These curriculum projects have created the conditions for a new dimension in the campaign for National economic literacy—the dissemination of the new curricula and the necessary concomitant, the training of teachers to use the curricula. Once again, it would seem wise for The American Economics Association to assume a major role in economics education. The Association, working closely with the U.S. Office of Education, might well establish a special committee which would take dissemination of new curricula as its major task. The prestige of the Association, coupled with funding from the U.S.O.E., could attract sufficient numbers of professional economists into economics education to make the work of dissemination and teacher training effective. Professional economists are badly needed to consult with school districts and teachers, to design in-service training programs, and to revamp the current mode of economics instruction for future teachers of economics in the schools.

The Joint Council has been effective in arousing interest and concern about economics education, both with school districts and in the communities which the schools serve. They have financed and otherwise promoted the development of local curriculum projects and teacher-training programs; their regional affiliates (The Affiliated Councils on Economic Education) have pressed state legislatures and departments of education to improve economics training requirements for teachers; the JCEE is a central information agency and they can recommend materials to schools; the affiliated Regional Councils and the College Centers for Economics Education sponsor their own as well as NDEA and NSF teacher-training programs. The Council's ability and willingness to disseminate and promote the adaptation of the new curricula is limited in the absence of a National policy. The Council staff can aid the Federal Government in promoting certain programs, but because the Council *must* work with all interested parties in economics education, in my opinion, it cannot take effective action to promote special programs, unless it is carrying out generally accepted National policy.

The work of developing and disseminating economics curricula should be carried on as a part of the work in developing and disseminating new curricula for all of the social studies. The professional organizations in all of the social science disciplines should be more deeply involved in education at all levels. Only by such official endorsement will academicians be induced to commit themselves to solving the problems of education.

RECOMMENDATIONS

1. There should be continued funding of curriculum projects in economics and in the other social science disciplines. These projects should elaborate on the work already done and extend the exploration of economics and the other disciplines as to the nature and structure of the disciplines and the relationships between these disciplines. Much new curriculum work is also needed on the problems of learning and the new curricula constitute a sound basis for such work.

2. The Federal Government should initiate programs to train personnel for curriculum development and teacher training work. There is a dire shortage of manpower here, and there are persons already interested who could be trained to fill this need (the gifted teachers who have experimented with new courses on the various curriculum projects). This could be accomplished through graduate

fellowships to teachers and economists interested in a career in curriculum design or college teaching.

(*a*) The U.S. Office of Education and the National Science Foundation should formulate a policy for funding the teacher training programs required to implement the new curricula. In particular, it should be the policy to make use of the NDEA and NSF institutes and other teacher training programs to train teachers in the use of the new curricula.

(*b*) There should be an expansion of programs like the National Science Foundation Cooperative College-Schools program which bridge the gap between curriculum development and dissemination. These programs should recognize the function of national curriculum projects: they provide an essential initial course ordering and development which the schools can take as a starting point in their own curriculum work. The funds to local school districts and local educational agencies should be toward this form of curriculum work, or to finance projects which seem to be truly innovative. In this way, local schools can finance the adaptation and use of innovations in course content.

(*c*) The U.S. Office of Education should direct PACE Centers, Regional Laboratories, school districts and other interested agencies to evaluate the new curricula, and to train personnel to aid in the dissemination of curricular innovations.

SUZANNE E. WIGGINS,

PART 6

Government publications as resource for basic economic education.

EXHIBIT I

Extracts from "Money Facts" submitted by Chairman Wright Patman upon recommendation by panel of educators.

The following questions and answers are excerpted from "Money Facts" (169 Questions and Answers on Money—a supplement to "A Primer on Money"), a committee print of the Subcommittee on Domestic Finance, Committee on Banking and Currency, House of Representatives, 88th Cong., 2d sess., Sept. 21, 1964.

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CHAPTER II. WHAT IS MONEY?

22. What is money?

Money is anything that people will accept in exchange for goods or services, in the belief that they may, in turn, exchange it, now or later, for other goods or services. Any number of different materials—including paper IOU's—may serve as money. How money functions, and what money represents are its important aspects and not simply what it is made of.

Today, the American people use coins, currency (paper money), and bank deposits (checkbook money) as money.

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27. What is the most important form of money in the United States today?

"Checkbook money," that is, demand deposits in commercial banks. They account for 80 percent of all the money circulating in the country.

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34. What backs U.S. currency?

Federal Reserve Notes are backed by the credit of the U.S. Government. American citizens, holding Federal Reserve Notes, cannot demand anything for them except (a) that they be exchanged for other Federal Reserve Notes, or (b) that they be accepted in payment for taxes and all debts, public and private. But, since certain foreign banks may exchange dollars for gold, gold does, in the last analysis, back U.S. dollars. Presently there is a 25-percent gold "backing" for Federal Reserve Notes.

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39. Why must money be managed?

"Money does not manage itself" is a famous saying of British bankers. It is a saying which Chairman Martin, of the Federal Reserve Board, likes to quote and it sums up the matter quite well.

Since the purpose of money is to make it easier for a nation to produce real goods and services, easier to divide the income from this production, and easier to save and invest for the future, the money system should be designed and controlled in ways which serve these purposes best. For example, it is very important to have the right amount of money available at all times. Too little money and too much money are both bad.

40. Why is the right amount of money so important?

The right amount of money is as important to the economic system as the right number of tickets is to the financial success of a theatrical performance. The theater has only a certain number of seats and distributing too many tickets

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will cause a scramble for seats when the patrons arrive. Selling too few tickets will leave empty seats. The same holds for money. When the Federal Reserve does not allow enough money to be created, there will be, in effect, empty seats in our economy. The economy's growth will be stunted by monetary deficiency—high interest rates with accompanying unemployment and underutilization of plant capacity. Real wealth which might have been created is not created. On the other hand, an economy can suffer from too much money relative to its needs. An overabundance of money, by spurring demand, pressures the economy to produce beyond its capacity. When this occurs, inflation erupts.

CHAPTER III. HOW IS MONEY CREATED?

41. What is the fractional reserve method of banking?

The fractional reserve method of banking originated with the goldsmiths—the predecessors of our present bankers. It is the method of banking in use today. Briefly, it is a system whereby bankers maintain as reserves only a fraction of the amount needed to meet all the claims against them. (The vast bulk of the claims against the banks are the deposits you and I hold. These are obligations which the bank must pay upon our demand.) The goldsmiths struck upon this method by noticing that the people who deposited gold with them for safekeeping only claimed a small portion of this gold at any one time. Therefore, the goldsmiths realized that they could lend out a good portion of the gold left with them. They then made loans, which in fact were not of gold but warehouse receipts for gold. These receipts circulated as money. Notice, the gold—actually the certificates of ownership—being loaned by the goldsmith was not his to lend. He did not own it. In other words, the goldsmith wrote receipts to people who were not depositing gold, i.e., to borrowers. So receipts for more gold than the goldsmith actually had in his vaults were circulating. The goldsmith had only a fraction of the amount of gold needed to meet the claims against him. This is the fractional reserve system. When the banks of the United States kept their reserves in gold, their reserves amounted to only a small fraction of the amount of money they had issued, all of which was guaranteed to be redeemable in gold.

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44. What are reserves in modern American banking?

Reserves in modern American banks are deposits—demand deposits—held by commercial banks at the Federal Reserve.

45. Where did the commercial banks obtain their reserves?

By and large the bulk of commercial bank reserves were created by the Federal Reserve and credited to the account of the various commercial banks which are Federal Reserve "member" banks. The Federal Reserve creates these reserves just as a bank creates checkbook money. By various devices, either loans or other means, the Federal Reserve credits a bank with bankers deposits—"reserves."

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49. How does the Federal Reserve change the money supply?

First, by increasing or decreasing the amount of bank reserves which the member banks of the Federal Reserve System have to their credit on the books of the Federal Reserve banks. Second, by regulations which tell the member banks the maximum amount of bank deposits they may create per dollar of reserves.

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54. How does the Federal Reserve create and destroy bank reserves?

By four methods: (1) by open market operations; (2) by gold purchases for the U.S. Treasury; (3) by loans to commercial banks; and (4) by purchases of eligible paper from member banks.

55. What are open market operations?

They are the Federal Reserve's purchases or sale of U.S. Government securities in what is called the "open market"—in order to expand or contract bank reserves and hence the supply of money and credit available. The Federal Reserve Bank of New York conducts these transactions as agent for the entire system.

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64. Do the banks of the Federal Reserve System pay for their reserves?

No. Bank reserves cannot be paid for by private banks. They can be shifted from bank to bank after they are created. But to all intents only the Federal

Reserve System itself can create or extinguish reserves. Indeed, when the Federal Reserve creates bank reserves this permits the banks to increase their loans and augment their profits.

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CHAPTER IV. WHY WAS THE FEDERAL RESERVE ACT PASSED?

71. What is a central bank?

A central bank has two essential functions. One is to serve as a bankers' bank, i.e., a bank which gives credit to the commercial banks and also holds their official reserves. The other is to adjust the money supply through the power to create reserves or to regulate the commercial banking system's ability to manufacture money. A bank which performs these and other related functions is called a "central bank." The Federal Reserve is a central bank.

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77. What were the main purposes of the Federal Reserve Act?

First, it was intended to mobilize reserves—to strengthen the fractional reserve system—and thus increase public confidence in the banking system. Second, it was designed to provide an "elastic currency" responsive to the needs of local business and trade. Third, it was to provide central bank supervision, to insure sound banking practices, and to safeguard against insolvency and loss of depositors' money. Fourth, it was to provide a system by which the banks could clear checks promptly and uniformly throughout the Nation.

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83. In what ways was the Federal Reserve System an improvement upon the preceding monetary system?

1. It permitted mobilizing reserves where they were needed in times of difficulty and eliminated the pyramiding of reserves in New York.
2. The Federal Reserve, although a central bank, was also in part decentralized, operating in 12 regions throughout the country.
3. The Federal Reserve Act provided virtually uniform regulation for all the banks of the Nation. (Although almost half of the banks of the Nation are not members, banks accounting for 85 percent of all commercial bank deposits are members.)
4. The Federal Reserve System was designed to provide an adequate money supply—one which expanded and contracted with the needs of trade.

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90. What are the important policy operations of the Federal Reserve System?

The Federal Reserve has the power to determine the money supply and thus strongly influence the level of economic activity and the general level of interest rates. It controls the money supply through its control over the, within limits, percentage in reserves member banks are required to hold behind their deposit liabilities and by controlling the amount of reserves actually available to member banks. The most important tool for controlling the amount of member bank reserves is in the hands of the Federal Open Market Committee.

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95. How does the Federal Reserve influence interest rates?

By open market operations, and by setting the required reserves of member banks, the Federal Reserve determines the amount available for lending. This together with the demand for loanable funds is the heart of the market for money that sets interest rates. In addition, by open market operations, the Federal Reserve can effect the level of interest rates on Government bonds. And finally, the Federal Reserve influences expectations about interest rates.

96. Why is the Federal Open Market Committee one of the most powerful groups of men in our country?

Because in many ways their power is equal to that of the President in deciding how the world's greatest economic mechanism will operate. By regulating the supply of money, the Committee can control the general level of interest rates. This in turn is one of the major determinants of the level of business activity in the country. The Committee, then, has the power to offset any action taken by anyone to stimulate or restrain the economy. This indeed is power.

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113. What changes were made by the Banking Act of 1933?

This act prohibited interest on demand deposits, in order to prevent unsound competition for demand deposits, and also as compensation to the banks for having to pay the fee for insuring deposits. In addition, the Federal Reserve Board was given power to change reserve requirements, subject to approval by the President. Also, in turn, investment bankers were prohibited from accepting public deposits.

The most important part of the Banking Act of 1933, however, was the establishment of a temporary deposit insurance plan which went into effect on January 1, 1934. This was made permanent by the Banking Act of 1935 which established the Federal Deposit Insurance Corporation.

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CHAPTER IX. WHAT IS MONETARY POLICY?

133. What is monetary policy?

Monetary policy deals with the operating instructions of the managers of our money factory. Monetary policy is what fits money into the structure of the economy. In specific terms it consists of the decisions the money managers make about the quantity of money, the price of money, and the availability of money. These are the quantities the money managers can manipulate precisely. Of course, the goal of a particular monetary policy at any one time is to steer the economy in the direction desired by the monetary authorities. In the broadest sense, monetary policy can be thought of as manipulation of the money supply in the pursuit of broad economic goals.

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137. What is "active" monetary policy?

Active monetary policy is the decision of the Government to give its monetary agencies the power and the responsibility to influence the economy, through deliberate and constant adjustments of the monetary mechanism. With active monetary policy, the prevailing level of the money supply and of interest rates at any time, results from a conscious choice by the central bank.

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143. What does the Federal Reserve mean when it says, "It can't push on the string"?

The Federal Reserve is drawing attention to the fact that while tight money—pulling on the string—can always slow down the economy, easy money cannot always spur the economy. Their argument is that in a depression businessmen become so pessimistic that they are unwilling to borrow for investment despite rock bottom interest rates. At the same time, banks, in a depression, are very choosy about lending. With many businesses on the verge of bankruptcy, good credit risks are hard to find. So, though the Federal Reserve provides the banks with vast amounts of reserves, the banks, they claim, find it very difficult to place the money with prospective business investors.

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147. What did the 1946 Employment Act say about monetary policy?

The act says it would be the policy of the Federal Government "to coordinate and utilize all its plans, functions, and resources" to promote "maximum employment, production, and purchasing powers." And this was to be done "in a manner calculated to foster and promote free competitive enterprise." There was no question in anybody's mind, at the time the act was passed, but that monetary policy would be coordinated with other policies of the Government in the pursuit of full employment. And so they were, until shortly before the famous Treasury-Federal Reserve "accord" of March 4, 1951.

148. What was the famous Treasury-Federal Reserve "accord" of March 4, 1951?

It was the culmination of a longrun conflict between administration policy and the Federal Reserve which ended in the Federal Reserve becoming "generally independent" of the policies of the rest of the U.S. Government. From that time on the Federal Reserve undertook to go "its own way" in deciding national monetary policy.

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157. In practical terms, what is meant by Federal Reserve "independence"?

There are two sides to independence—one is economic, the other political. On the economic side, independence means that the Federal Reserve formulates and executes economic policy, using its monetary controls, without any necessary reference or coordination with the policies being followed by the other branches of the Government. This, of course, invites clashes between the Federal Reserve and other parts of the Government. Clashes have occurred, with sad results for all. On the political side, independence means that the Federal Reserve is not accountable to anyone for its actions. As the situation now stands, there is no mechanism by which the Federal Reserve can be made to change a policy it has chosen to follow. The members of the Federal Reserve do not come up for election as do Members of Congress or the President. Though an arm of Congress, the Federal Reserve is not responsible to it. The Federal Reserve does not present an annual report to Congress nor does Congress review the system's actions as a normal part of its business. The congressional power of the purse—the historic source of the legislature's power—does not apply to the Federal Reserve, which provides its own revenue. The System is not even subject to audit control of the General Accounting Office. Finally, the President, though he may select one or two of the members of the Federal Reserve Board, appoints them for 14-year terms. In the normal course of events, these men cannot be removed from office and because of their long tenures they do not reflect any single President's ideas.

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161. Are the effects of money policy so unique that the monetary policymakers need to be free from all accountability?

No. It is hard to see what is so mysterious about monetary policy. Everyone is affected by tax and expenditure and by foreign policy. In both areas, the Government frequently must take "unpopular action." Raising taxes is not popular. Sending men to fight in Korea is unpopular. No one suggests that we should have an independent "defense policy board" or an independent "tax policy board." Why then an independent money policy board?

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PART 7

Materials related to economics manpower.

EXHIBIT I

Review of Data on Science Resources (app. 2) National Science Foundation, December 1966.

APPENDIX 2

Reviews OF DATA ON SCIENCE RESOURCES

NATIONAL SCIENCE FOUNDATION, WASHINGTON, D.C., 20550 · NSF 66-34 · No. 11, December 1966

Salaries and Selected Characteristics of U. S. Scientists, 1966

A PRELIMINARY REPORT BASED ON THE 1966 NATIONAL REGISTER OF SCIENTIFIC AND TECHNICAL PERSONNEL

Highlights

- The median salary of the 243,000 scientists reporting to the National Register in 1966 was $12,000. Salaries in the lowest decile were below $7,700; in the highest decile, above $19,700. Highest median salaries were reported by scientists in the field of economics ($13,100).
- As classified by type of employer, the self-employed had the highest median earnings, at $17,000; and those whose primary work was in management or administration of research and development reported a median salary of $16,800.
- The States of California and New York each had over 26,000 registrants. Six other States each had over 10,000 registrants—Pennsylvania, Illinois, New Jersey, Texas, Ohio, and Massachusetts.
- About one-half of the registrants were in

TABLE 1.—1966 CHARACTERISTICS OF SCIENTISTS IN THE UNITED STATES

CHARACTERISTICS	NUMBER	PERCENT
REGISTERED SCIENTISTS	242,763	100
MEN	222,599	92
WOMEN	20,164	8
FIELD OF SCIENCE		
CHEMISTRY	65,917	27
EARTH SCIENCES	19,749	8
METEOROLOGY	6,283	2
PHYSICS	29,130	12
MATHEMATICS	22,806	9
AGRICULTURAL SCIENCES	10,038	4
BIOLOGICAL SCIENCES	29,633	12
PSYCHOLOGY	19,027	8
STATISTICS	3,042	1
ECONOMICS	13,150	5
SOCIOLOGY	3,660	1
ANTHROPOLOGY	919	—
LINGUISTICS	1,249	—
OTHER FIELDS	18,160	7
HIGHEST DEGREE		
PH.D.	90,304	37
PROFESSIONAL MEDICAL	6,536	3
MASTER'S	66,754	27
BACHELOR'S	73,764	30
LESS THAN BACHELOR'S	2,435	1
NO REPORT	3,070	1
AGE (MEDIAN AGE 38)		
24 OR UNDER	9,259	4
25-29	38,767	16
30-34	40,466	17
35-39	41,912	17
40-44	36,831	15
45-49	28,565	12
50-54	19,960	8
55-59	12,538	5
60-64	7,763	3
65-69	3,952	2
70 OR OVER	2,709	1
NO REPORT	481	—
EMPLOYMENT STATUS		
FULL-TIME EMPLOYED	210,821	87
CIVILIAN	204,999	84
MILITARY	5,822	2
PART-TIME EMPLOYED	5,743	2
STUDENTS	21,567	9
PART-TIME EMPLOYED	12,614	5
NOT EMPLOYED	8,953	4
NOT EMPLOYED	5,830	2
NO REPORT	802	—

CHARACTERISTICS	NUMBER	PERCENT
TYPE OF EMPLOYER		
EDUCATIONAL INSTITUTIONS	87,315	36
FEDERAL GOVERNMENT	24,689	10
OTHER GOVERNMENT	8,268	3
MILITARY	5,891	2
NONPROFIT ORGANIZATIONS	9,813	4
INDUSTRY AND BUSINESS	83,990	34
SELF-EMPLOYED	4,914	2
OTHER	1,309	—
NOT EMPLOYED	16,783	6
NO REPORT	1,791	1
PRIMARY WORK ACTIVITY		
RESEARCH AND DEVELOPMENT	80,821	33
BASIC RESEARCH	38,293	16
APPLIED RESEARCH	31,077	13
MANAGEMENT OR ADMINISTRATION	49,921	20
MANAGEMENT OR ADMINISTRATION OF RESEARCH AND DEVELOPMENT	24,448	10
TEACHING	44,626	18
PRODUCTION AND INSPECTION	16,419	7
OTHER	26,702	11
NOT EMPLOYED	16,783	6
NO REPORT	9,491	4
YEARS OF PROFESSIONAL EXPERIENCE		
1 OR LESS	12,967	5
2-4	36,907	15
5-9	48,430	20
10-14	39,083	16
15-19	35,419	14
20-24	19,688	8
25-29	16,036	7
30-34	11,077	4
35-39	6,569	3
40 OR MORE	5,851	2
NO REPORT	10,936	4

SALARY DISTRIBUTION OF FULL-TIME EMPLOYED CIVILIAN SCIENTISTS	
LOWER DECILE	$ 7,700
LOWER QUARTILE	9,380
MEDIAN	12,000
UPPER QUARTILE	15,200
UPPER DECILE	19,700

NOTE - PERCENTS MAY NOT ADD TO TOTAL BECAUSE OF ROUNDING.
SOURCE - NATIONAL REGISTER OF SCIENTIFIC AND TECHNICAL PERSONNEL, 1966.

three fields: Chemistry, 27 percent, and physics and biological sciences, 12 percent each. Also, 9 percent were in mathematics and 8 percent each in earth sciences and psychology.

- Doctorates were reported as the highest degree by 37 percent of the responding scientists, master's degrees by 27 percent, and bachelor's degrees by 30 percent.
- Educational institutions employed 36 percent of the scientists, industry and business employed 34 percent, and the Federal Government employed 10 percent.
- Almost one-third of the registrants were primarily engaged in research and development, with 16 percent in basic research and 13 percent in applied research; and 18 percent reported teaching as their primary work activity.
- When both primary and secondary work activities are considered, almost one-fourth (23 percent) of the registrants were university and college teachers. The median calendar year salary of this group was $12,800.
- The median age of 1966 registrants was 38. Of the total, 20 percent were in their twenties.
- Twenty-one percent (49,800) of the registrants reported less than 5 years of professional experience. At the other extreme, nearly 6,000 had over 40 years of professional experience.

Introduction

The National Science Foundation, in order to present timely data on all respondents to the 1966 National Register of Scientific and Technical Personnel, is releasing this early report on salaries and characteristics of U.S. scientists. The selection of characteristics for this brief report has been guided by the many requests received for National Register information. The data summarized include the numbers and median salaries of scientists for the major science fields, highest degree attained, type of employer, primary work activity, and age. The numbers of university and college professors and instructors in the different science fields are presented, together with their median academic and calendar year salaries. The distributions of scientists by State and by science fields are also shown.

Analyses of data from the 1966 National Register will be undertaken in later reports. In addition to cross-tabulations of the principal data components, information on foreign language and area knowledge, geographic location by metropolitan areas, extent of support from Federal programs, and characteristics of women scientists will be reported. Longitudinal analyses utilizing these data are planned, and they should provide additional insight to such manpower dynamics as geographic mobility, work-history patterns, career development, and educational progress.

The coverage of the National Register has been improving, and in 1966 most of the Nation's science doctorates were included. Although coverage varies in different fields, a substantial majority of the individuals qualified for inclusion have responded to the National Register questionnaire. To determine the characteristics of the nonrespondents, a sample based on geographic location and scientific field has been developed; and plans are under way to conduct a study to determine the extent of bias, if any, resulting from the voluntary registration procedure. The National Register count of scientists differs from other published estimates—e.g., Bureau of the Census and Bureau of Labor Statistics—principally because of differences in fields included, variations in methods of data collection, and timing of surveys.

Salary Distribution

The distribution of salaries for full-time employed civilian scientists, by field, is presented in table 2.

TABLE 2.—SALARY DISTRIBUTION OF SCIENTISTS, BY FIELD, 1966

SCIENTIFIC AND TECHNICAL FIELD	LOWEST DECILE	LOWEST QUARTILE	MEDIAN	HIGHEST QUARTILE	HIGHEST DECILE
ALL FIELDS	7,700	9,300	12,000	15,200	19,700
CHEMISTRY	7,800	9,400	12,000	15,100	19,000
EARTH SCIENCES	7,800	9,300	11,400	14,300	18,000
METEOROLOGY	8,200	9,800	11,700	14,300	18,000
PHYSICS	7,800	9,500	12,500	16,200	20,000
MATHEMATICS	7,500	9,300	12,000	15,600	20,000
AGRICULTURAL SCIENCES	6,900	8,200	10,000	12,500	15,500
BIOLOGICAL SCIENCES	7,400	9,400	12,000	16,000	21,000
PSYCHOLOGY	8,000	9,300	11,500	14,200	18,000
STATISTICS	8,700	10,200	12,800	16,000	19,000
ECONOMICS	8,500	10,100	13,100	17,600	23,000
SOCIOLOGY	8,000	9,200	11,300	14,500	18,000
ANTHROPOLOGY	8,100	9,200	11,500	15,000	18,000
LINGUISTICS	6,500	8,200	10,000	13,000	16,500
OTHER FIELDS	7,500	9,100	12,000	15,600	20,000

SOURCE - NATIONAL REGISTER OF SCIENTIFIC AND TECHNICAL PERSONNEL, 1966.

Highest median salaries were paid in economics ($13,100), statistics ($12,800), and physics ($12,500); lowest median salaries were reported for agricultural sciences and linguistics ($10,000).

The economists not only ranked first in median salaries but also had the highest upper decile salaries ($23,000) and the widest range from the lowest to the highest decile ($14,500).

States

The character of the industrial and academic activities in a State largely determines the fields of science represented by scientists who locate there. For example, 65 percent of the scientists in Delaware, 48 percent of those in New Jersey, and 45 percent of those in West Virginia were chemists. Almost one-third (30 percent) of the registrants in earth sciences were located in Texas and California.

Table 3 shows the numbers of scientists who reported from each State, by field.

Highest Degrees Held

The scientific fields differed in the composition of graduate and bachelor's degree holders, depending on the requirements for professional standing in each field. The highest percentages of registrants with doctorates were in the fields of anthropology (90 percent), sociology (76 percent), and psychology (66 percent). Master's degree holders were most frequent in mathematics and statistics, with 43 and 41 percent, respectively. Scientific fields with high proportions of baccalaureates included agricultural sciences (50 percent), meteorology (47 percent), earth sciences (44 percent), and chemistry (42 percent).

Only 2,400 individuals, included in recognition of their professional work experience, reported less than a bachelor's degree.

In some fields, especially economics, median salaries for bachelor's degree holders may be higher than for individuals holding graduate degrees.

TABLE 3.—NUMBER OF SCIENTISTS, BY GEOGRAPHIC LOCATION AND FIELD, 1966

GEOGRAPHIC LOCATION	TOTAL	SCIENTIFIC AND TECHNICAL FIELD												
		CHEMISTRY	EARTH SCIENCES	METEOROLOGY	PHYSICS	MATHEMATICS	AGRICULTURAL SCIENCES	BIOLOGICAL SCIENCES	PSYCHOLOGY	STATISTICS	ECONOMICS	SOCIOLOGY	ANTHROPOLOGY	LINGUISTICS	OTHER FIELDS
ALL LOCATIONS	242,763	65,917	19,749	6,283	29,130	22,806	10,038	29,633	19,027	3,042	13,150	3,440	919	1,269	18,160
ALABAMA	2,049	529	63	66	267	273	181	250	90	20	89	26	3	3	189
ALASKA	488	25	135	83	16	20	113	57	9	1	11	—	2	1	15
ARIZONA	1,945	317	276	79	235	187	171	240	161	22	94	25	24	8	106
ARKANSAS	859	188	69	20	91	42	153	154	56	6	51	13	2	—	54
CALIFORNIA	27,641	5,869	2,380	746	4,496	3,758	859	3,041	2,507	321	1,215	350	107	145	2,027
COLORADO	4,170	964	1,089	226	499	322	305	402	281	44	118	38	17	6	259
CONNECTICUT	4,393	1,445	136	60	680	419	66	491	366	47	236	72	19	30	326
DELAWARE	2,492	1,610	20	13	129	47	21	113	68	21	127	7	—	1	315
DIST. OF COL.	7,625	1,031	700	324	1,009	671	220	799	531	334	1,255	188	43	84	436
FLORIDA	4,109	867	257	232	442	388	290	612	419	51	177	65	11	15	283
GEORGIA	2,630	552	105	95	190	231	311	513	229	26	173	51	6	2	146
HAWAII	849	121	69	94	59	70	59	163	65	9	45	23	12	22	38
IDAHO	911	154	71	24	96	40	267	107	53	2	27	6	—	1	63
ILLINOIS	12,695	4,131	528	282	1,430	1,026	232	1,432	1,135	149	843	222	58	84	963
INDIANA	5,060	1,635	214	25	914	511	145	724	395	58	287	83	15	52	402
IOWA	2,633	598	99	42	292	207	130	489	313	51	188	57	6	16	145
KANSAS	2,208	493	309	31	169	187	96	326	266	18	131	28	9	12	133
KENTUCKY	1,788	310	108	25	130	134	102	282	162	16	98	48	10	4	139
LOUISIANA	3,561	814	1,216	64	146	205	192	360	136	12	122	34	9	10	241
MAINE	707	137	43	24	45	60	95	114	68	9	41	12	3	2	54
MARYLAND	7,784	1,715	336	340	1,139	962	188	1,676	466	193	200	79	10	14	486
MASSACHUSETTS	10,374	2,738	390	339	2,071	1,228	91	1,190	797	96	671	173	57	71	662
MICHIGAN	8,608	2,768	402	120	803	698	334	1,036	799	103	505	185	38	76	741
MINNESOTA	4,177	1,146	176	61	383	444	271	620	425	61	235	64	8	12	273
MISSISSIPPI	955	136	177	15	50	69	139	171	62	4	42	19	—	3	48
MISSOURI	4,326	1,396	260	138	362	340	157	580	273	35	325	72	12	7	369
MONTANA	942	88	178	45	30	51	265	144	31	7	38	10	4	2	49
NEBRASKA	1,203	184	76	115	85	142	104	208	114	13	76	25	8	3	52
NEVADA	506	87	84	42	58	33	71	41	27	1	23	2	2	2	33
NEW HAMPSHIRE	759	160	54	19	83	78	59	125	44	3	61	17	5	1	50
NEW JERSEY	12,200	5,845	191	103	1,447	967	106	888	673	132	475	70	10	17	1,276
NEW MEXICO	2,113	310	255	95	648	247	154	134	73	27	42	13	16	8	91
NEW YORK	28,642	7,377	785	354	3,547	2,846	295	3,329	2,971	375	1,850	492	119	170	2,132
N. CAROLINA	3,485	1,049	124	86	286	299	240	646	226	69	192	86	15	15	172
NORTH DAKOTA	522	115	66	17	20	38	85	91	33	4	28	5	—	2	18
OHIO	10,850	4,270	474	110	1,300	723	168	1,092	823	108	552	170	19	36	1,005
OKLAHOMA	3,184	719	1,076	88	172	198	95	259	136	31	102	27	6	2	273
OREGON	2,531	388	183	50	181	156	660	414	199	19	125	40	15	8	93
PENNSYLVANIA	13,660	4,983	542	141	1,641	1,123	273	1,662	1,146	158	689	182	46	58	1,216
RHODE ISLAND	971	295	56	11	185	73	26	110	74	6	44	16	4	10	61
S. CAROLINA	1,318	415	38	44	121	99	153	162	63	11	73	17	1	2	119
SOUTH DAKOTA	521	69	35	21	24	43	110	94	44	4	34	13	2	2	26
TENNESSEE	3,421	1,177	136	60	510	214	154	485	213	25	150	35	6	6	270
TEXAS	11,383	2,469	3,463	310	966	874	285	995	519	101	390	103	16	47	843
UTAH	1,604	291	213	85	132	126	171	253	108	31	52	21	8	6	107
VERMONT	445	90	24	2	46	42	48	86	38	2	31	8	4	—	24
VIRGINIA	4,384	1,017	262	145	585	689	201	461	301	64	223	38	6	20	372
WASHINGTON	4,270	843	315	125	503	450	502	599	330	41	180	63	23	21	275
WEST VIRGINIA	1,514	682	95	18	63	56	105	144	59	11	74	19	1	1	186
WISCONSIN	4,376	1,216	197	68	472	425	264	638	364	37	243	92	28	35	297
WYOMING	687	76	269	11	19	27	130	92	36	5	13	4	2	—	43
CANAL ZONE	35	3	6	7	1	2	1	8	3	—	—	—	—	—	4
PUERTO RICO	313	93	17	22	28	13	4	37	20	5	29	11	5	13	16
VIRGIN IS.	9	2	1	—	1	—	—	—	2	—	2	—	—	—	1
GUAM	36	—	5	28	—	—	—	1	1	—	—	—	—	—	1
FOREIGN	3,642	295	903	513	293	231	100	331	225	43	253	123	67	101	164

SOURCE — NATIONAL REGISTER OF SCIENTIFIC AND TECHNICAL PERSONNEL, 1966.

This apparent inversion of expected relationships in terms of type of employer and years of experience was explained in a special analysis of 1964 National Register data for economics.[1] The main reason given was that industry and business, which paid the highest salaries to economists at all levels of academic attainment, also employed most of those with a bachelor's degree or less, while educational institutions, paying the lowest salaries, employed most of the Ph.D.'s. Moreover, the industrial employees who did not have higher degrees consisted predominantly of economists with many years of professional experience, as well as those engaged in managerial and related activities.

Table 4 shows the numbers and median salaries of scientists, by field and highest degree.

Type of Employer

The numbers and median salaries of scientists, by field and type of employer, are shown in table 5.

[1] American Economic Association, "The Structure of Economists' Employment and Salaries, 1964," *American Economic Review* LV: 4, pt. 2, December 1965, p. 4.

Educational institutions were the major employers of registrants in anthropology (78 percent), sociology (75 percent), and linguistics (70 percent). More than one-half (56 percent) of the scientists in chemistry were employed in industry and business. The Federal Government employed 67 percent of the registrants in meteorology, including those on active military duty. Civilians in the Federal Government made up 37 percent of the registrants in agricultural sciences.

The highest median earnings reported by self-employed scientists were in mathematics ($20,500), and in physics, biological sciences, and psychology ($20,000 each). The highest median salary in industry and business was reported by scientists in economics ($15,300). The highest median salary paid to scientists employed on a calendar year (11–12 months) basis by educational institutions was $13,100 in biological sciences.

Primary Work Activity

Although scientists are frequently engaged in more than one kind of work activity, for the purposes of this section they are classified by primary

TABLE 4.—NUMBERS AND MEDIAN ANNUAL SALARIES OF SCIENTISTS, BY FIELD AND HIGHEST DEGREE, 1966

SCIENTIFIC AND TECHNICAL FIELD	TOTAL	HIGHEST DEGREE				LESS THAN BACHELOR'S DEGREE	NO REPORT OF DEGREE
		PH.D.	PROFESSIONAL MEDICAL	MASTER'S	BACHELOR'S		
	NUMBER						
ALL FIELDS	242,763	90,304	6,436	66,754	73,764	2,435	3,070
CHEMISTRY	65,917	23,915	443	12,415	27,616	541	987
EARTH SCIENCES	19,749	4,330	———	6,372	8,664	247	136
METEOROLOGY	6,283	668	2	1,404	2,976	727	506
PHYSICS	29,130	11,850	22	9,438	7,553	75	192
MATHEMATICS	22,606	5,485	5	9,920	6,525	374	497
AGRICULTURAL SCIENCES	10,038	2,310	9	2,597	4,969	97	56
BIOLOGICAL SCIENCES	29,633	15,218	5,890	5,084	3,119	127	195
PSYCHOLOGY	19,027	12,545	44	6,075	339	5	19
STATISTICS	3,042	919	———	1,256	761	44	62
ECONOMICS	13,150	5,593	3	4,658	2,660	78	158
SOCIOLOGY	3,640	2,757	2	780	81	7	13
ANTHROPOLOGY	919	830	3	53	26	2	5
LINGUISTICS	1,269	750	———	348	137	1	33
OTHER FIELDS	18,160	3,134	13	6,354	8,338	110	211
	MEDIAN SALARY						
ALL FIELDS	12,000	13,200	17,200	10,700	11,000	11,000	11,500
CHEMISTRY	12,000	14,000	15,500	11,400	10,500	10,800	11,000
EARTH SCIENCES	11,400	12,000	———	10,500	11,600	12,000	12,000
METEOROLOGY	11,700	15,000	———	12,400	11,400	10,000	10,500
PHYSICS	12,500	14,400	———	11,000	10,600	12,000	12,800
MATHEMATICS	12,000	13,000	———	10,900	12,300	12,000	12,000
AGRICULTURAL SCIENCES	10,000	12,800	———	9,900	9,100	9,000	9,400
BIOLOGICAL SCIENCES	12,000	12,500	17,500	9,000	9,000	9,600	10,400
PSYCHOLOGY	11,500	12,100	16,300	9,800	11,000	———	———
STATISTICS	12,800	13,800	———	12,200	12,300	12,500	11,500
ECONOMICS	13,100	13,500	———	12,000	14,700	16,500	14,500
SOCIOLOGY	11,300	11,600	———	9,600	11,700	———	———
ANTHROPOLOGY	11,500	11,600	———	8,700	———	———	———
LINGUISTICS	10,000	11,000	———	8,200	8,800	———	10,000
OTHER FIELDS	12,000	14,800	———	11,000	11,500	12,000	12,600

NOTE - NO MEDIAN WAS COMPUTED FOR GROUPS WITH FEWER THAN 25 REGISTRANTS REPORTING SALARY.

SOURCE - NATIONAL REGISTER OF SCIENTIFIC AND TECHNICAL PERSONNEL, 1966.

TABLE 5.—NUMBERS AND MEDIAN ANNUAL SALARIES OF SCIENTISTS, BY FIELD AND TYPE OF EMPLOYER, 1966

SCIENTIFIC AND TECHNICAL FIELD	TOTAL	TYPE OF EMPLOYER								NOT EMPLOYED	NO REPORT OF TYPE OF EMPLOYER
		EDUCATIONAL INSTITUTIONS	FEDERAL GOVERNMENT	OTHER GOVERNMENT	MILITARY	NONPROFIT ORGANIZATIONS	INDUSTRY AND BUSINESS	SELF-EMPLOYED	OTHER		
	NUMBER										
ALL FIELDS	242,763	87,319	24,689	8,268	5,691	9,813	83,990	4,914	1,309	14,783	1,791
CHEMISTRY	65,917	14,770	5,983	836	689	1,884	37,033	553	347	5,352	472
EARTH SCIENCES	19,749	4,686	2,667	886	256	239	8,226	1,912	57	1,129	95
METEOROLOGY	6,283	412	1,837	114	2,349	197	662	18	25	262	27
PHYSICS	29,130	13,135	3,145	116	571	1,023	8,287	112	40	2,538	163
MATHEMATICS	22,806	9,308	1,413	270	464	1,074	8,901	147	109	1,001	119
AGRICULTURAL SCIENCES	10,038	2,554	3,690	1,680	46	106	1,924	192	20	188	38
BIOLOGICAL SCIENCES	29,633	16,650	3,300	1,057	790	2,185	3,185	673	135	1,348	310
PSYCHOLOGY	19,027	9,791	1,379	2,205	205	1,714	1,350	1,116	266	749	252
STATISTICS	3,042	937	614	125	43	149	1,012	23	23	100	16
ECONOMICS	13,150	5,599	1,348	490	90	460	4,073	228	45	719	98
SOCIOLOGY	3,640	2,768	163	141	11	211	86	26	51	135	48
ANTHROPOLOGY	910	721	41	14	1	33	2	6	54	41	6
LINGUISTICS	1,269	889	58	18	4	84	43	4	8	146	15
OTHER FIELDS	18,160	4,715	1,051	318	372	458	9,606	304	129	1,095	112
	MEDIAN SALARY										
		ACADEMIC YEAR	CALENDAR YEAR								
ALL FIELDS	12,000	9,600	12,000	12,100	9,900	8,300	13,000	13,000	17,000	11,500	———	12,000
CHEMISTRY	12,000	9,500	11,000	12,000	9,700	6,700	12,000	12,800	15,000	11,500	———	12,000
EARTH SCIENCES	11,400	9,500	11,000	11,800	9,500	8,000	12,000	12,000	13,200	11,500	———	———
METEOROLOGY	11,700	10,100	12,000	11,700	10,100	7,800	14,000	12,000	———	———	———	———
PHYSICS	12,500	9,600	11,000	12,900	9,300	7,800	14,400	14,600	20,000	10,000	———	12,000
MATHEMATICS	12,000	9,100	11,000	12,900	10,400	9,000	14,800	13,900	20,500	11,300	———	———
AGRICULTURAL SCIENCES	10,000	9,000	12,000	10,000	8,200	6,200	12,000	10,000	11,000	———	———	———
BIOLOGICAL SCIENCES	12,000	9,500	13,100	12,500	10,400	11,300	14,000	13,900	20,000	11,000	———	15,000
PSYCHOLOGY	11,500	10,000	12,000	13,400	10,400	9,500	11,500	15,100	20,000	11,500	———	11,100
STATISTICS	12,800	10,000	13,000	14,300	10,800	9,500	13,800	13,000	———	———	———	———
ECONOMICS	13,100	10,500	13,000	14,700	13,000	8,600	16,200	15,300	18,000	15,000	———	15,000
SOCIOLOGY	11,300	10,000	12,500	14,700	11,500	———	14,000	15,000	———	14,000	———	———
ANTHROPOLOGY	11,500	10,600	13,000	15,800	———	———	———	———	———	10,600	———	———
LINGUISTICS	10,000	10,000	10,500	12,000	———	———	6,000	13,800	———	———	———	———
OTHER FIELDS	12,000	8,600	10,600	13,400	10,700	7,400	14,500	13,000	17,500	10,800	———	12,000

NOTE - NO MEDIAN WAS COMPUTED FOR GROUPS WITH FEWER THAN 25 REGISTRANTS REPORTING SALARY.

SOURCE - NATIONAL REGISTER OF SCIENTIFIC AND TECHNICAL PERSONNEL, 1966.

activity only. Of the 243,000 scientists in the National Register, 39 percent were primarily engaged in some phase of research—16 percent in basic research, 13 percent in applied research, and 10 percent in management or administration of research and development.

Scientists in physics, biological sciences, and chemistry most frequently reported research as their primary work activity. Basic or applied research was reported by 44 percent in physics, 41 percent in biological sciences, and 34 percent in chemistry. Management or administration was the primary activity of 50 percent of those in agricultural sciences. Teaching occupied 52 percent of the scientists in anthropology and 49 percent each in linguistics and sociology.

The highest median salary, $19,000, was reported by scientists who were primarily engaged in managing or administering research and development in physics. Of those primarily engaged in basic research, the physicists reported highest median salaries, $12,900. In applied research, the physicists and mathematicians were highest, with median salaries of $13,200. Among teachers employed on a calendar year basis, those in the biological sciences reported the highest median teaching salary of $13,000.

Table 6 shows the numbers and median salaries of scientists, by field and primary work activity.

University and College Teachers

A total of 56,000 scientists employed in universities and colleges were identified as directly engaged in teaching as a primary or secondary work activity. Teachers in biological sciences constituted 20 percent of the university and college teachers, and 12 percent of the 243,000 registrants were in biological sciences. Teachers in chemistry represented 16 percent of the university and college teachers, but chemists constituted 27 percent of all registrants. About one-fourth (26 percent) of the university and college teachers reported the academic rank of professor; associate professors and assistant professors accounted for 22 percent and 26 percent, respectively.

TABLE 6.--NUMBERS AND MEDIAN ANNUAL SALARIES OF SCIENTISTS, BY FIELD AND PRIMARY WORK ACTIVITY, 1966

SCIENTIFIC AND TECHNICAL FIELD	TOTAL	PRIMARY WORK ACTIVITY								NOT EMPLOYED	NO REPORT OF WORK ACTIVITY
		RESEARCH AND DEVELOPMENT			MANAGEMENT OR ADMINISTRATION		TEACHING	PRODUCTION AND INSPECTION	OTHER		
		TOTAL (A)	BASIC RESEARCH	APPLIED RESEARCH	TOTAL (B)	OF R&D					
	NUMBER										
ALL FIELDS	242,763	80,821	38,293	31,077	49,921	24,448	44,626	16,419	26,702	14,783	9,491
CHEMISTRY	65,917	27,105	12,758	9,362	12,990	8,225	5,987	8,814	2,377	3,352	3,492
EARTH SCIENCES	19,749	3,715	2,039	1,651	3,467	1,184	3,114	560	7,044	1,129	720
METEOROLOGY	6,283	1,285	652	610	1,591	470	306	74	2,552	242	233
PHYSICS	29,130	14,977	8,345	6,574	4,152	3,069	5,902	227	842	2,534	892
MATHEMATICS	22,606	7,095	1,943	2,818	4,412	2,242	6,303	1,695	1,782	1,001	518
AGRICULTURAL SCIENCES	10,038	2,516	882	1,692	5,004	1,088	808	315	795	188	412
BIOLOGICAL SCIENCES	24,633	12,150	8,264	3,740	4,831	2,735	7,249	524	2,234	1,348	1,297
PSYCHOLOGY	19,027	4,330	1,589	2,817	3,528	1,184	4,183	11	5,455	749	571
STATISTICS	3,042	883	197	566	733	365	560	382	309	100	75
ECONOMICS	13,150	2,280	648	1,484	3,752	1,297	3,720	1,118	1,097	719	464
SOCIOLOGY	3,640	798	476	314	636	330	1,781	11	146	135	135
ANTHROPOLOGY	919	203	185	18	109	69	479	-------	48	41	39
LINGUISTICS	1,269	233	152	80	130	45	628	-------	72	146	60
OTHER FIELDS	18,160	3,453	363	1,351	4,586	2,165	3,606	2,688	1,949	1,095	783
	MEDIAN SALARY										
							ACADEMIC YEAR	CALENDAR YEAR			
ALL FIELDS	12,000	12,000	12,000	12,100	15,600	16,800	9,300	11,500	10,500	11,500	-------	12,000
CHEMISTRY	12,000	12,000	12,000	12,100	16,100	16,800	9,400	11,400	10,200	12,000	-------	12,000
EARTH SCIENCES	11,400	11,400	11,300	11,400	15,000	15,000	9,200	10,500	10,000	11,000	-------	12,000
METEOROLOGY	11,700	12,000	12,300	12,000	14,300	16,200	9,600	12,600	9,100	10,700	-------	10,800
PHYSICS	12,500	12,800	12,900	13,200	18,000	19,000	9,200	11,000	10,900	12,000	-------	12,000
MATHEMATICS	12,000	12,300	11,600	13,200	16,300	17,100	9,000	9,400	11,300	13,000	-------	12,000
AGRICULTURAL SCIENCES	10,000	10,600	10,700	10,600	9,900	12,500	9,000	12,000	8,700	9,600	-------	10,000
BIOLOGICAL SCIENCES	12,000	12,000	12,000	12,600	16,000	17,000	9,200	13,000	9,300	12,000	-------	13,100
PSYCHOLOGY	11,500	11,000	12,000	10,600	14,000	15,600	9,800	11,500	------	11,200	-------	11,100
STATISTICS	12,800	12,500	12,000	12,500	15,600	16,000	10,000	12,800	11,300	13,400	-------	12,300
ECONOMICS	13,100	12,500	12,200	12,500	17,400	17,500	10,000	12,100	13,000	14,200	-------	14,000
SOCIOLOGY	11,300	12,400	12,000	12,600	15,000	15,200	9,800	11,400	-------	11,500	-------	11,400
ANTHROPOLOGY	11,500	12,500	12,000	-------	14,600	15,000	10,300	11,000	------	11,500	-------	14,000
LINGUISTICS	10,000	10,400	10,600	10,000	12,900	15,500	9,600	9,700	------	8,000	-------	10,000
OTHER FIELDS	12,000	12,000	12,000	12,800	16,500	17,100	8,500	9,200	10,900	12,000	-------	11,900

(A) INCLUDES DEVELOPMENT AND DESIGN.
(B) INCLUDES MANAGEMENT AND ADMINISTRATION OF ACTIVITIES OTHER THAN RESEARCH AND DEVELOPMENT.

NOTE - NO MEDIAN WAS COMPUTED FOR GROUPS WITH FEWER THAN 25 REGISTRANTS REPORTING SALARY.

SOURCE - NATIONAL REGISTER OF SCIENTIFIC AND TECHNICAL PERSONNEL, 1966.

Median salaries on a calendar year basis were 29 percent ($2,900) higher than the median for those employed on an academic year (9–10 months) base. Median calendar year salaries of registrants in biological sciences were about 40 percent ($4,000) higher than academic year salaries. The largest median salary range between professors and instructors occurred in physics, with a $9,300 difference; in mathematics, with $9,200; and in chemistry, with $9,000. (See table 7.)

Age

For the fifth successive registration (1956-58 through 1966) the median age for all registrants was 38 years. The youngest scientists (median age 34) were in physics and mathematics; the oldest (median age 43) were in sociology and anthropology. The largest proportion of registrants, 34 percent, were in their thirties. Fifty-two percent of the scientists in their twenties were in the fields of chemistry and physics.

Median salaries in the different fields increased with age from a low in the twenties to peaks between ages 40 and 69. The highest median salary of $17,000 was reported for the field of economics in the 55–59 year group; scientists in physics reached a peak salary of $16,600 in the 50–54 year group. In the field of mathematics, the highest median salary of $15,000 was in the 40–44 year group. In the biological sciences a range of $10,000 separated the median salaries of the younger and older scientists —from $5,600 for those 24 years old or less to $15,600 for those age 55–59. (See table 8.)

TABLE 7.—NUMBERS AND MEDIAN ANNUAL SALARIES OF UNIVERSITY AND COLLEGE TEACHERS, BY FIELD, SALARY BASE, AND ACADEMIC RANK, 1966

SCIENTIFIC FIELD AND SALARY BASE	TOTAL (A)		PROFESSOR		ASSOCIATE PROFESSOR		ASSISTANT PROFESSOR		INSTRUCTOR	
	NUMBER	MEDIAN SALARY	NUMBER	MEDIAN SALARY	NUMBER	MEDIAN SALARY	NUMBER	MEDIAN SALARY	NUMBER	MEDIAN SALARY
ALL FIELDS	34,441	———	14,829	———	12,130	———	14,572	———	5,068	———
ACADEMIC YEAR BASE	28,313	9,900	7,867	13,500	6,847	10,400	8,643	8,700	2,718	7,100
CALENDAR YEAR BASE	17,184	12,000	9,320	16,700	4,210	13,000	4,362	10,600	1,146	8,300
CHEMISTRY	9,001	———	2,998	———	1,680	———	2,024	———	587	———
ACADEMIC YEAR BASE	3,828	9,700	1,123	12,800	906	10,000	1,138	8,600	226	7,200
CALENDAR YEAR BASE	2,645	12,600	751	17,000	635	13,000	681	11,000	163	8,000
EARTH SCIENCES	3,510	———	836	———	704	———	870	———	373	———
ACADEMIC YEAR BASE	1,987	9,500	542	13,200	505	10,000	622	8,500	244	7,000
CALENDAR YEAR BASE	622	12,000	194	15,500	133	12,300	170	9,600	51	7,500
METEOROLOGY	341	———	96	———	67	———	70	———	33	———
ACADEMIC YEAR BASE	158	10,600	56	14,100	37	10,800	36	8,700	11	———
CALENDAR YEAR BASE	109	12,700	29	18,400	21	———	27	12,000	11	———
PHYSICS	7,136	———	1,691	———	1,322	———	1,832	———	793	———
ACADEMIC YEAR BASE	3,924	10,000	1,086	14,300	906	10,600	1,271	9,000	464	7,200
CALENDAR YEAR BASE	1,504	12,000	417	17,600	306	13,700	404	10,800	152	8,300
MATHEMATICS	6,851	———	1,333	———	1,163	———	2,000	———	1,181	———
ACADEMIC YEAR BASE	4,204	9,400	909	14,300	825	11,000	1,462	8,900	762	7,000
CALENDAR YEAR BASE	1,018	11,500	229	17,000	193	13,000	303	10,000	173	7,800
AGRICULTURAL SCIENCES	1,395	———	451	———	337	———	251	———	69	———
ACADEMIC YEAR BASE	133	9,400	40	12,000	25	9,900	40	8,300	15	———
CALENDAR YEAR BASE	1,081	12,100	389	15,000	292	11,800	192	10,000	39	7,800
BIOLOGICAL SCIENCES	11,050	———	3,395	———	2,783	———	2,809	———	693	———
ACADEMIC YEAR BASE	3,622	9,800	1,048	12,800	972	10,000	1,112	8,500	244	7,000
CALENDAR YEAR BASE	5,845	13,800	1,951	17,800	1,542	13,600	1,462	11,300	311	9,000
PSYCHOLOGY	5,744	———	1,477	———	1,488	———	1,758	———	319	———
ACADEMIC YEAR BASE	3,476	10,000	923	13,300	950	10,400	1,153	8,700	144	7,200
CALENDAR YEAR BASE	1,673	12,000	433	15,600	442	12,500	486	10,600	82	8,900
STATISTICS	721	———	197	———	158	———	206	———	58	———
ACADEMIC YEAR BASE	384	10,100	105	15,000	98	11,000	123	9,000	37	7,000
CALENDAR YEAR BASE	195	13,200	68	16,000	46	13,500	57	11,000	5	———
ECONOMICS	4,675	———	1,531	———	1,060	———	1,212	———	372	———
ACADEMIC YEAR BASE	2,807	10,400	924	14,000	686	10,800	816	9,000	216	7,500
CALENDAR YEAR BASE	1,153	13,000	425	16,000	292	12,700	258	10,500	62	8,000
SOCIOLOGY	2,315	———	736	———	567	———	604	———	130	———
ACADEMIC YEAR BASE	1,456	10,000	493	13,100	365	10,000	405	8,700	73	7,400
CALENDAR YEAR BASE	514	12,500	173	15,700	132	13,000	125	10,500	19	———
ANTHROPOLOGY	627	———	167	———	177	———	161	———	11	———
ACADEMIC YEAR BASE	427	10,600	128	15,000	133	10,400	129	8,700	4	———
CALENDAR YEAR BASE	152	12,500	48	16,000	34	13,200	43	9,300	6	———
LINGUISTICS	736	———	202	———	181	———	209	———	59	———
ACADEMIC YEAR BASE	492	10,000	147	14,500	132	10,400	149	8,600	40	7,100
CALENDAR YEAR BASE	143	10,300	45	14,000	32	10,500	36	9,600	12	———
OTHER FIELDS	2,399	———	587	———	463	———	556	———	390	———
ACADEMIC YEAR BASE	1,413	9,400	343	12,800	307	10,300	387	8,500	236	7,200
CALENDAR YEAR BASE	530	12,000	168	16,200	110	12,700	118	10,000	60	7,500

NOTE – NO MEDIAN WAS COMPUTED FOR ANY GROUP WITH FEWER THAN 25 REGISTRANTS REPORTING SALARY OR FOR THE 10,964 REGISTRANTS WHO DID NOT PROVIDE A SALARY BASE.

SOURCE – NATIONAL REGISTER OF SCIENTIFIC AND TECHNICAL PERSONNEL, 1966.

(A) TOTAL INCLUDES DEANS, LECTURERS, RESEARCH ASSOCIATES, AND RESEARCH ASSISTANTS.

Technical Notes

The National Register of Scientific and Technical Personnel obtains data pertaining to the academic training, employment, economic, and other professional characteristics of the scientific community directly from individual scientists. These data provide a unique source of science manpower information and permit the identification and location of scientists in special cases that are in the national interest. The sixth biennial registration of scientists, conducted in 1966, included scientists in the fields of chemistry, earth sciences, meteorology, physics, mathematics, agricultural sciences, biological sciences, psychology, statistics, economics, sociology, linguistics, and, for the first time, anthropology. No data on engineers are included in this report, since the engineers register is maintained completely separate from the scientists register.

Criteria for Inclusion in the National Register. Individual scientists are considered eligible for inclusion in the National Register if they have "full professional standing," based on academic training and work experience, as determined by the appro-

TABLE 8.--NUMBERS AND MEDIAN ANNUAL SALARIES OF SCIENTISTS, BY FIELD AND AGE, 1966

SCIENTIFIC AND TECHNICAL FIELD (MEDIAN AGE)	TOTAL	AGE											NO REPORT OF AGE
		24 AND UNDER	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70 AND OVER	
	NUMBER												
ALL FIELDS (38)	242,763	9,259	38,767	40,486	41,912	36,831	28,545	19,540	12,538	7,763	3,952	2,709	481
CHEMISTRY (38)	65,917	4,436	10,913	9,672	10,096	9,143	8,079	5,651	3,484	2,114	1,206	956	167
EARTH SCIENCES (39)	19,749	464	2,268	3,231	3,982	3,641	2,294	1,517	996	674	357	287	38
METEOROLOGY (38)	6,283	312	991	931	1,163	856	1,121	523	245	91	26	16	8
PHYSICS (34)	29,130	1,644	7,905	5,924	4,808	3,704	2,125	1,292	882	648	242	95	61
MATHEMATICS (34)	22,806	648	5,547	5,381	4,324	2,868	1,602	997	695	436	188	110	10
AGRICULTURAL SCIENCES (41)	10,038	68	1,182	1,679	1,703	1,659	1,450	1,079	643	353	145	63	14
BIOLOGICAL SCIENCES (41)	29,633	308	3,068	4,644	5,647	5,041	3,773	2,899	1,991	1,274	599	345	44
PSYCHOLOGY (41)	19,027	51	1,597	3,037	3,936	3,688	2,605	1,711	1,132	646	325	255	44
STATISTICS (39)	3,042	30	474	536	579	471	361	271	176	93	30	18	3
ECONOMICS (41)	13,150	180	1,518	1,996	2,138	2,047	1,910	1,324	889	555	336	227	28
SOCIOLOGY (43)	3,640	5	145	490	661	651	595	415	286	172	107	99	14
ANTHROPOLOGY (43)	919	1	22	89	192	198	139	107	77	54	22	16	2
LINGUISTICS (38)	1,269	41	207	215	232	192	121	109	69	44	20	11	8
OTHER FIELDS (39)	18,160	1,071	2,930	2,641	2,651	2,672	2,370	1,645	973	609	347	211	40
	MEDIAN SALARY												
ALL FIELDS	12,000	7,500	8,600	10,200	12,000	13,400	14,300	14,800	14,700	15,000	14,300	12,000	10,500
CHEMISTRY	12,000	7,300	8,500	10,300	12,100	13,500	14,700	15,000	15,000	15,000	14,000	13,500	10,500
EARTH SCIENCES	11,400	7,600	8,100	9,500	11,000	12,500	13,500	14,300	15,200	15,500	15,600	12,500	10,300
METEOROLOGY	11,700	6,200	9,000	10,400	11,700	12,700	12,500	12,300	12,300	12,800	-------	-------	-------
PHYSICS	12,500	7,500	9,000	11,100	13,800	15,600	16,500	16,600	15,700	16,000	15,000	10,000	11,000
MATHEMATICS	12,000	8,000	9,500	11,500	13,500	15,000	15,000	14,600	14,300	13,400	12,300	11,900	-------
AGRICULTURAL SCIENCES	10,000	6,300	6,900	8,300	9,800	10,500	12,000	12,500	13,800	14,000	13,300	-------	-------
BIOLOGICAL SCIENCES	12,000	5,600	7,200	9,500	11,500	13,400	14,500	15,000	15,600	15,500	15,200	12,000	8,900
PSYCHOLOGY	11,900	7,100	8,300	9,900	11,400	12,400	13,000	13,000	12,800	12,700	12,100	10,000	10,000
STATISTICS	12,800	-------	9,500	11,000	13,000	13,800	15,000	15,700	15,200	16,000	-------	-------	-------
ECONOMICS	13,100	7,500	9,200	10,500	12,500	14,600	16,000	16,500	17,000	16,800	16,000	12,400	-------
SOCIOLOGY	11,300	-------	8,600	9,500	10,500	11,700	12,100	13,300	13,200	13,000	13,600	-------	-------
ANTHROPOLOGY	11,500	-------	-------	8,800	10,000	12,000	14,000	13,400	14,500	14,000	-------	-------	-------
LINGUISTICS	10,000	-------	8,000	8,500	10,000	9,900	11,700	12,500	14,000	15,300	-------	-------	-------
OTHER FIELDS	12,000	8,000	8,900	10,500	12,400	14,000	15,000	15,000	14,200	14,300	13,600	-------	12,400

NOTE - NO MEDIAN WAS COMPUTED FOR GROUPS WITH FEWER THAN 25 REGISTRANTS REPORTING SALARY.

SOURCE - NATIONAL REGISTER OF SCIENTIFIC AND TECHNICAL PERSONNEL, 1966.

priate scientific professional society.[2] The 2,400 individuals without a degree were included because of extensive qualifying experience. Both members and nonmembers of the cooperating societies were included in the registration.

The eligibility criteria vary among the different fields of science. For example, the American Chemical Society considers a person who has a bachelor's degree in chemistry and is employed in a position requiring a knowledge of chemistry to be a qualified chemist, whereas in the field of experimental biology the Federation of American Societies for Experimental Biology considers as fully qualified only those individuals who hold the doctorate and have several years of research experience. These varying standards should be kept in mind when comparing data for the different scientific fields.

[2] Cooperating societies in 1966 included the American Anthropological Association, American Chemical Society, American Economic Association, American Geological Institute, American Institute of Biological Sciences, American Institute of Physics, American Mathematical Society, American Meteorological Society, American Psychological Association, American Sociological Association, Center for Applied Linguistics, Federation of American Societies for Experimental Biology, and, through these organizations, other specialized societies.

Response to the 1966 National Register. The number of individuals identified on more than one mailing list during the 1964 mailings amounted to about 6 percent of the total. If the same conditions existed for the 1966 mailing of 482,000 questionnaires, then approximately 455,000 individuals were asked to respond. Questionnaires were returned by 302,000 qualified scientists and potentially qualified individuals, of whom approximately 59,000 were eliminated. Almost 243,000 individual scientists are represented in the data reported in this study.

Median Salaries. In the analysis of salary data, the median was computed as the $\frac{N}{2}$ th case from the lowest salary whenever an even number of individuals reported salary. In tables 5, 6, and 7 a differentiation is made between calendar year (11–12 months) and academic year (9–10 months) salaries for those individuals who are either employed in educational institutions, working primarily in teaching, or teaching in universities and colleges. The median calendar year salary should be used in comparisons with median annual salaries of other scientists.

EXHIBIT II

Extract "The Structure of Economists' Employment and Salaries, 1964," Committee on the National Science Foundation, Report on the Economics Profession, "American Economic Review," December 1965 (supplement).

* * * * * * *

THE STRUCTURE OF ECONOMISTS' EMPLOYMENT AND SALARIES, 1964

Summary of Findings

Some 12,000 American economists are included in the National Register of Scientific and Technical Personnel, a program of the National Science Foundation carried out in cooperation with the American Economic Association and ten other professional societies. In 1964, 10,000 of these economists reported basic salaries on full-time professional work which ranged from less than $5,000 to more than $100,000. The arithmetic average of these salaries was $13,670, but 60 percent of them were less than that amount. Half of the salaries were above and half were below the median of $12,000. The largest concentration of economists' salaries, 11 percent, occurred within $500 of $10,000.

Definition of Economists. The criteria used to define an "economist" have a considerable influence on the numbers and the salaries of those who qualify. To meet the standards of the National Register, an economist as here defined had to be known to some professional society such as the American Economic Association, to respond to the NSF questionnaire, to report an earned Master's degree or equivalent experience, and to designate some field of economics as his field of greatest special competence. In contrast, the classification standards of the Census of Occupations are much less restrictive, with the result that the Census of 1960 counted 22,000 "economists" who had median earnings of only $7,700 at that time. In the teaching segment of the economics profession, for which standards of qualification are most likely to agree, the 1960 Census median salary of $7,100 is reasonably consistent with the 1964 median of $9,700 of those on the National Register considering the general rise in salaries during the intervening period of time.

Salaries in the Economic and other Professions. The economists' median salary of $12,000, here reported, was the same as that of the physicists and the statisticians and was from $1,000 to $3,000 above those of any of the other nine professions surveyed for the National Register.* One-third of the economists were employed by industry or business at a median salary of $14,400, exceeding that of any of the other eleven professions by amounts ranging from $300 to $5,400. The Federal government employed one-tenth of the economists, as here de-

* The twelve professions included in the National Register were: economics, statistics, psychology, sociology, linguistics, physics, chemistry, mathematics, biology, meteorology, earth sciences, agriculture.

fined, and paid them a median salary of $13,700, which surpassed that of each of the other eleven professions on the National Register by amounts ranging from $700 to $4,400. Another 42 percent of the economists were employed by educational institutions (including all economists at those institutions whether engaged in research, administration, or teaching, and including those engaged for the 9-10 month academic year as well as those paid for a full calendar year). The median salary paid by educational institutions to economists was $10,100, which was lower by $100 to $400 than those paid to the professions of agriculture, statistics, and meteorology, but from $100 to $1,400 higher than the median salaries paid by educational institutions to the other eight professions. All of these are averages of basic sciences rather than gross incomes and they are influenced, of course, by the varying distributions of those in the different professions, not only by type of employer but also by other characteristics which are associated with differences in salary.

Characteristics Related to Salary Structure: Summary Evaluation. Seven characteristics of the economists were studied and each was found to have some measurable relationship to differences in their salaries. When each of these characteristics was considered separately, the relative salaries of individual economists were found to be most importantly related (in descending order) to: (1) years of professional experience, (2) primary work activity (teaching, research, administration, etc.), (3) age of the economist, and (4) the type of employing organization. Much smaller degrees of relationship were found between total salary variation and: (5) the particular economic field of greatest competence, (6) academic degree, and (7) sex. These may be called the *gross* relationships.

However, these seven characteristics also tended to be related to each other (intercorrelated). When the effect of these interrelationships between characteristics was eliminated (by a multiple regression technique) the most impotrant *net* relationships with differences in economists' salaries were (in descending order) with the characteristics of: (1 and 2) professional experience and type of employer (not separable because of interaction), (3) academic degree, and (4) primary work activity. Much smaller degrees of *net* relationship were found between salary and (5) age, (6) sex, and (7) particular economic field of greatest competence.

Both the gross and the net relationships between salaries and each of the selected characteristics of the economists are illustrated in Figure 1 (See Section V, pp. 66-67 of this report). The net relationships are obtained from a regression analysis that includes all seven of the characteristics listed above. These net regression coefficients, plotted

as the right-hand set of bars, show the net percentage salary differences associated with membership of an economist in each specified class.

"Level of highest degree" illustrates the difference between the gross and net relationships. Economists with no more than a Bachelor's degree received more than the average economists' salary, as is indicated along the middle line of bars in Figure 1. However, it was *not* better to have a Bachelor's degree rather than a Ph.D., as becomes clear when allowance is made for the other factors related to salary. Thus the *net* relationship of possession of a Bachelor's degree to salary was negative (right-hand set of bars), even though the *gross* relationship (middle set of bars) was a positive one.

"Sex of respondent" illustrates the impact of the relative number of economists on the overall salary level. The women economists received lower salaries than the men in, for example, nearly every field of special competence and, indeed, the net (adverse) relationship to salary of being a woman was almost as great as the gross relationship. Nevertheless, the difference in sex was of relatively slight importance to the salary level of economists as a whole, because of the very small proportion of women (left-hand bar in Figure 1) among the whole group of economists as here defined.

Professional Experience. Economists at the beginning of their professional careers (with less than 2 years' experience) had an average (median) salary of $7,800, while those with 20 or more years of experience had salaries averaging $16,000. The universal rule was that the larger the number of years of professional experience (at least up to 20 years or more), the higher was the economists' average salary. This rule applied, not only as a general tendency, but also for the economists with each combination of academic degree and type of employer. Taking all the economists together, the additional salary associated with one year of additional experience was about $400 or 4.8 percent for those who already had 5 years' experience. The incremental salary value of experience then declined in regular steps, so that those with 20 years' experience had an advantage of about $250 or 1.9 percent per year of additional experience over those with 15-19 years' experience. Between the different types of employers, the *rate* of salary increment per year of additional experience varied considerably. The Federal government granted the highest rate of salary increase per year of experience (6.3 percent) during the first 4 years, but the lowest rate (1.6 percent per year) after its economists had had 20 years of experience. Educational institutions provided the lowest rate of annual increments up to 14 years (2.6 to 3.3 percent per year) and thereafter rates (1.9 to 1.7 percent) which were only slightly higher than those of

the Federal government. Industrial and business employers had the highest incremental rates for all those beyond 4 years' experience, averaging more than 5 percent per year up to 14 years' experience and nearly 3 percent per year for those with longer experience.

Academic Degree. Taking all types of employment together, the economists with a Ph.D. degree had an average (median) salary of $12,100; those with a Master's degree, $11,000; those with a Bachelor's degree, $13,500; and the few (60) with less than a Bachelor's degree, $16,700(!) The chief explanation of this apparent inversion of expected relationships is that industry and business, paying the highest salaries to economists at all levels of academic attainment, also employed three-quarters of those with a Bachelor's degree or less, while educational institutions, paying the lowest salaries, employed 72 percent of the Ph.D.'s. A secondary explanation is that the industrial employees who did not have a higher degree consisted predominantly of economists with by far the largest numbers of years of professional experience. In each separate type of employment, the expected relationship did exist between level of degree and salary. Thus the Ph.D.'s had markedly higher salaries than the economists with the lesser academic degrees even within industry, and at similar levels of experience the industrial and business employers generally paid the Master's higher salaries than the Bachelor's.

Work Activity. An average (median) salary of $16,100 was paid to those economists who were primarily engaged in management or administrative activities, a group which comprised 30 percent of all the economists on the National Register. Nearly one-third of the economists were engaged in teaching and three-fourths of the salaries of the teachers were paid for in an academic year of 9 to 10 months. The median salary of the teaching economists, whether for an academic or calendar year was only $9,700. Economists primarily engaged in research had a median salary of $11,400 while those in production activities were paid an average (median) $11,700. The exceptionally low average salary of the teachers does reflect, in part, the effect of their shorter working year, but even after adjustment is made for differences in working time, the basic salaries of teachers are still less than that of economists in any other broad class of work activity. The relatively low compensation of the teachers is especially noteworthy in view of the high proportion of Ph.D.'s in teaching. A special tabulation of gross *incomes* (including consultation fees, extra summer pay, etc.) showed that, even after these additions to basic salary, those economists engaged in teaching still had lower average incomes than those in any other major class of work activity. The teaching economists did earn nearly as much as those engaged in research and development, but

they earned one-third less than those primarily engaged in management or administrative activity.

Type of Employer. Notice has already been taken of the sharp contrast between averages of $14,400 paid by industry, of $13,700 paid by the Federal government, and of $10,100 paid by educational institutions. The different types of employer, however, did not employ in equal proportions economists who had the same experience and academic degree to do the same class of work, for the same number of months per year. When account is taken of these related differences, the net relationship of type of employer to differences in salary, although not clearly separable, appears somewhat less important than the more obvious gross relationship.

Age. The economists surveyed who were less than 25 years old had a median full-time salary of $7,800. Average salaries were successively higher at greater ages up to between 50 and 64 years of age where a salary plateau of $15,000 was reached. For economists over 65 years of age, average salaries were below this plateau, those of 70 years or more having an average salary of $12,000. The net relationship between age and salary was relatively small, because of the somewhat parallel relationship between age and the more uniform and persistent factor of the number of years of professional experience. At any given age level, salaries varied considerably according to experience, but at any given experience level age had only a minor effect on salaries.

Sex. The very small number of women among the economists surveyed had a median salary of $9,900, in contrast to the men's median of $12,000. Moreover the women received lower salaries than men in every economic field of special competence except the field of Population, Welfare programs, and Standards of Living, where the women's salaries averaged $12,000 compared with $11,500 for the men. The patterns of experience, age, and other characteristics were so different for women than for men as to preclude any very precise salary comparisons between the sexes—especially in view of the small number of observations available for the women economists. The multiple regression analysis, however, confirmed the existence of significant salary differences between men and women.

Fields of Special Competence. The economists who stated that their education and experience had given them their greatest special competence in the more business-oriented fields of economics had average salaries of $13,000, whereas those most competent in economic history averaged only $9,800. However, when the differing years of experience and distributions by type of employer are taken into consideration, the field of specialization within economics appears to have had a relatively minor net relation to levels of salary. The special field of an econo-

mist's training does appear to be related to his chances of obtaining and retaining a job with the type of employer which pays the higher or the lower general levels of salary, but economists with the same length of experience and performing similar functions for any given type of employer are not likely to find that their particular fields of special competence will be importantly related to the average salary they receive.

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PART 8

A report on the National Defense Education Act, Title III, fiscal years 1965 and 1966.

EXHIBIT I

NATIONAL DEFENSE EDUCATION ACT, TITLE III

A 2-YEAR REPORT, FISCAL YEARS 1965 AND 1966

Prepared by Instructional Resources Branch, BESE, January 1967

TITLE III—NDEA

Expenditures fiscal year 1966

Preliminary summary based on financial reports from 46 States and three territories.

State supervisory, related services, and administration of the State plan

State supervisory and related services	[1]
Administration of the State plan	Not available
Sources of funds:	
Federal	$5, 709, 500
State	7, 179, 000
Total	12, 888, 500

[1] The fiscal year 1966 report forms did not ask for this information.

Expenditures fiscal year 196b

Acquisition of equipment and minor remodeling

	Acquisition of equipment	Minor remodeling	Total
Science	$64, 000, 000	$2, 163, 000	$66, 163, 000
Mathematics	10, 800, 000	83, 000	10, 883, 000
Modern foreign language	13, 000, 000	230, 000	13, 230, 000
History	15, 200, 000	69, 000	15, 269, 000
Civics	3, 500, 000	51, 000	3, 551, 000
Geography	11, 200, 000	37, 000	11, 237, 000
Economics	350, 000	18, 000	368, 000
English	14, 000, 000	182, 000	14, 182, 000
Reading	23, 950, 000	167, 000	24, 170, 000
Total	156, 000, 000	3, 000, 000	159, 000, 000

Sources of funds:	
Federal	$73, 700, 000
State	2, 600, 000
Local	82, 700, 000
Total	159, 000, 000

State supervisory, related services, and administration of the State plan

State supervisory and related services	$6, 475, 726. 04
Administration of the State plan	1, 913, 237. 03
Total	8, 388, 963. 07
Sources of funds:	
Federal	3, 986, 578. 59
State	4, 402, 384. 48
Total	8, 388, 963. 07

Acquisition of equipment and minor remodeling

	Acquisition of equipment	Minor remodeling	Total
Science	$78,808,565.06	$4,449,042.53	$83,257,607.59
Mathematics	12,585,855.55	137,749.09	12,723,604.64
Modern foreign language	15,593,288.83	350,926.25	15,944,215.08
History	2,817,987.50	5,856.79	2,823,844.29
Civics	575,613.23	3,223.73	578,836.96
Geography	2,177,318.09	773.73	2,178,091.82
English	2,346,323.79	121,428.73	2,467,752.52
Reading	5,434,525.56	8,213.73	5,442,739.29
Total	120,339,477.61	5,077,214.58	125,416,692.19

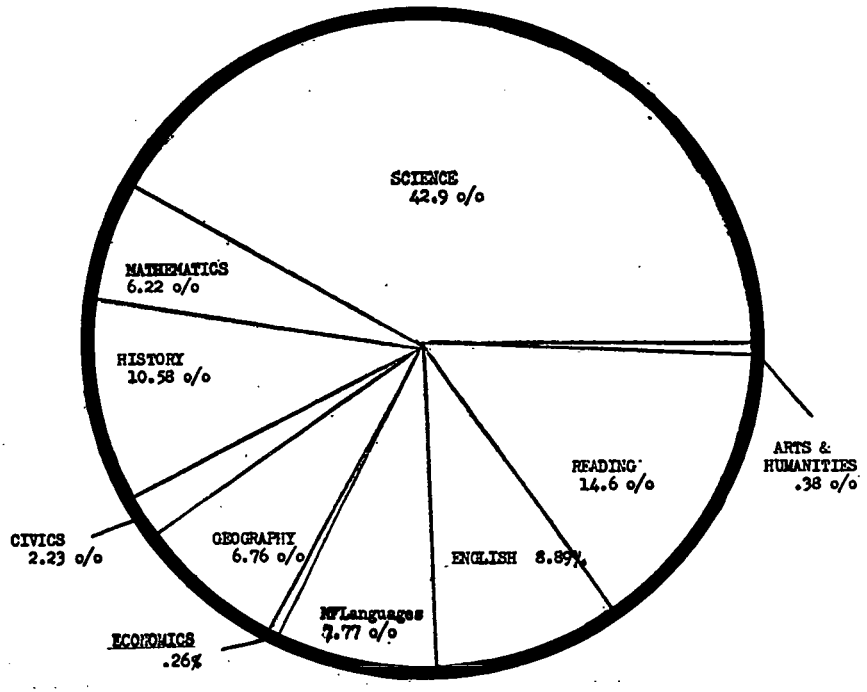
Sources of funds:	
Federal	$61,528,855.07
State	1,985,227.25
Local	61,902,609.87
Total	125,416,692.19

BRIEF SUMMARY OF STATISTICAL REPORTS FROM STATES FOR NDEA TITLE III, FISCAL YEAR 1966

Fiscal year 1966 Statistical Reports of 47 States reveal that approved projects totaled $169,372,247. (Expenditures are shown in the financial report.) The funds were divided among subjects as follows: science $71,961,777; mathematics $10,545,693; history $17,640,283; civics $3,789,028; geography $11,461,992; economics $438,917; modern foreign languages $13,162,912; English $15,073,983; reading $24,651,770; arts and humanities $645,892. The chart below shows the proportion of the total that was approved in fiscal year 1966 for each subject field.

Dollar amounts in a 10 percent random sample of approved projects in 27 States in fiscal year 1966 showed that approximately 58% of the funds were used for equipment and approximately 42% for instructional materials. Audiovisual equipment and materials accounted for 38% of the acquisition projects. Minor remodeling accounted for a very small percentage of the approved projects.

Although there are twice as many elementary schools as secondary, more than half the NDEA Title III funds were used in secondary schools.



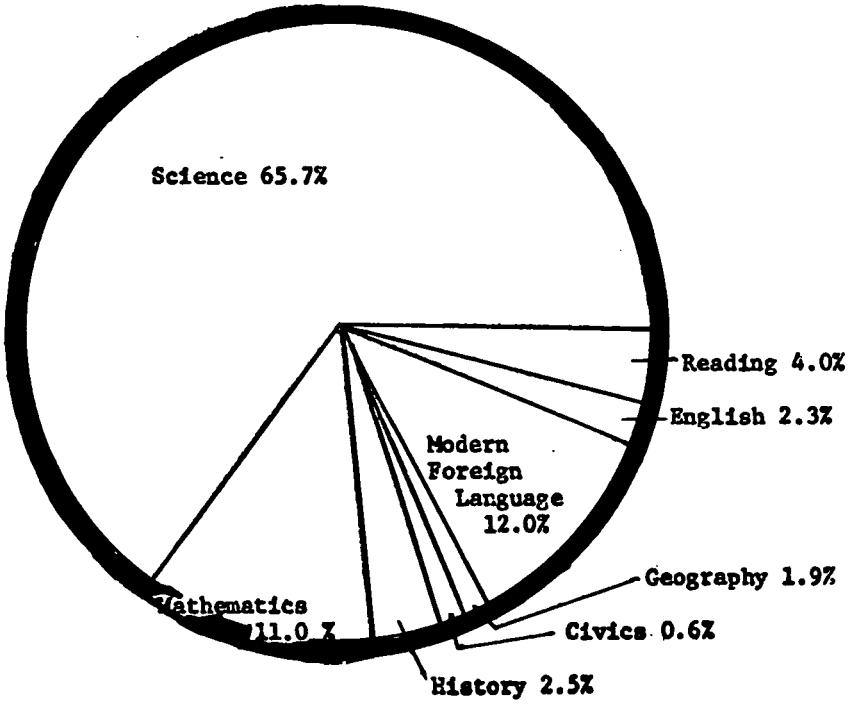
BRIEF SUMMARY OF STATISTICAL REPORTS FROM THE STATES, FISCAL YEAR 1965, NDEA III

From the first year of operation, FY 1959, through the end of FY 1965 a total of 388,673 projects have been approved by 50 States, the District of Columbia, Guam, Puerto Rico, and the Virgin Islands at a total cost of $709,581,187. There were 143,677 projects approved at the elementary level for a total of $122,281,110 and 166,016 at the secondary level for a total of $344,216,106. The remainder were combined projects for both elementary and secondary schools. Projects involving both the acquisition of equipment and minor remodeling numbered 8,593 for $28,738,273 while $680,842,912 was spent for 380,080 projects involving only the acquisition of equipment.

In FY 1965 approved projects totaled 81,732 for a cost of $149,144,555. The cost of 80,999 projects involving only equipment was $144,927,364. Projects for both equipment and minor remodeling account for the remainder of the total.

In FY 1965 full time supervisory personnel at the State department level totaled 224. There were 356 part time supervisors, or 125 additional full time equivalents. There were 1,849 per diem consultants employed by the States. Their working days totaled 8,226. The related services personnel and administrative staffs numbered 93 and 105 full time equivalents, respectively.

The following chart shows by subject area the portion of funds spent in FY 1965.



LOANS

Under Section 305, Title III of the NDEA as amended, loans are available to nonprofit private elementary and secondary schools to acquire special equipment and perform minor remodeling to strengthen education in science, mathematics, modern foreign languages, history, civics, geography, economics, English, or reading. The arts and the humanities have been added to this program by the National Foundation on the Arts and the Humanities Act of 1965.

For each of the last two fiscal years the appropriation for loans has been $1.5 million. The availability of funds for loans has taken on increased importance during the past year because of the unavailability of commercial loans. As a result

many private schools have been able to provide for needed facilities to improve instruction in the critical subjects at interest rates below those required by commercial banks.

Detailed breakdown of loans approved during the last two years is presented in the following table:

Loans to nonprofit private schools

	Fiscal year 1965	Fiscal year 1966
Number of loans	32	37
Number of schools	[1] 29	[2] 35
Amount of loans	$400,331	[3] $786,443 [4] 11,797
Interest rate (percent)	4	4¼
Number of students served	13,793	17,829
Subject area percentage:		
Science	63.7	72.1
MFLS	27.9	20.3
Others	8.4	7.6

[1] 15 States.
[2] 20 States.
[3] NDEA.
[4] NFAHA.

INSTRUCTIONAL IMPROVEMENT

The following summary of progress is based on Narrative Reports from the States for fiscal years 1965 and 1966.

Science

States report that NDEA Title III improved instruction during fiscal years 1965 and 1966 in several ways: introducing new programs, upgrading teacher preparation, and improving facilities. The number of State science supervisors increased during that time to 120. One result of the increase has been the stimulation of science education in a number of activities: workshops to improve teaching of science in elementary and secondary classrooms; improved preparation of of teachers in colleges and universities; development and updating of curriculum content; and preparation of bulletins, guides, and other publications.

One northwestern state reported that equipment purchased under Title III of NDEA is more appropriate to good science education than that which was purchased in prior years. This is due to the involvement of teachers to a higher degree in the preparation of project applications along with the experience gained in prior years in the purchase of equipment. Through the activities of the colleges, in cooperation with the State Consultant in Science, programs have been developed to give in-service training to teachers and bring them up-to-date in the utilization of new science techniques, equipment, and materials.

Another report from New York states that continuing title III aid is evidencing improved instruction and points up that increased retention of pupils in school programs offers curricular challenges. Classroom and laboratory equipment in senior high school has become increasingly sophisticated as course content has been expanded. Much of the material formerly presented in senior high schools is now being moved into the junior high school. Advanced placement courses in high school now require equipment formerly available only to college students. Actual laboratory-type experimentation by students is now replacing the less satisfactory teacher demonstration method. These implications provide a sustained need for increasing amounts of title III aid.

A third, from the southwestern states said,

"It was interesting, and very satisfying, to note that when the Metropolitan Achievement Tests were administered in May of 1966, in practically every building the science scores were the highest in the over-all battery. We feel the improvement is directly connected to the use of our new equipment."

Evaluation on improved learning does not stop at the high school level. Institutions of higher education are feeling the effect of NDEA Title III. Alabama reports that student achievement reflected in freshmen profiles from the ACT Tests of the colleges and universities indicate higher rating over previous years in the natural sciences. Guidance directors, deans, and registrars at the various State colleges report an increase in the number of students that are being placed in advanced science courses upon entering college. Surveys of all the State ac-

credited high schools show that the number of students taking science courses above the junior high school level is increasing.

North Dakota attributes much success to NDEA Title III:

"The general reaction to the title III program has been excellent. Almost every participating school feels that its strongest programs, best curriculums and materials, best prepared teachers—therefore the most keenly interested students—are found in the areas supported by title III."

But the reports also evidenced concern about the additional subjects and decreased funding. Illinois expressed apprehension:

". . . Changes in the NDEA program, however, encouraged diversion of funds as well as concentration from science needs by adding English, reading, history, geography, civics and economics to the list of critical subjects. Within a few months of this enormous expansion of NDEA coverage, schools were told that related acquisition funds for 1966–67 would be substantially reduced. . . ."

Mathematics

Rapid expansion and unanticipated changes in mathematics have necessitated a program of concentrated and continuous implementation which only could have been provided by National leadership and financial support directed through the existing structure of State departments of education. During the past two years annual reports from all the States have indicated that NDEA Title III has been the instrument which made this implementation possible and have presented unqualified evidence of the need to continue the program in order to keep pace with requirements.

Without exception States report that NDEA Title III has been a significant factor in the improvement of instruction as evidenced by the introduction of additional, specialized, and advanced course offerings, adoption of updated curriculums, increased class enrollments, higher college entrance examination scores, and better performance of students in schools and colleges.

For example, an Alabama State college reported a 1.7 increase on the American College Testing Program test score in mathematics since 1961. Another State university has reduced the number of remedial mathematics courses from 30 to 1, despite mushrooming college enrollments. In an independent study the Associated Consultants in Education, Incorporated concluded that in Florida "NDEA Title III has made the difference between poor and reasonably adequate schools."

In order to assure continuing quality in mathematics education, it is necessary to provide strong professional leadership directed to the establishment of adequately trained local supervisory personnel. NDEA Title III has been the vehicle which has enabled the States to inaugurate a continuing program of inservice education which would establish local leadership. During the past two years 95% of the States have reported the development of such programs and the need for additional funds for expansion. One example of the vital services performed by State consultants in this area was found last year in Oregon. The NDEA Title III supervisor instituted a training program for local mathematics consultants which provided the smaller school districts with a local person to work intensively with the local agency over a long period to develop a mathematics program specific to their needs.

Almost without exception the States report that the major needs for mathematics programs have been met by NDEA Title III in kind but not in quantity. Among State supervisory activities in need of additional financial support are the introduction and interpretation of new curriculums to local agencies; assistance in developing improved teaching-learning techniques; development of course study materials; consultant help to local agencies in long range planning for the best utilization of equipment, facilities, and staff assignments; coordination of local agencies with schools of higher education, business and industry; and development of individualized instruction for gifted and low achieving students.

Most of the leadership in the development and utilization of new materials has been provided by the State specialists. While almost all States have been able to fund a few publications, there is a continuing need to update and distribute them more widely.

The necessity for continuation of the program is paramount in over 90% of the State reports. No State has indicated that a saturation point is anticipated in either the acquisition or supervisory program. The most frequently reported need for funds is for inservice education. A majority of the States request changes in the legislation to permit local matching monies for conducting such programs and indicate this is an untapped financial resource that ultimately could be of great National impact. The majority of State supervisors of mathematics support this view.

Social sciences (history, civics, geography, economics)

All States have amended their NDEA Title III plan to provide for the inclusion of history, civics, geography, and economics as critical subjects. The number of State supervisors in these subjects has increased from 20 before NDEA assistance to 68 (representing 46 States) in 1966. Evidence of the efforts these supervisors are making to improve instruction is taken from the 1966 annual report which indicates that inservice education programs have been conducted in 33 States and curriculum development is underway in 23 States. Since economics was added in FY 1966, the majority of the specialists work either across the social science fields or only in history, civics, and geography.

The principal means of improving instruction, acquisition of equipment and State supervisory services, have already stimulated considerable planning and teacher involvement and have had an impact on the quality of instruction. Literally thousands of elementary and secondary classrooms have been supplied with such basic materials as maps, globes, charts, and a wide variety of audiovisual materials such as filmstrips, slides, transparencies, and motion picture films. Many States are offering guidance to local schools in the purchase of equipment and materials of instruction and are working closely with teachers through inservice workshops. Many State supervisors have developed and published guides for teachers of history, civics, geography, and economics. Newsletters also furnish reliable information concerning trends and issues, curriculum development, research, and new literature in the social science fields.

The State supervisors are working with schools primarily to develop a K–12 scope and sequence for the social studies. This involves changing the sequence of present courses, developing a conceptual framework, establishing behavioral objectives, adapting materials, and changing the nature of the social studies classrooms.

Although almost every State indicates that as a result of the availability of materials and equipment and consultant services, social studies instruction is being improved, it is recognized that this only represents a beginning and that there still exist vast unmet needs in the social science programs of all States.

Modern foreign languages

Three States (Arizona, Hawaii and Kansas) and two territories (Guam and the Virgin Islands) added specialist supervisors in modern foreign languages during this period, bringing the total to 41 States, 4 territories, and the District of Columbia. Despite turnover in positions the State FL supervisors as a group have continued to acquire special knowledge and experience and an expertise in dealing with Statewide problems of improving instruction. The recent annual meeting of their national council was marked by discussion of innovative projects, utilization of foreign consultants, study abroad by high school students, better organization of foreign language teachers, and the coordination of Federally aided programs. The appointment of local FL supervisors, recommended by State consultants because they are so important to the development of local curricula, increased markedly. The gains were noted especially in the counties and larger school systems.

The State FL supervisors played an active role in the national movement to establish guidelines and to raise the standards of teacher preparation programs by collaborating with colleges and universities in planning improvements and by their efforts within State departments of education to modify certification requirements.

The majority of the State supervisors devoted a large share of their time to planning and conducting workshops and conferences. State-sponsored workshops under NDEA Title III continued to reach more teachers and to treat a wider range of subject matter and teaching problems. In Illinois, for example, eight types of workshops, some at introductory and others at advanced levels, were held in 18 area centers. Massachusetts added to its existing program workshops in local supervision, elementary school foreign languages, and French culture.

Fourteen States reported the preparation and publication of curriculum guides, courses of study, and related curriculum documents. Outstanding examples are those of Minnesota, Maryland, Florida, California, and New York.

The number of language laboratories of some type increased to more than 7,000. Foreign language departments continued to acquire classroom tape recorders, projectors, recorded tapes and audiovisual materials, and supplementary reading books.

Observation of classroom instruction by State supervisors indicate that the general level of instruction rose by virtue of the teachers' higher level of pro-

ficiency in the foreign language, their greater sophistication in applied linguistics, methodology, and utilization of laboratories and other technological aids. Schools furnished with more and better equipment and a richer supply of materials were providing more frequent and profitable practice opportunities. Longer sequences of courses were reported by nearly all States and increased enrollments in elementary school programs by about half the States. Higher proficiency on the part of entering students was frequently reported to supervisors by the colleges and universities.

English

Twenty States have 33 persons serving the dual role of English and reading supervisor, sometimes called Language Arts supervisor, resulting in 109 individuals functioning in 142 positions.

State English supervisors have conducted a series of workshops and other inservice education programs at local levels introducing new approaches in the teaching of English. Teachers and supervisors who attended NDEA Title XI English and reading institutes have served as leaders in the inservice programs. Related to the inservice education programs was a series of regional meetings held in 1966. These meetings introduced patterns of language development for disadvantaged children.

Research findings from the 22 Centers for Curriculum Research and Development are being applied in most States to improve English instruction. Extensive experimentation in structural grammar, linguistics, development of composition methods, literary criticism, and other phases of English is under way in at least 43 States. One outgrowth of these developments has been the preparation of new curriculum guides in English. Sixteen States have completed curriculum guides and others are in process.

Reading

When reading was added to the subjects supported by NDEA Title III in November 1964 only 4 States and the District of Columbia had a State reading supervisor. By the end of fiscal year 1966 there were 66 reading supervisors in 46 States and 3 territories. The four States without reading specialists authorized positions but were unable to recruit persons with the necessary qualifications.

At the national conference of State English and reading supervisors sponsored by the Office of Education in March 1966, the participants concentrated on five areas: State leadership in instructional improvement, inservice and preservice teacher education, curriculum innovation, programs for the disadvantaged, and research in English and reading. The unity of effort and common needs of the group resulted in organizing the Association of State English and Reading supervisors. This organization will hold meetings during the annual conventions of the National Council for Teachers of English and the International Reading Association. It established a newsletter for regular distribution.

The reading supervisors cooperated with all Federally funded programs in their respective States by assisting in developing and evaluating proposals, planning programs for the improvement of teachers in service, developing curriculum guides, giving demonstrations, working with colleges and universities to improve teacher education, consulting with local county and district supervisors, and aiding in improving the selection of materials and equipment for instructional improvement.

Every State reading supervisor held a series of workshops for reading improvement during fiscal years 1965 and 1966. These workshops involved thousands of classroom teachers and were conducted with help from university, State, and national reading consultants.

The schools made extensive purchases of instructional materials for English and reading, amounting in 1966 to nearly a fourth of the NDEA Title III acquisition funds.

Arts and humanities

Although the arts and humanities are supported through Sec. 12 of the National Foundation of the Arts and the Humanities Act, the program is administered through NDEA Title III. One limitation is the fact that State supervisory and related services are not supported under the Act; in contrast, NDEA Title III authorizes support for these services in the nine critical subjects. Significantly, however, State department of education staffs include 50 music supervisors and 36 art supervisors, some supported by State funds and others by ESEA Title V funds.

During FY 1966 all but four States amended their State NDEA Title III plans to include arts and humanities. Despite the short planning time and the small amount of funds available, many projects of genuine worth were submitted and the response of the States was enthusiastic.

The projects fell, in general, into two main categories:

(1) Funds were matched on behalf of local school districts by the State department of education and were used to purchase materials and equipment (mainly audiovisual) which were then distributed to regional centers and were loaned to local schools on request.

(2) State priorities were established and project applications were invited from local school districts. Many of these projects dealt with innovative concepts in integrated arts and humanities courses of study which undoubtedly will motivate nearby school districts to substantially upgrade their programs. Invariably more projects were submitted than could be funded.

Perhaps the reaction from the field to this program might best be epitomized by a statement from the Commissioner of Education of Alaska who wrote, "Most of these children have never been away from their native Arctic village except possibly to go to Nome to have their tonsils out. They are products of one or two room village schools which do not have many cultural resources. We are happy to have this extra money to buy beautiful sights and sounds, and new experiences for them."

PART 9

Economic Literacy in a Free Society—Special issue of Challenge magazine.

EXHIBIT I

Selected articles from Challenge, March 1964 Special Issue.

Economic Education: How It Began and Why

By Haig Babian

Dissemination of economic knowledge, through organizations and instrumentalities most often not a part of any accredited public or private educational institution, has become a sizable effort in the years since the end of World War II. All over the country today—in the board rooms of major philanthropic foundations as well as in the offices of profit-motivated business corporations, in the headquarters building of the AFL–CIO in Washington as well as in the meeting halls of many locals, at the U.S. Department of Commerce (where the phrase "We are a nation of economic boobs" was coined) and in many other places where hundreds of organizations, centers, committees and groups of one kind or another operate—a large number of people are putting time, money, ideas and effort into what has to be called a *movement* to broaden, heighten and generally increase the depth of economic understanding of the American population, whether in or out of school.

To be sure, there is nothing like unanimity among the participants in this movement as to methods, standards, immediate goals, and even as to the rationale of what improved economic literacy would accomplish. Thus there can be little coordination of effort, and inevitably there is a certain amount of denigration of what the other fellow is doing. But all are committed to furthering economic understanding (at least as they each see the essentials of that understanding), and most of those who make a full-time living at economic education talk about it as though it were the most important thing in the world. This is understandable for like doctors, lawyers, engineers and even economists, who are well-known for preoccupation with their professions, economic educators have made of their concern a profession as well as a movement. This was inevitable and even necessary.

No one has ever been able to ascertain exactly how much money this movement, and the profession it supports, costs in one year. Attempts to develop a reasonably accurate figure have always been frustrated by the endlessly imaginative ways in which costs can be calculated and economic education defined. And, of course, from time to time there are additional expenditures in one year on behalf of a special project that the movement in toto, or even its best-heeled parts, would not wish to sustain for long. "The American Economy" TV series represents one such unusual effort, which from September, 1962 through May, 1963 provided the viewing public with a rare opportunity to see what a real, live economist-teacher looks like—at a cost of $1.3 million, plus an unknown additional amount donated by the network that carried the program. (Fortunately for those who supported and helped in the preparation of "The American Economy," Prof. John Coleman, the national teacher, was able to add his rare gift of learned effectiveness to the good intentions that dominate economic education, thereby endowing the expenditure of $1.3 million with the accolade of "well-spent.")

The difficulties and fluctuations notwithstanding, has anyone dared to make an estimate of the money being spent on economic education? It is safe to say that about $5 million per year is currently going into economic education efforts that adhere, albeit rather loosely in some cases, to the standard of educational purpose. If one were to take into account *all* activity pursued in the name of economic education, without distinction between education and persuasion, one could

easily find himself dealing with something like $25 million per year, or more. In an era when anything less than a billion dollars is considered small potatoes, the expenditure of $25 million by a nationwide movement appears to be a paltry effort. Yet, when we place this sum next to the $10 million spent last year on research by the American Heart Assn. and its local affiliates, or the $12.5 million spent on research by the American Cancer Society, we gain an increased appreciation of the ability of economic education to command funds for use on behalf of the public good, as variously defined by its practitioners.

Inasmuch as there is nothing on the horizon to indicate that similar sums can be secured by the proponents of music, psychology, history or English education, or what have you, one must conclude that economic education was the beneficiary of a unique confluence of forces that made it a movement of considerable size and scope. To trace what these forces were, how they changed in composition and motivation, and how economic education evolved over the years is to be served a slice of postwar history that comes close to Americana.

Even a cursory look into the backgrounds of the many economic education efforts that exist today would establish a curious coincidence in their timing: they all got into full swing after the war, and most started around 1950. A clue as to why this should be so is provided by a review of the credos of just a few of these organizations.

For example, the *Advertising Council* was moved in 1950 to launch a program that would "explain how American business has helped to build the highest standard of living the world has ever known." The *American Economic Foundation*, established in 1939, stated its purpose as one of conducting "research into the causes behind and the elimination of the economic illiteracy that produces irrational friction between economic groups and the illogical prejudice against American capitalism." *Americans for the Competitive Enterprise System*, or ACES, wanted "to educate millions of Americans in the superiority of the American competitive system over any form of Collectivism, including Communism, Fascism and Socialism." The *National Association of Manufacturers* started a booklet program and sought cooperation from the schools because "our continued progress as a people depends so much upon a broad understanding of our free competitive system and its benefits to all." *Invest in America* built up a network of state councils working to bring about a "better public understanding of the role of voluntary savings wisely invested for individual and national economic growth and freedom." These organizations, and others with similar goals, have received substantial and continuing business support, naturally.

The role of the American businessman as an inspirer and supporter of economic education is an all-important one. Not one of the aforementioned organizations could or would have engaged in this activity if there had been business resistance to it. Space does not permit a complete catalog of the many business groups that sought to do their bit to erase the economic illiteracy undoubtedly afflicting the nation. Suffice it to say that every conceivable business quarter emerged as a sponsor of economic education programs, which, in sum, employed all media of communication and, at one time or another, encompassed every segment of the reading, listening and viewing public. Such education programs had in common the dissemination of information and ideas in which the business interest was not only clearly identifiable but also expressed as synonymous with the public interest.

Quite explicit in the tenor of these so-called educational programs were the motives of the business community. There was no attempt to deceive or even to be subtly effective. One could either accept the thesis that economic education meant a better understanding of business contributions to society, of business needs and problems, or simply take these programs for what they were: interesting, often useful presentations, meant as antidotes to the lingering bad taste of a depression which had found another antidote in government.

Business support for such efforts, quite apart from whatever one might think of them, did accomplish one important thing: it placed the need for more economic education on the agenda of "things to be thought through" by a postwar America, and a burgeoning peacetime economy provided an increasing amount of loose change in business-controlled budgets to finance this one, special kind of economic education.

The role of the businessman, however, did not and does not end here. For if we have been talking about one kind of economic education, we have also been talking about only one kind of business interest in economic education. Whatever else we might believe of our captains of industry and commerce, they cannot be accused of placing their economic education money on one horse only. This

phenomenon is distinctly American (for reasons that, among other things, make American capitalism a clearly identifiable breed unto itself). One of the significant manifestations of what has just been referred to as a phenomenon was the founding in 1942 of the *Committee for Economic Development* (CED). A few years later economic education veered away from a strictly business orientation, and this with the help of an organization financed by the business community.

CED *was not* created to engage in economic education. With a membership made up preponderantly of leading businessmen, but including some educators, as well, CED *was* set up to engage in objective research and offer recommendations for business and public policies that "will contribute to the preservation and strengthening of our free society, and to the maintenance of high employment, increasing productivity and living standards, greater economic stability and greater opportunity for all our people." An additional mandate of CED was "to bring about increasing public understanding of the importance of these objectives and the ways in which they can be achieved." On this latter count, CED was interested in economic education, and this interest was to be expressed through a kind of effort which, for the first time, the educational community could feel free to lead.

Thereafter economic education took on a dual character: on the one hand, business-sponsored efforts with clearly limited and more loosely defined educational objectives; and on the other, professional-educator-led efforts with the considerably broader objective of getting "more and better-taught economics in the classroom." After 15 years of coexistence, it is still not clear whether the educators' definition of economic education, which goes considerably beyond an examination of what is good for business, is something the majority of businessmen would want it to be, or had in mind when their programs of spelling out "the economic facts of life" to the public were launched.

Be that as it may, CED supported a desire, expressed in 1948 by educators, to hold a conference on economic education. The outgrowth of this conference was a decision to establish a national council, led by educators, whose policies would be determined by a board representing educational, business, labor, agricultural, and so on, interests—in short, the community interest. This council was chartered in 1949 as the *Joint Council on Economic Education*, and CED provided the wherewithal, until in 1951 a large foundation grant cast the CED contribution in a comparatively supporting role. But CED trustees remained prominent within the inner circles of the Joint Council, and their influence was instrumental in securing local business support for the many state and regional councils on economic education that became affiliated with the national body.

This, then, was the way the professional educators joined the economic education movement. They joined early, riding in on the hullabaloo the businessmen had created, and having become a part of the movement, they forthwith proclaimed themselves the only ones who could legitimately act as proselytizers of economics among the nation's schools. The business-sponsored groups could hardly afford to debate the issue of legitimacy of content. Also, problems of curriculum and pedagogy were clearly beyond their competence. Overnight, so to speak, economic education was given a new dimension by the professional educator-turned-agitator, who, as the paladin of economics, made it his purpose in life to convince the elementary and secondary schools to teach more economics. And to do this, the teacher training institutions would also have to be induced to teach more economics. These two objectives the businessman could not demean, although at times some self-styled rugged individualists must wonder what happened to the simple programs that "laid it on the line" and came "straight to the point" that all good men of business could understand and wished others did, too.

The arrival of the education-oriented economic educator not only raised the sights of the movement, but also made of it a far more serious—and complex—affair than the business groups had ever anticipated. Curriculum reform was obviously an intramural matter that could involve only educators. For the businessman this meant becoming a petitioner, if he was interested in the schools, and for the professional economic educator this meant winning over other educators who, at "the point of sale," were structuring and administering curricula and teaching the content in the classroom.

Old school ties notwithstanding, the economic educator has found his chore only slightly less difficult than the businessman seeking a better public image. Not all educators have felt the need for more economics in the curriculum. If they had, there wouldn't be an economic education movement directed at the schools.

In the ensuing struggle to be heard, to exert influence and effect reform, the economic education movement has gained in strength, sophistication and *legiti-*

macy, the latter quality considerably enhanced by the growing number of recruits from the most legitimate of sources, the economics profession itself. Economists had always worked in and around the fringes of economic education, particularly since the professional educator assumed leadership of the more important segment of the movement. But after 1954, when the *American Economic Association* appointed a committee on economic education, ranking economists felt they could join the movement without risking their academic standing. Thus today, economic education is not only a movement with a well-articulated purpose, but one that often offers, on paper, a program of rich content and substance as well.

What remains to be done? First, the nation's school systems still have to be convinced that they need to teach more economics. Second, many businessmen have to be converted to the view that their original idea—to sell free enterprise—has not been subverted. And third, economic education would do well to emerge from preoccupation with itself and help in the greater movement to provide *better education* in the service of a free society.

What Would Economic Literacy Be Like

By Edwin G. Nourse

While most Americans would agree that raising the national level of economic literacy is a desirable goal, there is no general consensus on the level and kind of literacy that is possible and the proportion of the population such a program should encompass. "Economic literacy means 'reasonable competence' of the largest possible proportion of the population in administering their affairs, and similar competence in making their choices as voters," says Edwin G. Nourse, *who was Chairman of President Truman's Council of Economic Advisers. And since high school graduates make up the representative group in the population, such a program should be geared to this level.*

The word *literate* is quite simple and definite in meaning if we stick to its Latin derivation. The literate person is one who "knows his letters" or is able to read and write. This implies some education, so the word is often stretched to apply to the educated person or even the 'learned."

But when we add an adverb and say *economically* literate, which of the three levels of literacy do we mean or expect? Mere ability to read and write such words as supply and demand, free enterprise, gross national product or fiscal policy would certainly be too loose and inclusive a specification; and "learned" —as an economist, a "pro"—would be much too restrictive. In between these two extremes is a broad middle band of meaning to which common sense would seem to lead us. To escape economic illiteracy, anyone would need some teaching in that area of human experience and participation that, by common usage, we call "economic"—an area of rather fuzzy frontiers.

To say that the attainment of economic literacy requires "some educating" simply raises three practical questions: How much, what kind, and for how many of the people? Taking the last question first, I would suggest this answer: (a) for all who have the privilege of a college education; (b) for as many as possible of those who embrace the standard American opportunity of a high school course; and (c) at least a little mental conditioning for those who are "dropouts" for reasons other than mental retardation.

As for the first of these three groups, I maintain that it is an educational scandal that a majority of that smug class holding a baccalaureate degree or better does not know anything coherent about the institutions and processes of the economy they live in. With shame for my own profession, I have to confess that an important reason is that basic economics has been made a dismal science or an esoteric craft by most college teachers instead of a throbbing reality and a responsible avocation for all good citizens.

What I say from here on is beamed primarily to the high school graduate. But it applies almost equally to the college men and women who specialize in fields other than economics. And it sets up a minimum of attainment quite within the reach of many workers and citizens whose formal schooling does not go beyond the grades but whose economic behavior is vital to the success of our way of life.

Since high school graduates make up the modal or representative group in the working, managing and voting population, the top question on the docket of our democratic enterprise society should be: What is a *necessary* but at the same time

practicable minimum of economic understanding for this stratum of the population? How would the complexion of this mental middle class be changed if, by and large, economic illiteracy were eliminated? In the anthropologist's lingo, what would be needed before we could say that the members of this influential group had been suitably "acculturated" or adjusted to the environment of the modern industrial and price-organized society in which they are going to live—and try to prosper? When would the individual be prepared in mind and spirit to take a place in our laboristic capitalism and play an honorable part in making it measure up to our hopes—and our boasts?

Economic literacy demands: (a) reasonable competence of the largest possible proportion of the population in administering their individual, family and company business affairs; and (b) similar competence as voters to choose among rival candidates to administer the public business and to vote "yes" or "no" on state and local bond issue proposals or other referendum questions. It would imply more than this minimum competence on the part of government functionaries, legislative and executive, in proportion to the government level at which they aspired to serve.

The expression "reasonably competent" is, of course, a slippery and rather pompous phrase. I do not rest my case here but shall make this the departing point for exploration of what competent means and what is reasonable in general and in some particulars. Other authors in this symposium will discuss the process of economic education both as to content and as to method. My concern is with the end product, and I shall apply a pragmatic test in common to all who deserve a "pass" mark at the several levels of education they have been privileged to receive. I believe there is such a common denominator.

Here I go back to the rudimentary phrase with which I started—"literate," meaning able to read and write. Only by learning to read and write does each rising generation become capable of communicating beyond the range of whatever limited group it may meet face to face. Once people have acquired these "tool subjects," they can go on to participate as fully as they wish in the mental life—the culture—into which they were fortunate enough to be born.

Communication is a two-way process, involving both sending and receiving. In our nonauthoritarian society everyone is free to get in his "two cents worth" in the economic dialogue (to use the current clichè). And that, to my way of thinking, is the vital inner meaning of economic literacy. It does not mean being taught a precise set of simple concepts or following a stern rulebook of precepts, or applying economic "laws" after the manner of astronomy or physics. Economics is a social science, based on human behavior, with all its motivations, incentives, whims and value systems. To work at all well, an enterprise economy requires a democratic government and a literate citizenry, articulate to a high degree as to their needs and their dreams, their frustrations and their resentments. They may "speak their piece" in the meetings of their union, in a letter to their Congressman, their mayor or school board, or to the editor of their local paper or a national magazine.

This articulate public says its last word at the polls, but it also has another (and decisive) voice in the functioning of our economy as it casts its votes every day at the cash register. It may be a stupid vote, and manufacturers and merchants have to be watched and thwarted in their not infrequent efforts to miseducate consumers—just as politicians are not always angels of intellectual light and civic virtue. But it is also true that corporations with profits at stake organize elaborate campaigns of market analysis or buyer reaction to guide them in advance so that they will not suffer a costly rebuff at the cash register.

So much for the sending or articulate aspect of economic communication. Economic literacy requires also a receiving or attentive character. Much has been said or implied about attempts of public functionaries, academic preceptors and the voice of Madison Avenue to guide the thinking and acting of the free-choice public in economic matters. On this side of the question, I suggest that the essence of economic literacy is that the public be attentive to these voices but not gullible in its response.

When businessmen, public officials and professors complain that America is a nation of economic illiterates, they generally express dismay that the cockeyed populace fails to agree with their personal economic theories or their diagnosis of a particular economic problem or their prescription for its cure. Economic literacy would not mean consensus on any one of these ardently supported but divergent positions. Just as it is important that policy makers and theory formulators be attentive to what the masses think and feel, it is also important that these unsophisticates listen to and ponder what the elite of wider experience

and deeper erudition have to say. Thus from read-and-write literacy we proceed to two-way, listen-and-ponder literacy.

The man or woman entitled to be called economically literate will be not only an attentive but also a discriminating listener. He will have some ability to defend himself against the class bias of business and labor spokesmen, the propaganda of partisan politicians and even the dogmas of overardent professors. He will not be satisfied with a neat little packet of "truths" handed out in a school course, or glib generalizations deduced from individual or group experience. Economic literacy is a digestive process; it cannot be achieved by trying to gulp the wisdom of others.

Certain *qualities* identify the economically literate person and safeguard him against gullibility in economic matters. I would emphasize three such qualities of mind and behavior that distinguish the literates from the illiterates at all levels and stations of our economic life. First is the ability—the habit, if you please—of searching for cause-and-effect relations. Second comes the capacity—again, the habit—of weighing alternatives thoughtfully before making choices in action or belief. Third is what is generally referred to as "objectivity."

In giving first place to the cause-and-consequence approach, I am in effect saying that a person, group or nation that had achieved economic literacy would have entered into today's age of science in economic life. It is of the very essence of science that, from an observed condition or action, one tries to move back to identify and understand its cause or causes. Or from an observed force or action the scientifically acculturated person reaches forward, with the best tools he can command, to identify, measure and explain consequences.

Present-day America is scientifically literate enough to have abandoned many superstitions that were prevalent in my boyhood. Farmers no longer believe that potatoes must be planted in the dark of the moon. Probably nobody believes that a horse hair dropped in the brook will turn a water worm or snake. Very few are terrified at the breaking of a mirror—because it is said to bring seven years of bad luck. But there is a mass of economic illiteracy no less primitive or prescientific about profits, wages, debt and taxation.

The second quality that characterizes economic literacy—weighing alternatives—lies at the very heart of the domain of economics. In fact, a short and pithy definition of economics is: the science and art of economizing or, in everyday language, "getting the most for your money." To do this requires some mental bookkeeping and thought for the future as well as the present.

The small businessman or the largest corporation is constantly choosing ways of making the smallest input of cost items yield the largest output in market values (or some nonmarket value like prestige or public service). The humblest consumer becomes economically more literate in proportion to his ability to be a more careful and less stupid shopper. The same can be said of a compulsive spender who has been heedless of his need to save for the future; or a gullible investor, too greedy for quick profits with disregard for safety. The Secretary of Defense is economically literate in proportion to his ability to buy "the biggest bang for a buck." And a Congressman is economically illiterate when he tries to block the abandonment of no-longer-useful military installations in his district.

The president of the U.S. Chamber of Commerce recently gave a beautiful lesson in leadership toward economic literacy, in a message issued to all Chamber members, when he said that the Administration's move to reduce defense installations deserved the support of every businessman. "These changes," according to Edward Neilan, "challenge the business community to do something positive and constructive in supporting the program for reducing the total cost of our defense appropriations. . . . I urge all of those Chambers and business organizations located in the immediate proximity of each of these installations to make special effort to utilize the people and the facilities released by these defense adjustments. . . . The ingenuity and resourcefulness of businessmen can accomplish the necessary adjustments through industrial, commercial and community expansion."

A third quality of economic literacy—objectivity—again breathes the spirit of science. Quite possibly this is the quality of economic literacy most difficult to inculcate or acquire, because the individual is so personally involved. Children, savages and economic illiterates are instinctively and habitually subjective or egocentric—in simplest terms, selfish. Insofar as they make conscious choices, it is "every man for himself, and the devil take the hindmost." A considerable step toward economic literacy has been taken when lone workers begin to think in terms of the common interest of their craft group and form a union to formulate that interest. When a nationally organized and federated labor movement talks and acts (as it is beginning to do today) in terms of national problems and national

policies, the growth of economic literacy is well under way. Even Mr. Hoffa can't stop it. The same is true when farmers, traditionally "as independent as a hog on ice," join in small cooperatives which grow and affiliate until they stabilize an industry or subindustry nationally.

The growth in economic objectivity is perhaps most fully manifested in the world of private business by the pacemakers among our big industrial and commercial corporations. While a certain subjectivity is the first law of nature for a profit-seeking corporation, there are striking evidences today of objective consideration of the interests and needs of a progressive and stable economy in their programs of scientific and technological pioneering, employee pensions and other welfare activities (some in advance of the government social security program) and their services in capital formation and the devising of credit institutions and practices.

Finally, there is progress toward the objective quality of economic literacy when voters start to think about the economic impact of federal subsidies to shipping, minerals production, farm commodities, highways and air transport, to foreign aid, and to education and medical care, rather than make elections a popularity contest or a field day for local or class greed.

In all this I have kept fairly well tethered to my basic formula that economic literacy depends on, or is an extension of, the ability to "communicate," to carry on a fruitful dialogue among workers, employees, bankers, professors and politicians about how the processes of business really work. These human processes can be made to work better for us all. The alternative is to see the benefits of high productivity whittled down by struggle among self-seeking groups.

These, I submit, are modest and practical but vital specifications for a people so well supplied with productive resources and the facilities of popular education. Without being naively optimistic about our present situation, I find several reasons for encouragement as to the future. There has been a great awakening of interest and concern about economic education in recent years—both at the secondary school level and in the less "structured" (that's what the educators call it) programs of adult education.

Thanks to the application of our fast-moving science to the problems of mass communication, we have a stupendous apparatus for projection of the colonial town meeting into a national forum of economic discussion, both practical and expert. Miraculous photography, high-speed printing, amazing color work enable residents of the most remote village or farm to have ringside seats at the pageant of the nation's economic life, realistically framed in its political setting. They see the most influential businessmen, labor leaders and bankers explaining the processes of business as they are confronted by it, eager to justify their course of action or attack, what they believe to be popular fallacies. They can see candidates for the highest office moving about their daily chores, joining in debate or being quizzed by the best informed and shrewdest newspaper reporters and columnists. Professional economists, political scientists, even philosophers, join in the fun.

This blossoming of intellectualism on the economic front is solidly rooted in the institutions and the mores of our people, based on free speech, free enterprise and collective bargaining in ideas as well as wage contracts. Of course, a powerful apparatus of mass communication can be misused for propaganda rather than honest enlightenment. But there is a built-in device of correction—that ever-present claim for "equal time" by the other side. Was it Job who remarked: "In a multitude of counsellors there is wisdom"?

We have economic illiteracy on the run and are pressing the attack. A reasonable objective now is economic sophistication.

What Economics Should We Teach?

By G. L. Bach

In all the hue and cry about raising the level of economic literacy in the United States, one question stands out: "What economics should we teach?" "The answer", says G. L. Bach, *Visiting Ford Research Professor of Economics at Stanford University, "is not to merchandise this branch of economics or that; it is to teach people to reason independently." Prof. Bach was Chairman of the National Task Force on Economic Education appointed by the American Economic Association.*

Economics is not a set of pat answers or of simple rules or principles. Economics is a body of concepts and working relationships which, when intelligently used,

can help in reaching reasoned judgments about economic issues. Economics is a way of thinking, and a tool kit to be employed in thinking through problems as they arise, whether simple or complex.

Thus, properly taught, economics does not lend itself to indoctrination. On the contrary, it is the antithesis of indoctrination, since its main usefulness is to help people reach their own judgments on economic issues.

Such reasoned consideration of economic issues is vital to a well-functioning democratic process.

These three points summarize perhaps the most important things to be said about what economics we should teach. They reflect the views of leading economists over many years, and of thoughtful laymen as well. Two widely read quotations emphasize what might be called the first lesson of economics:

"The theory of economics does not furnish a body of settled conclusions immediately applicable to policy. It is a method rather than a doctrine, an apparatus of the mind, a technique of thinking, which helps its possessor to draw correct conclusions."—J. M. KEYNES, from the Introduction to the Cambridge Economic Handbook Series.

"Those seeking to forward special interests and those who believe that the teaching of economics should be indoctrination will find scant comfort in this report. For it stresses, above all, the development of objective, reasoned consideration of economic issues as a basis for thorough understanding and wise choice. Its spirit is the spirit of working democracy."—DONALD K. DAVID and T. W. SCHULTZ, from Preface to the Report of the National Task Force on Economic Education.

It is no accident that the quotations above are from men of divergent backgrounds and political persuasion—two very different economists and a leading businessman-educator. For the point of view they express is one with which all who understand the essence of economics would, I think, agree. The way to resolve the question, "What economics should we teach?" is not to merchandise this brand of economics or that; it is to help people learn to reason independently on the economic issues they inevitably face.

But to teach this first lesson well is not enough. More is needed. Obviously, individuals differ widely in ability and interest. With any amount of time and energy some will learn vastly more economics than others. *To face the problem in its hardest and most practical form, I presume that our goal is to teach a majority of our youngsters that minimum amount of economics they might reasonably learn in, say, not more than a semester or so of high school or college study of economics.* This is a base minimum. But even this would be a much larger investment of time in economic education than now prevails for the majority of our population.

To achieve this minimal goal, beyond primary stress on lesson No. 1, I suggest that we need to provide four simple things:

(1) A rough overview of the way our economic system works.

(2) An awareness of some of the big economic problems of the day.

(3) A rough understanding of a *few* major institutions of our economic society and fundamental economic concepts and relationships needed to understand the issues that the average person faces in his personal life and as a voter.

(4) Some experience in applying these concepts and relationships to a few typical economic problems.

OVERVIEW OF THE SYSTEM

Every participant in the American economic and political system needs to have at least a rough overview of the way our preponderantly private enterprise, but mixed, economic system operates. By this I do not mean anything like the elaborate general equilibrium, mathematized model found in economic theory textbooks. Instead, I mean a very simple, rough picture.

One might begin with a look, first, at *the large private sector of the economy.* Consumers basically determine what is produced by the way they spend their dollars in the marketplace. Businessmen, trying to make a profit, produce the things they think consumers will buy at profitable prices, and in doing so draw labor and capital into those activities where consumer demands are strongest. In this process, workers and other owners of productive resources (land and capital) find that by and large they can earn the biggest incomes in those industries where consumer demands are strongest—that is, where they contribute most toward producing the goods and services that consumers want to buy.

In this interrelated process, market prices act as a regulator that keeps the system *producing*, for the most part, what consumers want and *paying* out incomes for the production of those goods and services. When demand goes up relative to supply, profits and prices generally rise; this both calls forth more production and temporarily pulls purchases back down toward supply when prices rise. Conversely, if demand falls, profitability declines and prices tend to fall; then businessmen and workers in these industries tend to find more attractive alternatives elsewhere. By and large, the businessmen who foresee and meet the demands of consumers most efficiently (at lowest cost) make the largest profits; those who guess wrong suffer losses.

Thus the system relies on the initiative of consumers, businessmen, workers and capitalists to look out for their own individual interests; and in the process, competition in the marketplace basically allocates resources to produce the largest quantity of wanted goods and services. Competition plays a central role, because it is competition that assures consumers of the goods and services they want at the lowest prices consistent with covering costs and reasonable profits.

The economy grows (the total amount of goods and services produced increases) when our total productive capacity grows and there is adequate money demand to buy all the goods and services that the economy can produce. The total output of the economy (gross national product) depends basically on the supply of resources (labor, capital, land, etc.), on our technology (the efficiency with which we organize our resources), and on the initiative and entrepreneurial ability of our businessmen. When we save part of our incomes and invest in more productive resources (buildings, machinery, schools, highways, and the like), this increases our productive capacity and we grow faster. But even when productive capacity grows, there must be adequate total money demand in the marketplace to buy this amount of goods and services; otherwise there will be unemployed men and machines—recession or depression. Conversely, if total money demand exceeds the production capacity of the system at substantially full employment, prices generally will rise, a phenomenon we call inflation.

Government (including federal, state and local levels) plays three major roles in our economic system.

First, government intervenes to establish rules to make the system work effectively—especially to prevent fraud, to protect contracts and to maintain reasonable competition.

Second, government participates directly in the allocation of resources through levying taxes and spending tax receipts to provide "collective" goods and services (national defense, public education, highways, general government, and the like). The public votes for these through the democratic process; generally they cannot be provided at all or as well through the private marketplace. Government taxes draw spendable income away from private consumers and businesses, and the ensuing government spending diverts resources away from producing for private uses (autos, clothing, and the like) to public goods (highways, defense, and the like). Thus the people must choose how they wish to use their resources—through millions of individual consumer and business expenditures in the marketplace or through collective decisions implemented through governments.

Third, in recent decades the federal government has intervened to help keep aggregate demand roughly in balance with the total productive capacity of the system, to avoid depressions and inflation. The total output of the economy is bought by three large groups of spenders: consumers, business firms and governments. Often private spenders spend more or less than just the right amount to buy all the goods available at high-level employment. Then government may increase or decrease its spending to achieve a better balance between total supply and total demand.

When government spends more than it currently collects in taxes, this ordinarily expands total (public plus private) expenditures. Conversely, when the government collects more in taxes than it currently spends, this commonly has a depressive effect on total spending. Thus government "surpluses" may be used to help check inflation when aggregate demand is too large, and government "deficits" may be used to help prevent depressions when aggregate spending is too small. The government also attempts to help stabilize aggregate demand through its control of the supply of money. The Federal Reserve (the nation's "central bank") may increase total spending through making it easier for banks to lend when depression threatens, and may restrict total spending when inflation threatens.

This is, of course, a drastically simplified overview of the way our economic system operates. But if the layman has at least such a minimal overview, he has

some framework within which to understand the big economic issues which face him—taxes, antitrust laws, the cost of local education, and the like.*

ACQUAINTANCE WITH BIG PROBLEMS

Unless people are aware of issues, they cannot be expected to form reasoned judgments about them. The evidence is amazing, but clear, that a large portion of the American public has little or no knowledge of even the big, front-page economic issues of our day.

For example, in 1961 nearly half of a large national sample of the voting-age public did not even know that the federal government was running a deficit—and this in spite of the fact that federal finances had been a major issue in the Presidential campaign of 1960 and continued to be front-page news during 1961. In 1948, when the Taft-Hartley controversy was at its peak, a comparable national survey showed that one-third of the voting-age public had never even heard of Taft-Hartley, and another third had no opinion on it or its contents. Local studies have repeatedly shown that many voters are unable to identify economic issues specifically placed on the ballot—for example, bond issues to finance new local schools.

Clearly, economic education must teach students and adults to be aware of some of the big issues that exist. The cliché that the American people learn all the economics they need to know from the newspapers and TV simply does not stand up under examination.

CONCEPTS AND INSTITUTIONS

The professional economist has a large tool kit of concepts, relationships, facts, and the like, which help him in his analysis of the complex economic problems we face. Which are the most fundamental of these that we ought to try to teach to everyone?

First, a negative. To spend much time teaching detailed facts is waste. We know that the human memory is very short for unused facts. A few big facts are important—some orders of magnitude on the main sectors of the economy. But most facts are better learned when they are needed. They are relatively easy to come by once one knows what facts to look for and ask about.

Second, it *is* important for everyone to be acquainted with a few of the main institutions in our economy, such as the corporation, labor unions and banks.

Third, and most important, a few simple but fundamental economic concepts can help greatly in understanding economic issues. These need not be technical, or mathematical, or even very difficult. The fundamental concepts are those of the *market,* in which buyers (*demand*) and sellers (*supply*) meet and in this meeting determine *prices; competition,* which tends to drive prices down toward cost of production, plus a reasonable profit; *interdependence* among various prices and markets so that what happens in one part of the economy has side effects on others; economic *production,* as any activity that helps to convert resources into goods and services for which consumers will pay in the market; *productivity,* the amount of production obtained from varying amounts of labor, capital and other resources; and *income* as payment for productive services rendered.

Looking at the area of growth and business cycles, central concepts are *aggregate demand*—the total demand of private consumers, private businesses and governments for goods and services; *saving* and *investment,* or *capital formation; gross national product* as the measure of the total output of the economy; *price level,* an average of many prices; *potential high-employment output* of the economy, and the notion of comparing aggregate demand with this potential maximum output to predict unemployment or inflation; *money* and its role in changing aggregate spending; the *federal budget* and the way in which it may add to or deduct from total aggregate demand; *economic growth* and its sources.

It is easy to add more concepts. But a rough grasp of only these, with the overview of the system previously outlined, can help the layman to reach reasoned judgments on many economic issues. For example, if the economist sees a surplus of a commodity in a market, say wheat, he instinctively thinks probably the price is too high—using the concepts of the market and of supply, demand and price in that market. If he sees widespread unemployment, he instinctively thinks aggregate demand is probably inadequate—using the concept of aggregate demand and comparing it with the high employment potential output of the econ-

*For a more complete statement of this type of overview, see *Economic Education in the Schools,* Report of the National Task Force on Economic Education (available from the Joint Council on Economic Education, 1212 Avenue of Americas, New York, N.Y. 10036; $1).

omy. If, in a period of prosperity, someone suggests increasing government spending (for a moon shot or more education), instinctively he thinks this is an alternative to using the resources in the private marketplace in response to consumer demands. If a "fair trade" law permits producers to prescribe a price below which their products cannot be sold, he instinctively thinks this is a restriction on price competition which will probably mean higher prices for consumers—again using the concepts of competition, supply, demand and prices in the marketplace.

These simple examples indicate how fundamental concepts can help us understand what is going on in the economy.

EXPERIENCE IN APPLYING CONCEPTS

Guided experience in applying such concepts as the above is the fourth stage in teaching minimal economic understanding.

In economics, as in most other fields, making rational choices among alternative policies on big or little issues generally involves at least four steps:

First, define the problem. What are the facts? What issues are raised? Where are we in relation to where we want to go?

Second, identify our goals or objectives, and give them some rough order of priority.

Third, look for the principal, feasible ways of attaining these objectives.

Fourth, analyze the consequences of each likely line of action, and, on the basis of this analysis, choose the one that promises to be best.

These are nothing more than the stages in a sound businessman's thinking as he makes an important decision. They are the same steps that a good physician or a good engineer follows in solving his problems. The same kind of orderly thinking also underlies rational economic choice for individuals and families. We have come full circle—back to the first lesson of economic education. How can we help people make reasoned judgments on economic issues through applying economic concepts in the framework of the overall operation of our economy?

OTHER ECONOMIC SYSTEMS

Thus far I have written entirely about the American economic system. But I believe that every informed American should have at least a general impression of how other major economic systems operate, especially communism. All economic systems face the same basic problem of using their resources most effectively in satisfying their economic needs. Most economies are mixed, neither purely private enterprise nor Communist, neither purely controlled by individual spending nor centrally directed. Moreover, most economies are continually changing in the way they make their economic decisions and carry them out. Thus a brief analysis of how a Communist system, for example that of the U.S.S.R., does operate—pointing out major differences and similarities with our system, and some of the major changes in both over recent decades—is an important part of what we should teach about economics.

IS THIS ENOUGH?

Is this amount of economic understanding enough? Clearly the answer is "no." John Doe needs to know much more if he is to deal effectively with the complexities of the economic problems he faces. But the amount of economics outlined above is feasible even for a typical high school youngster with no more than a semester or so to devote to this subject. It is obviously feasible for college students; indeed, much more can be done there. But limited as it is, this amount of economics could eliminate much of the nonsense on economic issues we hear in today's public discussions. It would not, indeed, be much. But it would be vastly more than there is today.

For those who set their sights higher, the Report of the National Task Force on Economic Education provides recommendations much like those outlined above, but more ambitious in coverage and depth.

Economics *is* a difficult subject. Economic problems *are* complex and confusing to the layman. Thus I cannot emphasize too much that what I have outlined above is intended only as a hopefully practical, bare minimum. To teach less is shocking and inexcusable. To teach much more to students going on to take multiple courses in economics in colleges and graduate schools is a sound investment, indeed.

The Professional Economist

By Leonard S. Silk

Has economics become too cloistered a profession, with a tendency to ignore the problems of the real world? Are most economists so intent on impressing their colleagues that they abdicate their responsibilities to educate the general public on economic issues? Leonard S. Silk, *Senior Editor-Economics, "Business Week," examines the professional economist's role in economic education. This article was adapted from a paper Dr. Silk delivered to the December, 1963 meeting of the American Economic Assn.*

Honest economists, including those who have and those who have not committed themselves to teaching economics to children and the general public, know that economics is a tricky subject.

The economist must deal with a myriad of information that comes to him in imprecise form. Even if he gets numbers that look clean, he knows that they are only shadows of a world that is anything but neat, precise, orderly, systematic. His normal job is to try to impose order on a disorderly mass of information. Other scientists may have to do this in the beginning of their sciences, or may have to do it at crucial turning points in their development, but thereafter they are filling in parts of an empirically solid structure, or, in the case of mathematics, of a logically consistent structure. The economist constantly works from life, in all its buzzing, blooming confusion.

Yet the economist has a secret weapon that other people do not have—economic theory. This gives him certain habits of thought that enable him to conceptualize problems that he has not seen before, or problems that seem always to confront him in a new way. Thus he is able to apply his concepts to problems that, to the noneconomist, may seem totally unrelated to one another—the strategy of conflict, the farm problem, the growth of the electronics industry, the decay of a region. Such problems challenge the economist's ability to cope with interdependence—and poor data.

The basic bits of economic theory seem simple, obvious, even trivial. Every child realizes without being taught that if a good is cheaper, he is likely to buy more of it. But what is missing for the child is the overall system, the mode of analysis, the analogies among all types of economic activities and problems. The trouble in learning economics is that you cannot understand the parts until you understand the whole, and you cannot understand the whole until you understand the parts. This is what makes economics so hard to teach others.

At Duke University, Professors Calvin Bryce Hoover and Joseph Spengler impressed upon me that economics could never be a monologue art, that the economist always needed to try his reasoning on some other economist. I think this is generally true. It probably explains why the economics profession is so strong and close a fraternity; the economic monologist is not only out of touch, but always in danger of becoming a crackpot or, less seriously, a layman, if he cannot talk, talk, talk with his brethren—or at least read, read, read from them and to them. Preferably both.

But the fraternal way that economists learn and practice their art has much to do with the failure of economists to do an effective job in educating the public.

Economists talk mostly to each other; they tend to regard the public as beyond the pale. Exclusivity exists in every profession, of course, and it is, if properly exercised, a good thing. While there is much to be said for exclusivity, since it may promote high morale and high scientific standards and values that are professional rather than worldly, it seems to me that, carried too far, exclusivity is particularly dangerous to the economics profession. It may cut economists off from the public they must serve. When economists venture to try to educate or influence the public, they usually find it hard to communicate; they discover that it is not easy to translate their learned arguments into comprehensible or convincing language.

Many economists are careless in their public utterances; they will invest endless hours of meticulous work in a journal article on some fine point of theory, and then turn around and—off the top of their heads—dictate into a machine or scribble out an argument designed to move the Congress or the general public on some vital matter of state. I have heard it said that their work in the classroom (or in preparation for the classroom) is not well or carefully done, and that the atrocious teacher who is a good researcher has no reason to doubt that he will become a full professor, but the good teacher who is not a creative researcher is wise if he leaves teaching.

The really high-prestige economist may disdain to educate students at all, particularly *high school* students. This is perhaps understandable, both because it offers little or no professional reward and because it is painful to do—since no one has yet discovered how to do it or even whether it can be done in the first place. Indeed, I think that some economists question whether teaching the public a smattering of economics is worth doing. They apparently prefer to let the public trust the professional to be right, since the client is not a true judge of the value of the professional's instruction or advice. But, in economic matters, this is particularly hard for the clients to do. For one thing, the clients have strong economic convictions—and interests—of their own. For another, it is not easy for the clients to know which professional economic tutelage automatically to trust, since there is so much conflicting professional instruction and advice. Some professions—such as medicine or law—have explicit or tacit rules against casting aspersions upon the professional competence or recommendations of colleagues. Not the economists. They frequently appear to be trying to defame one another in public. They are disputatious,within and without the cloisters, and they carry their disagreements to the public for settlement, even exaggerating them for the sake of winning personal acclaim, while failing to get across to the public their areas of substantial agreement on important matters.

Many of the disputes among economists, admittedly, are not about true matters of economic doctrine or analysis, but, particularly on important questions, stem from differences in the political, social or moral values of the disputants. I believe that it would help matters if economists made their values explicit, rather than leaving them concealed, and bending their analysis to support a value conclusion. Certainly, on this matter, the public is usually not deceived. It identifies economists as far right, conservative, middle-of-the-road, liberal or left wing, and knows that this probably (though not necessarily) affects the nature of their analysis or recommendations.

But the economist is often self-deceived, and only succeeds in lowering his own standing and that of his profession by seeking to invoke professional authority for his personal values. I believe that when values are made explicit, we shall get better analysis, not worse, and more honest policy advice.

Another problem the economics profession must face in its relations with the public at large is that too many economists (but certainly not all) seem to want to spend their time only on the fanciest kind of theoretical needlework. I suspect that the explanation for this, again, is to be found in the sociology of the economics profession and its priestly scale of values.

But this greatly reduces the ability of economists to counsel or educate the public. If economists wish to play their public role more effectively, then they will have to try to acquire something like the broad, but detailed, knowledge of public affairs and of the springs of human action of, say, a Walter Lippmann or a James Reston. These are high standards, but I suggest them as models, not minimum requirements. I might similarly have suggested that we seek to emulate such great teachers from our own field as David Hume, Adam Smith, J. M. Keynes and Joseph Schumpeter, whose greatness consisted in being students of society and not merely of economics. If, in saying this, I give offense to some able technicians, I apologize; but my aim is to attack the evils of scientism and too constricting a professionalism, which I think are spoiling economics, not to attack good and clean technical work.

How can economists best discharge their responsibility to educate the public? There are no easy answers. Certainly economists must devote more time and effort to addressing the public, less to each other. They must publish more and better books and articles for the public, lecture to the public and help to advance the cause of economic education in the schools.

The task also involves finding out much more about the process of education. What do we know of the art of teaching? What has been learned by those who have worked on the problem, and how can economists apply this to their own job? Answering such questions will require real effort, real humility—and open-mindedness. Can television, for instance, provide a means of economizing on our best teaching resources? Although the results are not yet entirely clear, it appears that the national television course, "The American Economy," has been a useful device for conveying "a broad, general understanding of economics" to a great many people.

But what are the limitations of mass teaching economics—whether through television, or newspapers and magazines, or books? How can the classroom teacher's time best be used to reinforce and go beyond what the mass media or

books can do? We need better answers to all these questions—that is to say, more good people to work on them. And we certainly need more first-rate economists to work outside the colleges—in journalism, business, government and other organizations. That is where some of the most significant educational work can and must be done.

The job of public education in economics, with all its difficulties, is far from hopeless. Economists have, in fact, done much to educate many important political leaders and members of what is now popularly or unpopularly called "The Establishment." The increasing status of the profession, as evidenced by the creation and role of the Council of Economic Advisers, as well as by the role of economists in other agencies, has blocked off Presidents and other policy makers from crackpot advice, and has made it far more difficult for Congressmen to take their cue from cranks, living or dead.

A start—I say this hopefully—has even been made with the economic education of the general public, particularly with the help of our late President. A swing toward broad support of the tax bill is now apparent. Whether economic logic has prevailed, or just the weight of the opinion makers, is, however, far from clear.

Economists cannot be content, in this democracy, to educate only the elite, and to win a point once in a while on public policy. Economists have also a critical role to play in helping to bring into being a better informed citizenry, competent to reason for itself and to act sensibly on important private and public matte rs

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The European View

By Benjamin Higgins

Why is the economic education movement a uniquely American phenomenon? Why do many European economists feel that such an effort is inappropriate in their countries? The answer, says Benjamin Higgins, *Ashbel Smith Professor of Economics at the University of Texas, lies in both the nature of the European educational system and the party discipline inherent in parliamentary government. Given rigid party discipline, there is no need to "educate" the public on every economic issue to attain a national consensus. In the U.S., in sharp contrast, passage of legislation depends on shifting Congressional coalitions which cross party lines. The need for public understanding of each issue is therefore more compelling.*

When one asks a European economist what is being done about economic education in his country, he is likely to reply by talking about the economics *of* education. The latter subject is one of great interest in Europe, with a burgeoning literature and much keen discussion. But few economists in England, France, Germany, Switzerland, Italy or Greece have heard of economic education as a matter for discussion, let alone organized campaigns.

Before one can get a meaningful reaction from Europeans to the question, one must first explain that economic education has become a serious issue in the United States; that a growing number of Americans have come to feel that in a democracy the only way to assure good economic policy is to have an economically sophisticated electorate; and that special organizations have been established to promote economic education with substantial financial backing from private and foundation sources. All of this is likely to elicit a somewhat astonished reaction from most European economists.

This article is the by-product of a six-week European trip, during which I had the opportunity to meet economists from quite a few countries. It is not the result of a survey that was either broad or deep. But the reactions of the economists to whom I spoke were so uniform that, while the sample was small, I feel reasonably confident that the picture that emerged from these conversations is an accurate representation of the real situation.

In the United Kingdom, economics has been offered as a matriculation subject since 1940. It is, in fact, the fastest growing subject at the "A" level in the secondary schools—that is, economics is increasingly popular among those secondary school students who plan to go on to a university. Economics is also available as an option for the school certificate, in the eleventh grade; but here, apparently, its popularity is less marked. One reason for the growing interest in economics as an examination to be passed for entrance to a university is—unfortunately—that it has been regarded as a "soft option" in comparison with such subjects as

mathematics, languages and natural sciences. (This fact tells us something about the way economics has been taught in the secondary schools.) It is also considered to be of some use for a career in business or accounting.

The economic education of the electorate as such, however, is left to organizations other than the school system. The BBC Third Program, for example, has carried a good deal of material on economic questions, although one might wonder just how popular these programs have been. The political parties themselves devote considerable effort to explaining to their followers their reasons for adopting certain economic policies. When an economic issue of particular importance comes up, the government itself may issue a White Paper to instruct the general public on the nature of the problem and the reasons for the government's decisions on measures to deal with it. Beyond these are a host of separate organizations that provide lectures and pamphlets on economic questions. Of particular importance among these is the Workers' Education Association, which reaches a very wide audience. The trade unions themselves provide a good deal of economic education for their own members. So do the various cooperative organizations. The Fabian Society and the Henry George Society continue to thrive.

But most of these organizations are trying to educate people in a particular viewpoint on economic issues. To a large extent they are devoted to explaining why the worker, or the landlord, or the dairy farmer should take a particular stand on the economic organization of society in general or on individual issues.

At least one British economist, who is Professor of Economics and Deputy Vice-Chancellor of one of the new "red brick" universities, thinks that this haphazard approach to economic education may have to change. Dissatisfaction with the performance of the British economy is growing, and social criticism along "affluent society" and "hidden persuaders" lines is becoming more common. There is a feeling that the economic system still is not doing what it should for the people as a whole, and that something should be done about it. There is danger, this economist thinks, of intervention in the operation of the economy for social welfare purposes, with insufficient understanding of how the economy actually works. Most British economists, however, seem to be content to continue giving formal economics training only to an intellectual elite heading for leadership positions.

In France the situation is much the same. There is a host of organizations, including high-level institutes, providing lectures and publishing pamphlets or journals and monographs on particular aspects of economics, but no general feeling that the "man in the street" needs formal training in the whole field. The government is currently concerned about mounting inflationary pressures and is conducting a TV campaign to encourage public resistance to price increases. The educational content of these programs, however, is very limited. They are less concerned with explaining the inflationary process than they are with encouraging the public to use those shops which support government policy. There is some dissatisfaction with the education system, but it does not center on economics.

In Switzerland, I was told, no one thinks of campaigning for secondary school or adult education in economics because even university training in economics is regarded as essentially useless. It is considered to be an abstract and theoretical set of speculations of no value to the practical man. It has low prestige as a field for concentration in universities and is selected by inferior students. It was suggested to me that at least until recently there has been some justification for these attitudes. In many departments of economics in Switzerland there was a very long lag between contemporary thought and what was taught in the classroom.

In West Germany the situation seems to be much the same as in France and Britain. Individual economists in positions of power, such as the Minister of Economics and the Governor of the Central Bank have been assiduous in their efforts to educate the general public of the need to support particular economic policies. There is little feeling, however, that each citizen must be provided with enough economics training to permit him to reach his own conclusions on policy matters by applying his own knowledge of the subject.

In Greece and Italy the question of economic education of the electorate scarcely arises because these countries (particularly Greece) have barely begun to train a basic cadre of professional economists for the government service, business and the universities. In the whole of Greece only 200 people are described as economists in the recent manpower survey, and of these perhaps one-quarter would be regarded as fully trained professional economists by American or English standards. As the Governor of the Bank of Greece, himself a former

professor of economics, puts it, there is not in Greece a single faculty of economics and scarcely a department of economics worthy of the name. The shortage of economists for high-level positions in the ministries and agencies concerned with policy formation—let alone well-trained journeymen economists to do the routine work of gathering and analyzing the relevant facts—is one of the major bottlenecks in Greek economic development. It will be a long time before countries in this sort of situation can think of providing economic education to the general public.

In general, then, we can see that there is much less interest in economic education in Europe than in the United States. The interesting question, however, is: "What explains the difference in viewpoint?" I pressed my informants on this question, too, and once again the replies tended to follow a common pattern.

Most of the European economists to whom I spoke felt that economic education of the electorate was probably more important in the United States than in Europe because of prevailing attitudes toward government intervention in the economy and the nature of the Constitution. In the United States, they pointed out, 19th century laissez-faire attitudes and a general suspicion of government intervention of any kind are still common. Thus it is not merely a problem of getting popular support for the "right" economic policy; it is a matter of getting enough support to permit any move at all in the economic sphere.

In Europe the voter is more inclined to trust the political party of his choice to represent his views, and does not feel the need to maintain a constant "watchdog" attitude toward all government action. There is less concern about a need to achieve a high general level of economic sophistication because one's own political party is expected to translate individual interests into effective policy and legislation. Moreover, it is suggested, even conservative parties in Europe are more frankly interventionist than the Democratic party in the United States. Faced with socialist opposition, the nonsocialist parties, when in power, are compelled to move some way toward the policy position of the socialists. With the general acceptance of the idea that the government is supposed to manage the economy and improve social welfare, there is more willingness to accept the leadership of the top politicians in one's own party, and to trust them to do the right thing on particular policy issues.

Combined with this difference in attitude is the difference between a parliamentary and a congressional system. In a parliamentary system you do not have the peculiar American phenomenon of a government having its proposals defeated and still staying in power. Nor do you have the peculiar American phenomenon of shifting combinations of members of both parties voting for and against particular legislation. Crossing the aisle is rare; party loyalty the rule. Thus any party with a clear majority or a firm coalition can always count on the legislation it proposes being passed. Consequently it is not necessary to arouse public support and pressure on the legislature on each individual major item of economic policy, as it is in the United States. Instead, each party appeals to the voters at election time asking them to support its whole economic program. Accordingly, the need for widespread economic sophistication is less.

It is also suggested by Europeans that the European school system is designed to teach people to think, rather than to provide them with facts, or set answers to particular questions, or knowledge of a "how-to" variety. The three "R's" well taught, plus some history and classics, should give a citizen the necessary intellectual capacity to reach a decision on major issues, and particularly to choose the political party best able to represent his interests.

European economists are inclined to think that the system works better this way, and that formal economics should be reserved for a small elite group which will have the general confidence of the public. A little economics, they point out, can be a very dangerous thing. You cannot really teach enough economics in high school to permit every voter to conduct his own economic analysis, and it is better for them not to try. When professional economists publicly disagree with each other on a major issue, the electorate can make their choices on general political grounds, trusting the leaders of their own party to make the best possible decision. We do not expect every voter to know enough nuclear physics to make decisions on atomic weapons; why expect him to know enough economics to make decisions on economic policy?

It cannot be said that the European approach works less well for Europe than does the United States approach for the United States. The postwar performance of the European economies has for the most part been better than that of the United States, in terms of rates of growth, unemployment, price stability, and recently even the balance of payments. The United Kingdom, it is true, has done

no better so far as rate of growth is concerned during the Fifties, and has had a somewhat greater rise in prices. But the United Kingdom has done much better on the employment front than the United States and has been subject to less violent economic fluctuations. Belgium has had slower growth, more unemployment and more inflation, but less instability. Among advanced countries, only Canada has done worse than the United States on all four counts.

European economists are inclined to attribute the inferior performance of the United States economy to inferior economic policy. Angus Madison, Assistant Director for Technical Cooperation of OECD, makes the point in forceful terms in a significant book, tentatively titled *Economic Growth in the West*, about to be published by The Twentieth Century Fund. The United States, he argues, failed even in the primary obligation of government to maintain an adequate level of effective demand. Monetary policy was used in a timid and ineffective fashion, and in comparison with European countries fiscal policy can hardly be said to have been used at all during the Fifties.

For example, in the United Kingdom there were significant tax changes in nine of the 11 annual budgets between 1950 and 1960, and six major changes in depreciation allowances. American tax rates were raised during the Korean war and lowered after, but there was no attempt to use fiscal policy to combat the 1958 or 1960 recessions. The European governments were not handicapped, as was the U.S. government, by irrational emphasis on the virtues of a balanced budget.

In the present writer's experience the most concentrated effort at economic education on the part of professional economists was the campaign in the late Thirties and early Forties to persuade the general public that a rising national debt need not be feared, and may be essential to maintenance of a high level of employment. During the war it looked as though this particular battle had been won. It is now clear that it is not. We are confronted with the peculiar phenomenon of an electorate fearful of a tax cut lest it lead to budget deficits.

It seems, therefore, that countries with no campaign for economic education get better economic policies than countries where the campaign is rampant. One should not conclude, of course, that there is a direct cause-and-effect relationship. Perhaps, as suggested above, the United States needs economic education more than European countries. But the European experience might be a reason for further reflection on the matter.

Teaching College Economics

By Richard Ruggles

There is a wide divergence of opinion on what subject matter should be emphasized in the elementary college economics course. Some argue that its primary function should be to improve the student's ability to be an intelligent citizen; others feel that the basic economics course should be handled as part of the general cultural background offered in a liberal arts college. A third view is that freshmen economics is basically a useful background subject for those entering business, law and engineering. And, finally, there are those who feel that introductory economics should be taught as a professional discipline. Richard Ruggles, *Professor of Economics at Yale University, examines the different approaches to the teaching of college economics, as well as the equally thorny problem of teaching materials.*

The teaching of economics to college undergraduates is viewed with considerable uneasiness by both students and teachers. Many of the students find themselves in the difficult position of arbitrating between the ideas they hear in the classroom and those which are established doctrine in the minds of their parents. Others find the subject dull and uninspired, full of abstractions and generalizations which do not appear to match the reality around them. The teachers, on the other hand, are plagued by the multitude of purposes which the teaching of economics is supposed to serve. Disagreements among faculty members about the major purpose of economics teaching are often responsible for considerable acrimony.

First, there are those who believe that the primary function of economics training is to improve the student's ability to function as a citizen and an individual. Proponents of this view point out that the level of economic literacy in the nation is very low. Neither voters nor legislators generally understand the

basic problems involved in economic policy making. But, it is argued, if the next generation is properly trained, economic policy will improve. While the obvious irrationality of economic decision making at the national level propels many teachers of economics to concentrate on this aspect of economic education, others, who do not feel the frustration of economic events as acutely, place more emphasis on the individual aspects of economics training for citizenship. They may give priority to instruction which will help the student spend his money wisely, invest, and cope with financial problems he may encounter.

A second view of economic education considers economics as an integral part of the general education which should be given to all students attending a liberal arts college. The basic economics course is viewed as a cultural subject much like survey courses in literature, music, history and science. For such a purpose it is appropriate to paint with a broad brush, providing a survey course which is related to other subjects but also has its own individual stamp as a separate discipline. In the more extreme cases, economics may be submerged in a general course which treats the behavioral sciences as a group, or it may be combined with political science or history.

A third point of view presents the argument that economics is basically a tool subject, useful as a background for students who are intending to go into business, law or engineering. Economics in this role serves the same function as biology is supposed to serve for pre-med students. Economics is also viewed as useful for students in related disciplines such as history and political science. From this point of view, the major function of economics teaching is to provide needed service courses for students who are primarily concerned with other professions and disciplines. Emphasis is therefore placed on providing information on how the economy functions in terms of its institutions and government regulations.

Finally, there are always a number of staff members who feel that economics should be kept pure and untainted. From this point of view, economics is a professional discipline with a body of rigorous theory which must be mastered if one is to enjoy the essence of the subject. Abstractions are not necessarily the means to this end; they are in large part the heart of the subject. Since the proponents of this view consider that it is the integrity of the discipline which is at stake, they often put up strong resistance to the service concept of economics, and even object to the presentation of institutional material or to any orientation of an applied nature. Instead attention is focused on the type of material which a Ph.D. candidate in economics is expected to master.

The content of economics as taught to undergraduates reflects these divergent objectives. The major exposure of college students to economics comes, of course, in the basic elementary course. Typically, 50 to 75 per cent of undergraduates take the elementary course in economics. No more than 10 to 15 per cent of these become economics majors. And no more than two to three per cent of economics majors go on to graduate training in economics. Thus the number of potential professional economists is a very minute percentage of those taking the elementary course, yet in many ways at many institutions the course is created for these few.

At the major universities which offer graduate training in economics, the elementary course is often taught by graduate assistants. These graduate assistants are aspiring to be professional economists, and they have a tendency to wish that their students shared these aspirations. In fact, the pride and joy of a teacher is a student who wishes to be just like that teacher, and in a profession where theory, abstraction and a high degree of specialization are status symbols, the results for the teaching curriculum are obvious. The energy and enthusiasm of graduate assistants is often very great, and they are anxious to impart to the students the full kit of abstract tools which they themselves have so recently mastered. The course must also serve all the other purposes.

It must present a wide range of contemporary economic policy issues and information about major economic institutions. It must provide a comprehensive survey of economics for that large body of undergraduates who will never take any more courses in the area. It must also equip the student who expects to major in the field of economics with the tools he will need for more advanced courses. In most institutions the elementary course is a prerequisite for all other courses in economics, and it is expected that higher level courses will build on the foundation of the elementary course. The result of all of these pressures is to produce a jumbled polyglot of topics which are jammed into an incredibly short span of time. The major benefactors of these basic courses are those who teach them, since they are forced to master and digest an enormous amount of material before they can present it. In fact, a graduate student's training is not complete until he has taught the elementary course.

At institutions which do not have graduate students, elementary economics may be quite a different subject. The content of the course will depend a great deal upon the individual teacher. Where the course is taught by someone just out of graduate school, he will tend to behave like his recent colleagues, the graduate assistants, and in these cases he will face many of the same problems. In some institutions, however, the course may revolve around such practical matters as how the stock market operates and the problems of family finance. In other instances, the elementary course may be a propaganda piece on how well the free enterprise system operates and how all problems would be solved if we left everything to the invisible hand as described by Adam Smith.

Economics courses beyond the elementary level at almost all schools are generally considered the domain of senior faculty members, whether or not they are equipped to teach them. Every professor regards the course he teaches as his own private property and does not take kindly to suggestions by his colleagues. Rightly or wrongly, he considers himself the authority on the subject he teaches. If, for any reason, the course must be taught by someone else, as for instance when the regular teacher goes on leave, it is usually found that the same course differs considerably in scope, orientation and content.

Thus, for example, a course on money and banking taught by one instructor may cover a body of material on banking institutions, banking practices, problems of credit, and the money supply. Another instructor teaching the same course may disregard such material entirely and cover instead problems of employment, prices and output, with heavy accent on fiscal policy and income analysis. As a result, it is often necessary to supply the name of the instructor as well as the name of the course in order to understand what training a student has had.

Teaching materials probably play an even more important role in economic education than do teachers. Many students can educate themselves if they are assigned good texts and readings, even though their teachers are mediocre or poor, but it is difficult for even the best teacher to provide a good course in the absence of good teaching materials.

Unfortunately, teaching materials are normally produced as a by-product of academic life, with a mere fraction of the total resources devoted to the educational process. In a course of 20 or 30 students, instructional costs amount to about $100 to $200 per student, but the total cost of teaching materials will rarely be more than $10 to $20—and most of that goes to the paper and printing industries, not to the more intellectual factors of production. Authors usually receive 10 to 15 per cent of the total amount spent on teaching materials, or approximately one per cent of the total teaching cost for the course as a whole. The preparation of teaching materials, furthermore, is never considered a full-time job. There is a mass of material produced, but most of it is developed on the side—a kind of moonlighting activity. The fact that textbook writing often attracts the best talent in the profession is due to the existence of relatively high returns for those few who can turn out successful texts. But even the best talents could do a much better job if textbook writing were not just a spare-time activity.

Textbooks, like platforms of political parties try to be all things to all people. They are designed to cover a multitude of purposes, and try to echo the most widely accepted doctrines in a manner that will offend no one. Teachers are supposed to pick and choose what they want to use, rearranging and adding. The resulting mixture is often an ill-adapted set of disjointed and heterogeneous readings, and much of the potentiality for a consistent and cumulative body of teaching material is lost. In some fields, notably physics and mathematics, there are indications that the profession is sufficiently concerned about this problem to provide an organized effort to improve the quality of teaching materials. In economics, however, the development of teaching materials still depends upon the invisible hand.

It is quite possible that a different mix of the factors of production and some innovations in the teaching process could be introduced which would greatly improve teaching effectiveness and provide a greater feedback in terms of the advancement of the subject itself. At the present time, it is not feasible for textbook writers to undertake major efforts to fill in gaps in knowledge. Economics texts rely heavily on causal empiricism and reasoning by analogy; their major effort is devoted to organizing and presenting existing knowledge. But the preparation of good teaching materials should involve devoting substantial resources to those problem areas to which adequate attention has not yet been given.

The dynamic factors which economics relies upon to explain productivity growth in other sectors of the economy, such as specialization, division of labor and the development of new techniques, are all sadly lacking in the preparation of the

discipline's own teaching materials, and production is essentially still a handicraft process.

There is no obvious solution to this problem, but one thing is certain: the present industrial organization of the teaching profession does not readily foster the kinds of approaches which are capable of yielding a solution.

It is very difficult to evaluate the impact of college level economics courses. In terms of the prevailing views on major economic policies, it would appear that the economic and political temper of the times is a more important factor than the level of intellectual enlightenment. A recession accompanied by substantial unemployment or a major threat to a nation's security will be quite effective in making both voters and legislators doubt the validity and meaningfulness of traditional balanced budget precepts. But in a prosperous peacetime economy, these doubts evaporate, and college graduates who once were exposed to economics but who are now a part of the business community echo the "sound" doctrines around them, despite the fact that such doctrines would result in slower growth, smaller profits and future recessions.

Despite the obvious shortcomings of confused objectives and inadequate resources devoted to the preparation of teaching materials, economic education nevertheless does progress. Much of this progress is due to the development of the subject itself. From this point of view the future holds considerable promise.

With the introduction of electronic data processing and the development of statistical techniques, economists are now able to formulate and test hypotheses in a manner which has not heretofore been possible. Up to now economics has been an armchair discipline, depending mainly on logical reasoning and causal empiricism. Perhaps in the near future it can evolve into the social science it claims to be. Then and only then can the teaching of economics reach its true potential.

Teaching High School Economics

By Albert Alexander

One of the most vexing areas in economic education has been the content of the high school economics course. Only in recent years, through the economic education movement, has there been any progress in coming to grips with the three key problems: (1) defining the subject area, (2) better preparation for teachers, and (3) improved learning materials. "Success or failure will ultimately depend on the extent of the educator's demand for more economics and the number of economists willing to help provide the product," says Albert Alexander, *Executive Secretary of the New York City Council on Economic Education.*

The wayward child called high school economics is the product of the difficult parent named introductory college economics. For it was the collegiate course, with its jumble of cross purposes and catchall contents, that fathered the secondary school study of economics. In the intervening years there has been relatively little communication between parent and offspring. Only in post-World War II years have the forces of reform—the economic education movement—started to rehabilitate the delinquent by giving some attention to his real and unique needs. These needs relate to defining the subject area, better preparation for teachers and improved learning materials.

From its introduction (as political economy) into the high school curriculum in the late 19th century, and through its 20th-century vicissitudes as (1) a diluted principles course, or (2) consumer economics, or (3) economic history, or (4) a kind of economic citizenship study, economics has scarcely been a "popular" subject. During the past 35 years enrollment in economics courses in secondary schools has seldom risen above five per cent of the student body. Fifteen years ago, when the reform movement started, the percentage had dropped to less than four per cent. While the curve of general enthusiasm for economic understanding has undoubtedly soared during these past years, the chart of total student enrollment reveals many signs of a slow upturn at best.

Admonitions and exhortations concerning our national economic illiteracy have assailed the 50 state school systems from metropolis to hamlet. Yet, what is the net result of this "big drive" in terms of high school enlistments?

In a recent survey of 130 large city school systems, the Joint Council on Economic Education ascertained that only 25 have a *required* course in economics, while 64 give an *elective* course. Oddly enough, two-thirds of the required courses

were being offered by small school systems. That elective courses, generally speaking, have poor drawing power can be deduced from the situation in New Jersey, where 60 per cent of the high schools *offer* a course in economics, but only 7.8 per cent of the student body *takes* the course. Perhaps this latter situation is just another way of pointing up the *malaise* of high school economics.

Probably the greatest problem with the high school economics course concerns *content*. No consensus has evolved on what topics can and should be included in a one-semester course. The greatest need still remains to translate the abstract, theoretical college economics into concrete terms recognizable by the varied levels of high school ability. As one critic stated the problem in a recent issue of the *American Economic Review*, "Assuming economists can agree on the basic intellectual structure of their discipline, the truly exciting challenge for the economist is to discover ways of revamping this structure so that it can be made interesting and understandable to students at various grade levels."

Encyclopedic coverage still remains the great weakness of the high school course, as it does in the college principles course. There is, however, an important difference. Today's principles course, with all its overstuffed weakness, is firmly geared to the new economics. An attempt is made to communicate the unity of economics and to develop an understanding of "an impoverished humanity, driven to ease its material condition but hampered from doing so by its own shortcomings. . . ." Unfortunately, while the secondary school counterpart has assembled some of the newer economics, it is often jumbled in a curriculum frame of classical proportions. The resultant design is frequently one of uncorrelated and unconnected details. Assorted topics are strung together, but lead nowhere. The fiction which the student brings to his class is perpetuated by the fragmented picture of the economy that emerges.

If these difficulties abound for the economics course, what shall we say about economic understanding in other high school courses like United States history, problems of democracy, world history and business education, to select the more obvious ones? On the premise that you must know *more* in order to simplify, it would seem that economic content, which certainly abounds in these subjects, will scarcely receive the required analytical treatment from inadequately trained teachers. History and problems courses remain firmly oriented to historical approaches. In the case of business education, its practitioners frequently have commendable course requirements in economics, but overspecialization has narrowed their vision to tree rather than forest observation.

It is highly problematical, therefore, given present conditions, that much can be accomplished in the way of using these courses to foster a "rational, objective way of thinking about economics." Economic understanding can and should be stressed whenever possible and wherever needed. But the real burden of fostering economic literacy belongs to the economics course. It is difficult to imagine that the fundamental economic analysis desired by the National Task Force on Economic Education, appointed by the American Economic Association, can emerge other than through some intellectual structuring of the discipline—in short, a course in high school economics.

How can the high school course be improved? First of all, the professional economist must be brought in to work *with* the secondary practitioner. Secondly, the aim of the course should clearly be the inculcation of a good reading knowledge of economics within a liberal arts framework. Aristotle's observations still have pertinence here: "Every systematic science, the humblest and noblest alike, seems to admit of two kinds of proficiency, one which may properly be called scientific knowledge of the subject, while the other is a kind of educational acquaintance with it." The latter proficiency should be the objective of the high school economics course. When the British weekly *The Economist* was founded 120 years ago, the name meant a pragmatist and not a specialist in economics.

This obviously means that a consensus must be reached between economists and educators as to topics to be included. Too much must not be tried. In order to be effective, sound psychological and pedagogical experiences must be followed. Economic concepts should fall within the common sense purview of students, using their basic experiences. Courses must be adapted for slow leaners who struggle toward terminal goals, as well as for bright and average college-bound students.

It must be recognized that professional economists have difficulty in bridging the gap to the lowlier terrain of economic education. They operate from a narrower base of self-motivation. They frequently lack adequate preparation in the related social science disciplines, and speak and write in a type of shorthand and devise charts and graphs not readily transcribed for use by "common folk." For the necessary work with school systems, economists must emerge from behind their

screen of rigor, theory, analysis and what has been called "dialectical immaterialism." They must adapt or modify their thinking, which is conditioned by the technical apparatus of geometric designs, a stylized kit of tools—and by a desire to be "recognized" by fellow economists.

The report of the National Task Force, its valued contributions notwithstanding, simply did not take into account the great ignorance about economics of the vast majority of students. It also, in effect, sacrificed economic institutions, descriptive approaches and personal economics at the altar of principles and analysis. In this respect it overlooked some simple motivational truths and the necessity to capitalize on a combination of approaches.

The troubles of economic education cannot, however, be laid at the door of the professional economist alone. In order to accomplish the goals of course improvement, we need a secondary school teaching staff with greater competency in economics. Sad to relate, most social studies teachers are afraid to teach economics. When confronted with the need to emphasize or even adopt analytical economics, the average secondary school teacher is hopelessly at sea. In too many cases he is a product of the lack of communication between his group and that of the professional. Just as many students shy away from the level of abstraction demanded in economics, so do some of their teachers!

Graduate courses in economic theory, regardless of their merit, provide little or no help for most basic teacher needs at the secondary level. Special economics courses are needed for those who will become *economic educators* rather than *economists*. Assuming that the teacher had a "good course" in elementary economics, the time lapse would still be a minimum of three to four years before he assumed teaching duties. At present, three Midwestern universities provide programs at the masters or doctoral level leading to degrees in economic education. Many more colleges and universities must enlist in programs of this type. They must also indicate a greater willingness to "tailor" economics courses, within the context of the discipline, to the curriculum needs of teachers.

In-service courses, specialized workshops and the unique TV course, "The American Economy," have proved in many cases to be valuable adjuncts to the education of teachers. The overwhelming need, however, is for collegiate economics programs designed specifically for prospective teachers. Similar programs, and the necessary financial arrangements, must also be undertaken for teachers already in service.

Above all, state requirements in economics for teacher certification in social studies and business education should insist on a minimum of six hours, if not more. In the past four years the number of states, mandating economics for these subject areas increased from eight to 22. The State of New York, on the other hand, failed to require economics for certification, and New York City in 1963 moved into line by eliminating its own long-time requirement of three hours in economics for social studies teachers. And this despite the fact that for 60 years economics has been a required course *for students!*

Curiously enough, of the three problem areas—curriculum, teacher training and materials—the economist offers most immediate guidance in the realm of materials. For one thing, a lively style (in spite of overly theoretical and mathematical constraints) is now almost a prerequisite for a college text in introductory economics. Gradually, through these improved texts, a consensus on topics is emerging. Once the block against reading a college text is removed, the high school teacher can acquire considerable self-education from these sources.

Also, thanks to a Materials Evaluation Committee composed of economists and educators, excellent guidelines have been established for the writing of supplementary materials for high school use. These materials have steadily improved in the past few years, and more can be expected of them in the near future. Economists, however, are generally agreed that most high school social studies textbooks fail to develop in students the sense to know economic "truth" when they find it. The criteria for effective economics texts, as stated by a textbook study committee of the American Economic Association, can be paraphrased as follows:

Textbook treatments must contribute to the development of informed citizens. Orientation should follow the "economics of society" rather than sole dependence on individual problems. Vital matters, including those of a controversial nature, must be emphasized. The nature of value judgments must be explained. An idea of change must be conveyed. Discussions must be essentially analytical and include adequate factual and descriptive material. Factual and analytical errors should be minimal.

Attempts to stimulate interest in the textbooks have resulted in greater readability, clarity and attractiveness. Economics texts, however, still draw critical

fire for their inclusion of unimportant and jumbled topics, for their lack of purpose, their failure to explain "economic" behavior and to provide conceptual frameworks and analyses for their overly descriptive pages. Textbook authors too frequently practice the elaborate *sic et non* for controversial issues which assures every dogma its day.

The goal in economics textbooks remains the selection of fewer topics that have more contemporary and persistent significance within the framework of limited objectives. This should be undertaken with the active collaboration of economists.

Thanks to the good work of those active in the economic education movement, teachers, economists and community groups have been aroused to the need for active participation in an objective program. The promotional phase is now over. Almost everyone who is likely to be interested now knows that more should be done with economics. What lies ahead for the high schools is the more difficult era of implementation and experimentation in order to determine course content, to insure adequate teacher preparation and to seek improved materials. Success or failure will ultimately depend on the extent of the educator's demand for more economics and the number of economists willing to help provide the product.

The Businessman's Interest

(By Alfred C. Neal)

Why should businessmen be interested in economic education and how can they properly evince this interest? Alfred C. Neal, President of the Committee for Economic Development, believes that the businessman has a definite role to play in supporting academically acceptable economic education. In fact, hundreds of firms have contributed to this effort without in any way attempting to control its content. "Objectivity in economic education," says Dr. Neal, "is clearly a watershed issue in the business community."

Businessmen are probably in closer agreement about the need to teach more economics in our schools than about almost anything else relating to education. Individually and through their various associations businessmen have been giving increasing attention and support to economic education. Why this singular interest in a particular aspect of the school curriculum?

When asked this question, business leaders give answers ranging from the selfish to the philosophical. Most of the answers evidence serious, thoughtful study.

The selfish-interest answer is simply that business wants to operate at a profit and wants the public to understand that profit, far from being a bad word, is a good measure of business performance in the public interest. Freedom from too much regulation, taxation or pressure is essential to attaining satisfactory profits. Given sufficient freedom, business is confident of its ability to perform and to turn in a good record of profits.

The philosophical argument for economic education advanced by many businessmen is based upon the inseparability of political and economic freedom. Just as political freedom depends upon the right of the citizen to have a voice in the affairs of government—free of coercion and of the distortions of control—so economic freedom depends upon decentralization of economic power, and particularly upon the free choice of millions of economic decision makers. Concentration of economic power in the hands of government, business, labor or other organizations may give one group so much control over the livelihood of so many people that it may be able to impair the exercise of political rights.

Both the selfish and philosophical reasons represent attempts to express something that is not easy to articulate. Our economic system depends upon enterprisers to maximize output per unit of resources, improve products and develop new products. To perform these functions, enterprisers need a very large degree of freedom to make decisions. The power of government and of organized groups imposes constraints which often inhibit or control decision-making freedom. Examples of such constraints are not difficult to find.

Excessive taxation of business profits can deprive business of the investment funds needed to develop more efficient production processes, or to improve products or introduce new ones.

Excessive pressures by unions for wage increases or for job security can inhibit change, or at least squeeze down funds needed for investment.

Excessive market power of some producers can inhibit others from experimenting with lower prices or new sales efforts.

Impairing the freedom of businessmen to decide how the resources at their command can best be used not only frustrates management's capacity to do its job well, but deprives society of economic growth and improvement of living standards.

Too many or too severe restaints upon the enterpriser's capacity to maximize and improve output could lead to public dissatisfaction with the economic system, which would then be followed by strong pressures for radical change. This is perhaps the ultimate reason for the interest of business in economic education: a desire to preserve an economic system which has produced a measurably higher average standard of living than any other system yet tried.

This final reason is the more compelling in this period of history. The Soviet system is dedicated to overtaking the competitive enterprise (capitalist) system of the West not only by the usual subversion but by outproducing it. Businessmen welcome the challenge to produce. But by the same token they foresee a need for a more widespread voluntary dedication to our own relatively free economy in order to offset the inculcated dedication of the Soviet citizen to his more highly disciplined system.

With some minor exceptions, until the last decade businessmen were fairly well content to leave education to educators. This course had been, and still is, urged upon them by educators; indeed, the strongest movements for improving economic education in the schools have been led by educators with very little direction or influence from business. Why, then, should promotion of economic education in the schools have become a primary concern of business leadership?

A simple answer to that question can be found in the surveys of the public's understanding of economics as well as in the amount of economics being taught in the schools. The schools have not been doing a good job of educating their students in economics. About one high school graduate in 20 has been getting any instruction in economics worthy of the name. The most widely used textbooks in social studies have been condemned by a textbook study committee of the American Economic Association as wholly inadequate to the task of preparing the student "to cope understandingly with most problems of economic public policy." Consequently, in the words of the Secretary of Commerce, we have become a nation of "economic boobs." Some schools have been teaching bad economics or teaching economics badly. But most schools have been teaching hardly any economics at all. While some schools have been doing a good job, their number is not large.

In no small measure the failure to introduce economics into the schools has been the fault of the academic economists and their colleagues in the other social sciences in the colleges and universities. There has been a proliferation of specialization in the universities in the various divisions of history, political science, anthropology, sociology, humanities, archaeology, business administration and, finally, economics. There is simply no room in the high school curriculum for instruction in each of these disciplines; yet the social studies teacher in the high school is expected to use an amalgam of them in the social studies courses. With exceptions, teachers teach what they have been taught (as improved by further study, workshops, etc.). But the university social scientist, with rare exceptions, teaches his specialty in a way which cannot be transferred downstream.

Economists, in particular, have insisted upon a unitary approach to their subject which, regretfully, became increasingly arid as it attempted to become more "scientific." It has been left to the poorly prepared social studies teacher to work out ways of introducing economics into history and other courses taught in the high schools, and most of them have enough trouble already without taking on this problem.

Happily, in the last few years academic economists have overcome their stuffy and indifferent attitude toward the schools. Encouraged by the American Economic Association, they have begun to work actively with teachers to enrich the social studies curriculum of the high schools by introducing a minimum number of economic concepts.

Educational shortcomings are only partly to blame for the sad state of economic educatiou. To some extent, neglect of economics is the price of successful performance of our economic system. The rapid growth of the economy, the wide diffusion of its benefits and the high income level which supports universal education have all contributed to a tendency to take the economic system for granted. (The working of the economy called for no more understanding than the motor in one's car!)

To some extent, too, the failure of the schools to give adequate education in economics is the result of the fumbling efforts of business itself to get them to do so. Many of the earlier efforts, and too many of the efforts being made today, reflect either narrow self-interest or a doctrinaire point of view. Many business groups have not limited themselves to urging that the schools introduce instruction in economics; instead they have urged that instruction be given in the virtues of thrift, or the benefits of consumer credit, or the desirability of a gold standard, or the iniquity of increased government expenditures, or some other "package deal" backed by more money than good judgment.

If business is dissatisfied with laissez faire in economic education, then it must make some effort to express what it wants. Does business want some particular kind of economics taught in the schools? It is at this point that I shall have to make a distinction between business in general and business leadership.

The leading figures in American business have so often demonstrated their support of academically acceptable education in economics that there is very little doubt as to where they stand. More than a hundred companies supported the 'College of the Air" TV course in economics without preview or any attempt to control its content, and the number could have been multiplied had more companies been asked. Several hundred companies have supported economic education workshops for teachers on the same basis. Hundreds more give general support to colleges and universities.

At the other extreme is the view expressed by an indignant business correspondent who wrote: "I am tired of supporting an objective approach to economic problems and thereby advancing communism."

Objectivity in economic education, as opposed to indoctrination, is clearly a watershed issue in the business community. Should students be indoctrinated with the virtues of our competitive enterprise system and the beneficence of profits? Or should they simply study how our system works, the strengths along with the weaknesses? The majority of the business leadership group would probably agree with the statement of the head of a large utility: "The approach to economic education should be an objective one—not oriented toward any particular philosophy. The purpose should not be to show any student what philosophy to embrace, but to enable him to determine what is likely to be the course of events under any given set of circumstances. In any course of training, we should assume that the youth of our country is able to think for itself."

Thus the leadership group would agree with the American Economic Association's Task Force on Economic Education that the most important step toward understanding in economics is the "replacement of emotional, unreasoned judgments by objective, rational analysis."

One needs only to scratch the surface of business-financed literature directed at the schools to discover a range of divergent views on this issue. Business has a wide choice of the kind of economics it can support. In the long run, I think it will be wasting money to the extent that it departs from the assumption that "the youth of our country is able to think for itself." If a certain amount of indoctrination is deemed necessary, this might better be carried on within the company, where it can be done openly as a matter of company policy. The public schools must serve all of society, not merely a few companies.

Closely related to the watershed issue of objectivity is the question of whether economic analysis should be premised on ethical or political values, the most important of which is individual freedom. A great part of a perfectly valid body of economic analysis can be carried on without explicit allegiance to these values. Businessmen, regardless of the school of economics to which they might subscribe, are generally agreed that understanding of a value system, which gives priority to individual freedom, should be an explicit part of the economics that is taught in the schools. Many economists and teachers would perhaps prefer that the student draw his own conclusion about the priority given to individual freedom in different economic systems.

While businessmen would agree that a knowledge of competing economic systems is essential, they would not leave to chance or imagination the recognition and emphasis of individual freedom as a cornerstone of our economic system. My own experience leads me to share this view. The pre-eminent position of individual freedom in economic philosophy and policy in the American economy distinguishes it not only from nonliberal economies, but even from the economies of Western Europe and Japan. The American system cannot be properly understood, nor can many of our differences with other advanced countries, without an appreciation of the emphasis upon individualism in the American economy.

Another issue which divides businessmen and educators alike is the relative importance of personal and business economics in a program of economic educa-

tion. The allergy of the professional educator and the economist to personal and business economics probably reflects as much as anything else the earlier attempts by business to foist off as "economics" some descriptive material about business. Actually what is involved here is a pedagogical question: Can many of the important economic concepts be better taught as a part of personal and business economics than in some other way? If economics is going to be introduced at the lower grades, it will probably have to be tied into the behavior of the family and the firm. Because the disagreement is largely about pedagogy, I am content to let the economists and educators work it out.

Probably the largest area of disagreement between business leaders and academicians relates to the role of government in the economy. What is involved here is not a single, well-defined issue, but a concatenation of them. Moreover, issues in this field are not purely economic; the economist may often carry credentials no better than those of other knowledgeable people.

One group of questions relates to how the minimum functions of government (defense, education, public safety, sanitation, fire, etc.) shall be financed. Economists themselves disagree about the effects of heavier reliance on direct or indirect taxes, but are disposed toward more progression in the tax system than are business leaders. They tend also to lean more toward federal than to state and local government performance of many governmental functions than do businessmen. Neither business leaders nor economists consider these to be settled questions.

Another set of questions relates to the role of government as a stabilizing influence on the economy. On these questions the academic economist and the business *leader* are not very far apart, but both are in trouble with probably the majority of businessmen on the use of government fiscal and monetary policies for stabilizing the economy and promoting growth. CED's well-supported recommendation of a stabilizing budget policy and a flexible monetary policy, while pursued in practice by Democratic and Republican Administrations alike, is still subject to some contention in business circles. Much of the argument is probably based on misunderstanding. The majority of the opponents of a stabilizing budget policy probably think it means increasing government appropriations (e.g. on public works) to combat recessions.

Probably the most difficult question of all in this field has to do with the scope of the public sector—the desirability of new or additional programs requiring increased government spending, such as federal aid to education. If on such questions the businessman has a bias, it can be said with equal truth that the educator also has a bias.

Most educators are public servants supported by government. They deeply believe in the value of their educational services and many believe that they are underpaid. While the businessman may have difficulty being completely objective about new or higher taxes, the educator, be he an economist or otherwise, has difficulty being unbiased about government expenditures for education, research and related activities.

It is unfortunate that the analytical tools developed by economists for dealing with questions involving the size and scope of the public sector lack the precision required to give students a well-defined basis for arriving at sound judgments on economic grounds. But it may well be that economic analysis alone does not provide the entire basis for better decisions on many issues. Deep philosophical and political issues may be involved, not the least of them being the matter of individual freedom. As long as the economist recognizes this and presents problems in this area as problems, business leadership will have very little quarrel with him.

It should be clear by now that business has a legitimate interest in economic education. Business leaders are firmly committed to an educational process that will produce understanding of how our economic system works and a "way of thinking" about economic problems that will, before too long, lead to better decisions. Educators and economists in increasing numbers share this interest. Differences of opinion on some issues are not important enough to keep them from joining forces to increase the economic literacy of Americans.

The View of Organized Labor

By Ben B. Seligman

The teaching of economics in our high schools is both woefully inadequate and highly biased, says Ben B. Seligman, *Director of Education and Research, Retail Clerks International Association. The point of view of business is imparted to the students in the guise of "universal wisdom," while the views of labor unions are either ignored or distorted. Yet we must and can "teach economics in a way which allows for divergent points of view" if students are to understand the mechanics of our economic system and the important role of organized labor in a free society. We could, for example, remove economics from the grab bag called social studies and teach it as a subject in its own right.*

Why do unions complain so much about the manner in which economics is taught in our schools? The primary reason is that the standard economics courses offer a highly biased view of the labor movement. Labor's dissatisfaction is also aroused by the fact that high school graduates entering the ranks of unions have little or no understanding of the function of organized labor in our complex society. Even a cursory review of the current state of economic education occasions considerable dismay.

Labor's interest in education is of long standing. As far back as the 1830's labor organizations campaigned for the immediate expansion of educational facilities. A free, tax-supported school system existed at that time only in certain regions of New England. The agitation of organized labor for equal educational opportunities spearheaded the drive for the kind of school system which later developed in this country.

As John R. Commons reported in his monumental history of labor: "Wherever the working men organized . . . public education was their first and foremost demand." Invariably the cry was for "republican education"—a phrase that bore a different connotation in the pre-Civil War days—an education that would strengthen democratic institutions and democratic society.

Trade unions have always considered themselves an integral part of the democratic society, not merely an appendage which enjoys certain rights on sufferance. But, regrettably, economic education today barely recognizes the legitimate role of labor unions in a free society. At best, unions are regarded as barnacles attached to the underside of a freewheeling competitive society. At worst, they are a cancerous growth to be removed from the body politic.

Is the description exaggerated? Let us consider one example of "good economics teaching" described in a recent study of the Kazanjian Foundation, published by the Joint Council on Economic Education. In a class consisting predominantly of Negroes and Puerto Ricans, virtually all of whom would undoubtedly have some contact with trade unions during their working lives, the students were encouraged to believe that labor unions throw "monkey wrenches" into the "wheels of prosperity."

The teacher proudly reported that his class discussed how the growing insistence of unions on a bigger slice of the income pie impeded the "plowing back of profits." Further, the students were taught that union funds "are not derived mostly from union dues, but come in large measure from company income channeled in by way of employer 'contributions' as required by contracts with the unions." Is it surprising, then, that unions consider that economics courses in many schools impart highly biased information.

Unfortunately, such erroneous teaching is difficult to counteract. Prof. Robert Doherty of Cornell University, who recently surveyed a cross section of high school economics courses, suggests that the situation described above is the rule rather than the exception. The textbooks either say nothing about the workers and their organizations or are woefully incomplete.

Authors of texts appear excessively cautious or display simple-minded notions about unions and their problems. Labor is depicted in most texts as a disturber of the peace, concerned primarily with promoting violence and strikes. Seldom if ever is it pointed out that time lost due to strikes constitutes less than one-tenth of one per cent of all working time, or that industrial conflicts are usually resolved by peaceful collective bargaining. Prof. Doherty further mentions that a great many teachers derive most of their information from the daily press, which is without doubt the poorest source for factual economic information.

The influx of special interest materials flowing from Chambers of Commerce and trade associations only aggravates the situation. I have before me one such

propaganda tract sponsored by a group of utilities—companies that have flooded the classrooms with all sorts of booklets and pamphlets. Heading the list of topics in this tract is something called the "free enterprise system." As Prof. Daniel Fusfeld of the University of Michigan has pointed out in the December, 1963 issue of CHALLENGE ("Economic Education—or Indoctrination?"), one is never quite sure what the term "free enterprise" means. In any case, it suggests that government participation in economic affairs is bad. Perhaps the utilities would like to abolish public rate control agencies. Of course, they never quite say this, but such an attitude is fostered by them.

The irony is that the high school student subjected to this sort of propaganda will in all probability himself become a worker. As a worker he will want to live in a thriving society and will expect the government to exercise its legitimate responsibilities in keeping the economy viable. But as a student he will have been taught the fiction of laissez faire. And what a fiction it is!

Somehow the story of tariffs, land grants, farm subsidies, public works, credit controls and monetary management is told, if at all, in an utterly sterile fashion, devoid of the vibrant clash of interests that makes economics such an important and exciting subject. The vapid character of economics teaching today merely conveys a sense of complacency about the failures of the classical market; it does not tell students that many observers have reasonable doubts about the effectiveness of the laissez-faire dream.

Economics is a controversial subject because it deals with human attitudes and aspirations. The objectives and goals of different people may conflict and frequently arouse deep-rooted emotional responses. Even the analytical side of economics can stir a heated debate, as, for instance, the wrangle over the causes of unemployment. Surely economic education must admit the existence of divergent views.

We do not impart knowledge by evading issues, by not mentioning the word "unions" in silk stocking schools or the word "management" in factory districts. It is damaging enough to insulate the student from contesting viewpoints in economics. But to present only one, slanted approach under the guise of universal wisdom merely serves to inculcate a distorted view in the minds of youth and denies to students their right to know. The result is indoctrination worthy only of contempt.

The experience of Prof. Fusfeld may be brought to bear on the problems of economic education. He has found that students have been reared mainly on conservative sermons: free enterprise means democracy; government intervention means socialism; inflation is destructive; the federal budget must be balanced; money should be backed by gold; automation will create more jobs. As Fusfeld commented wryly, this is folklore, not economics.

In one social studies class that I observed last year, tensions within a society and between nations were compared to liver ailments in the human body, requiring only magic pills to restore perpetual harmony. Such analogies are not merely false; they give the student an utterly distorted view of the social and economic structure. Worse still, since labor unions are usually blamed for starting all the trouble, they are regarded as microbes which cause disease. Thus a myth-ridden ideological folklore sustains a blinding bias.

Is it too much to ask that the teaching of economics in schools be relevant to the lives of the students and their families? Since so large a proportion of students will be working for a livelihood, shouldn't they learn that a collective bargaining agreement establishes on-the-job rules, spells out work relationships, provides for grievance and arbitration machinery—in short, is something more than a lever for moving up wages?

Ought not students be aware that unions *are* concerned with minimum wage legislation and social security and community services and foreign aid—in short that their vision is just a bit broader than the mere concern with "employer contributions required by contracts"? And beyond these elementary considerations, should not students learn something of the broader economic issues that will affect their futures—"full" employment, economic growth, taxes, housing, government spending and prices?

Frankly, I have little patience with people who say that high school students cannot be taught these supposedly abstruse concepts or that it is too difficult to counteract the prevailing folklore. I remember years ago witnessing a lesson on housing. To start with, the teacher was thoroughly familiar with the subject. He motivated the students by asking them to describe the kind of home they would build if unlimited funds were available. The tantalizing thought led to an animated discussion of the kinds of housing that could be built. The problems of

providing decent homes flowed naturally out of the pro-and-con arguments offered by the students. I could not help feeling that they left the classroom with some sense of the concreteness of economic problems.

But this happened in bygone days, when economics was taught in high schools as a subject in its own right, and the teachers, by and large, had been trained in economics. Then the "Problems of Democracy" people and the history teachers took over and squeezed economics out of the curriculum. It was absorbed into "social studies," a grab bag of items drawn from the news summaries of Sunday supplements. A disinterest in economics was transmitted from teacher to student.

Even worse, the teacher forgot how to teach the little he knew about economics, as genuine instruction was displaced by panel discussions modeled upon television's "What's My Line?" The passive transfer of ideological tidbits supplied by the Chamber of Commerce became a substitute for a lively relationship between teacher and student.

Given the gaps in understanding and the absence of the broad-mindedness so necessary in the teaching of economics, the vacuum has been filled by traditional notions dribbling down from newspapers and such journals as *Time*, *Life* and *The National Review*. Economics quickly degenerated into a parade of dull definitions of money and pat descriptions of the Federal Reserve System which have served as classroom soporifics.

The situation is not much better at the university level. I became convinced of this while attending a session on wages, prices and employment conducted by a professor at a Midwestern university. The competitive marginal productivity model was offered as the last word in economic science. Naturally the audience could only conclude that an increase in wages was bound to result in unemployment. That marginal productivity is only one of several demand theories, that it has little applicability in a mixed, oligopolistic, dynamic economy, that it fails as an explanatory device in a monopolistic world and that there are alternative concepts which are more relevant to the realities of wage-employment relationships, evidently occurred neither to the lecturer nor to those exposed to this time-honored variant of conventional wisdom.

Of course, this sort of approach is endemic in economics itself. The labor economist can register justifiable complaints not only against the high schools, but against those who set the tone of economic thinking—the academicians. A favorite pastime of the latter is to search for constant relationships among "variables" which can then be manipulated to the heart's desire. Such explorations, it is said, make economics a science just like physics.

Thus the rapidity with which money and/or money substitutes change hands during a given period of time, expressed in the well-known equation of exchange, $PT=VM$, is deemed to be a constant, despite an acknowledged, variation of perhaps one to three per cent. Constant also is the marginal propensity to consume and the ratio between labor income and national income. The latter, of course, implies that unions cannot do very much about relative wages; hence, they ought to become social clubs or something like them.

Curiously, the wage-national income ratio has varied by about 10 per cent over the last few decades, suggesting at least a 25 per cent movement in the ratio of labor to nonlabor income. This makes it a rather strange "constant." It is with this sort of straining after elusive gnats that some economists can call for eliminating unions, enforcing free competition, and nullifying income taxes without serious rebuttal, or, as John Kenneth Galbraith has suggested, without injury to their own reputations.

Prof. George Stigler of the University of Chicago has said that the way to instill the habits of logical economic thinking in students is to teach them price theory. Accordingly, the only conclusion the student would arrive at in a debate, say, over the shorter workweek is that it would be uneconomic and would result in a misallocation of resources. Hence, the pressure of unions to reduce hours is morally wrong and economically harmful.

Curiously, unions have been quite deaf to this argument and have succeeded in reducing the workweek by 15 minutes annually over the last half century without diminishing productivity or impeding the advancing march of technology. In fact, an excellent argument can be made for a positive relationship between shorter hours and economic growth during those 50 years. But the presentation of alternative viewpoints in economic education appears unacceptable. Interpretations that deviate from the dominant folklore are apt to be denied a hearing.

The shorter workweek is rejected on the ground that it would increase production costs. A 35-hour week, it is said, would augment labor costs by 14 per cent.

But such arithmetic stops short of the total analysis, since labor costs in many industries may represent only a third of total sales. In retailing, labor costs are even lower, often under a fourth of total sales.

Hence, a 14 per cent increase in the labor component may work out to a one to three per cent increase in comparison with overall revenues. Considering the insistent drive for greater sales and ever deeper market penetration, and considering our vaunted productive capacity, such a modest cost increase may be worthwhile. This, of course, is a controversial argument, but then all arguments are controversial—and economics is perhaps the most argumentative of all social sciences.

Is it possible to teach economics in a way that allows for divergent points of view? Of course it is! Consider the approach used in *Labor-Management Dynamics*, a high school text developed by the Detroit Board of Education in 1961. The position of the labor movement in American society is set forth in plain words: "The right of American citizens to organize, to bargain collectively and, if necessar, to go on strike, is well established now. . . ." Or again: "The vastly improved processes in collective bargaining through use of democratic processes are indications of the recognition of the importance of labor unions on the American scene."

The so-called right-to-work debate is presented in parallel columns with the National Association of Manufacturers' views listed on one side and the AFL-CIO's on the other. Seldom can students examine labor's arguments in so balanced a fashion. Normally, the views of management receive the greatest play and teachers seldom offer rebuttals.

In his recent examination of social studies, *Where, When and Why*, Martin Mayer dredged up some really incredible examples of educational atrocities being perpetrated in our schools. In Houston, for instance, teachers may not mention the United Nations because it is "controversial." Elsewhere in Texas, a history book was banned because its cover design, depicting an eagle clutching arrows, might have been mistaken for a hammer and sickle. And in Indianapolis, AFL-CIO materials sent to the school system never arrived at their destination; they were buried at headquarters. I remember, too, a Teaneck, N.J. history teacher who was reprimanded for telling his classes about the Revolutions of 1848 because they had to do with something called socialism.

Under these circumstances, organizations like the Joint Council on Economic Education, which are concerned with improving high school economics courses, have an important task to perform. To be sure, a program such as the one undertaken by the Council cannot get far without the cooperation of school administrators. But would it not be worthwhile to convince the administrators that meaningful economic education cannot be attained by omitting or distorting the objectives of millions of Americans whose working lives are directly conditioned by the labor movement?

THE PRESS: IS IT DOING A GOOD JOB?

By Robert Lekachman

Better interpretive reporting in the daily press would be a basic step toward a greater degree of public understanding of economic issues. Newspapers must recognize the importance of economic interpretation and analysis in addition to the straight reporting of economic news. The kind of economics journalists we sorely need can be developed at schools of journalism in much the same manner as science writers are currently trained. ROBERT LEKACHMAN *is Professor of Economics and Chairman of the Department at Barnard College.*

After accepting CHALLENGE'S assignment to assess the handling of economic news by newspapers and magazines, I asked a group of 50 economics students whether they had been following the public debate about the tax reduction measure. Almost all the students I queried said they had been reading about the tax bill more or less from time it was first introduced in Congress. More than half of the students were daily readers of *The New York Times*, a few favored the *Herald Tribune*, and substantial numbers were clients of *Time* and *Newsweek*, in addition.

So far, so good. Then we approached the heart of the issue. What had they learned? They knew that the original Administration measure combined tax reform with tax reduction. Most realized that the projected decrease in taxes amounted to about $11 billion. Some thought that the House of Representatives had substantially altered the bill before sending it to the Senate.

Fair enough. But what these exceptionally alert and generally well-informed young people did *not* know truly startled me. To begin with, their factual knowledge was exceedingly sketchy. They had only the dimmest notion of the character of the Kennedy reforms, the groups that would be affected and the nature of the opposition aroused by the reforms. Still less, therefore, were they aware of what had happened to the actual Kennedy reforms in the course of the protracted hearings before the House Ways and Means Committee. Hence they were also unfamiliar with the changes in the timing, phasing and distribution of the tax reduction.

Since their grasp of the facts was so limited, they were naturally unable to assess intelligently either the merits of the original Administration program or the transformed bill which emerged from the House of Representatives. They could not responsibly argue that the bill was likely, or unlikely, to stimulate the economy adequately. Nor could they determine whether the probable economic stimulus was consonant with their own notions of equity in the treatment of different economic groups and interests.

Yet the complex provisions of tax measures are intimately involved in the affairs of practically every special interest group in the land. If the public is ignorant or apathetic, the legislation which Congress will write is unlikely to represent anything better than an agreement negotiated by the major economic pressure groups. Tax "loopholes" and special exemptions are preserved less through the malevolence of their beneficiaries than the indifference of the remainder of the population.

Admittedly, economic problems, economic theories and economic legislation are all highly technical. The ordinary citizen, faced with a discussion of farm subsidies, tax reform, tariff reduction or job retraining, may conclude that the topic is both dull and difficult. No doubt, however much the news media improve their handling of economic developments, some citizens will still prefer to read about the latest crimes and the juiciest scandals.

Such reactions point to a major defect in the present coverage of economic issues. The news magazines will indeed examine a major economic story, as it breaks, in the front pages under National Affairs or some similar rubric. Thereafter, the story tends to be relegated to the business section where it can be conveniently skipped by the general reader.

Much of the same comment applies also to the newspapers. Let's take a specific instance. On December 13, 1963 half of the first page of the Business and Financial Section of *The New York Times* was devoted to Common Market developments. Column 1 contained a report from Edward T. O'Toole in Brussels under the heading, "A Farm Deadlock Grips Trade Bloc." The body of the account quoted Edgar Pisani, French Minister of Agriculture, to the effect that "next week will be decisive," and cited German soft-pedaling of the gravity of the disagreement.

The three stories in Columns 2, 3 and 4 were covered by a single headline, "Common Market Fights for Life." Henry Giniger's Paris story recounted French intransigence on farm issues and refusal to link a farm settlement with later negotiations with the United States. From Giniger's account it appeared that the French were prepared to terminate the Common Market rather than compromise with their partners.

From Bonn, Arthur Olsen had a different tale to tell. He paraphrased Chancellor Ludwig Erhard to the effect that "West Germany's clash with France over Common Market agricultural policy was not a 'quarrel,' but only hard bargaining between friends." Finally, Edwin L. Dale Jr. from Washington drew ominous parallels between De Gaulle's rejection of Britain's bid to enter the Common Market "exactly a year ago" and De Gaulle's equally hard line in the current negotiations.

It scarcely needs emphasis that Common Market developments have a profound impact on American calculations in foreign affairs and economic policy. Both the Eisenhower and the Kennedy Administrations strongly supported efforts toward European unity, even when these efforts might have been damaging to short-run American interests.

The Trade Expansion Act, a major legislative achievement of the Kennedy years, was premised on the continuation of the Common Market. In fact, President Kennedy deployed as one of his most effective arguments for Congressional action the necessity of strengthening the hand of American negotiators with the Common Market. If the Common Market were really to dissolve, as the *Times* stories seriously contemplated, then the NATO alliance would suffer further damage, and a reappraisal of our entire external policy would be unavoidable. Under the circumstances, it is hard to overemphasize the significance of trade discussions between the Common Market partners and other nations.

But if the *Times* reader had not turned to the business section on December 13, he would not have become aware of the gravity of the situation until 11 days later. On December 24 another Brussels dispatch by Edward O'Toole reported a comparatively happy ending to the tussle. Since the story was accorded front-page treatment, any casual reader was now brought fully into the picture.

In fact, Mr. O'Toole's dispatch amounted to an admirable summary of the outcome—for someone who had been following events closely. As he evaluated the results of the negotiations, French agriculture gained a number of valuable concessions, and Germany in exchange received some French assurance—of a rather general nature—that the French negotiators would not sabotage the Kennedy round of tariff conversations.

The story made it plain that the Germans had a vital interest in all-around reductions of industrial tariffs as an aid to their efficient export industries, and industries, and the French felt an urgent need to open wider markets to their relatively efficient farmers. It was equally clear that Gen. de Gaulle had done rather better than his negotiating partners out of the compromise formula.

Of course, one shortcoming of this coverage is that the ordinary readers learned about the conclusion of the crisis before they were aware that a crisis existed in the first place. But perhaps too much has been said in this survey about *The New York Times*. Most Americans are served far less well by papers in their communities. How well, in fact, do the great dailies in other important cities handle and analyze the economic news?

For instance, how did such successful newspapers as the *Chicago Tribune*, the *Atlanta Constitution*, the *Detroit Free Press*, the *Louisville Courier-Journal*, the *Boston Globe*, the *Philadelphia Evening Bulletin*, the *Cleveland Press*, the *Baltimore Evening Sun* and the *Washington Post* report and explain what President Johnson had said in his State of the Union message on January 8?

So far as display was concerned, the newspapers, with one exception or two, treated the speech as the top news of the day. Five ran front-page banner headlines, there were two five-column spreads, and only the *Detroit Free Press*, which placed Gov. Romney's message to the Michigan legislature in the place of honor, and the *Philadelphia Evening Bulletin*, which even less explicably granted the President a one-column account, accorded secondary importance to the story. Moreover, five of the nine printed the complete text of the speech.

The President's message emphasized domestic problems, especially tax policy and a concerted program to alleviate poverty. Accordingly, most of the stories stressed economic issues. Typically the newspapers devoted two front-page stories to the message. One summarized the message, generally with some fairly explicit favorable or unfavorable bias. The other story reported political reactions, often beginning with the area's Congressmen and Senators. On the whole, then, the readers of these newspapers got an excellent opportunity to read the President's speech, or, if they were in a hurry, a more or less fair summary of what the speech contained.

The weakness of almost all of these newspapers was to be found in their efforts or absence of efforts to interpret the economic meaning of the message. There was no shortage of *political* analysis, however. In three of the nine papers James Reston's excellent commentary appeared. One ran Walter Lippmann. And even the *Philadelphia Evening Bulletin*, which had seen little news value in the message, ran four columns of individual analysis by James Reston, David Lawrence, Marquis Childs and an AP writer. What was missing is exemplified in the one newspaper which filled the gap.

The *Washington Post* ran on the front page an excellent analysis of the budget by its economic specialist, Bernard Nossiter. This analysis argued that President Johnson, by shifting expenditures between fiscal years and by other devices, produced a budget which enlarges the apparent deficit for the fiscal year ending June 30, 1964 and decreases the deficit for the succeeding fiscal year. In fact, this column and well-balanced news summary and editorial comment gave *Washington Post* readers much the best opportunity to *understand* as well as to read the Administration's proposals.

On the other hand, the *Philadelphia Evening Bulletin* not only devoted two front-page columns to the Gimbel Award to Pearl Buck, while according a single column to the President's message, but in that story conveyed the impression that the President's only significant proposal was an earlier reduction of withholding rates on personal income. The *Chicago Tribune* offered the clearest instance of biased reporting. Its account of political reactions to the message identified only unfavorable judgments, and its banner headline, "Johnson Spending Plans," stressed expenditures at a time when other headline writers more appropriately

emphasized the tightness of the budget. The *Tribune* complemented its reporting with an extraordinary vituperative leading editorial.

But what can be done specifically to remedy the prevailing economic illiteracy of the public? The first essential is for newspapers and news magazines to recognize the enormous importance of economic news. This is more than a matter of giving front-page coverage to monthly Department of Labor unemployment statistics and Department of Commerce figures on national income. It is a continuing, firm conviction that economics is deeply entwined in foreign policy, aid to underdeveloped lands, civil rights, mass leisure and the quality of everyday life. Such a conviction alone is capable of moving economic news out of the back of the newspaper and into the front where it often belongs.

The mass media have come only belatedly and partially to a second realization: that economic news demands exceptionally qualified reporting, much as science news does. I should like to see Columbia's School of Journalism or some other good journalism school train economics writers in the same way that they are trying to develop science writers. A well-conceived program which combined the skills of the journalist and the economist would fairly rapidly raise the entire level of economic reporting.

In addition, economic interpretation and analysis should be expanded, for all economic issues involve, openly or covertly, economic theories. The Administration's tax bill is based upon Keynesian aggregative economics and the specific doctrine of the investment multiplier. The manpower retraining programs which Congress has enacted conform, to some extent, to the arguments of economists who maintain that unemployment will not be alleviated by simple increases in the aggregate demand for goods and services.

As for the Trade Expansion Act, it is grounded on the venerable principle of comparative advantage, still the best theoretical argument for free trade. Even the differing opinions about who should enjoy the lion's share of tax reduction are closely affiliated to the theoretical arguments about the relative merits of stimulating investment or consumption, and the possible impact upon incentives of a less progressive tax structure.

In the nature of things, even improved economic reporting is an incomplete substitute for analysis and interpretation. What is badly needed is the equivalent of the skilled political analysis which James Reston and his colleagues provide in the *Times* or the equally distinguished foreign affairs commentaries of that newspaper's correspondents. All that the *Times*, in fact, offers in the economic field is M. J. Rossant's Monday column on the financial page and occasional columns of "news analysis," often excellent in themselves. Still, economics needs a lot of learning. Hence the requirement is for regular, economic interpretation which ranges over issues, legislation and publications.

Equity demands the admission that economic illiteracy has other villains beside the daily press and popular news magazines such as *Time* and *Newsweek*. As a teacher of economics, I have long been distressed by the unpleasant fact that although many businessmen under 45 have taken courses in economics at the college level, they so frequently and so readily forget what they have learned and regress to ancient pieties about balanced budgets and to fears about the size of the national debt—just as though they had never heard of the fallacy of composition (which in this instance suggests that the government ought to run its financial affairs in the manner of a thrifty family).

Teachers of economics have a substantial responsibility for the relative economic illiteracy even of the educated. Nor does this responsibility end in the classroom. American economists have been remiss as educators in a more general sense. John Kenneth Galbraith, who is frequently criticized by economists as a "journalist" or a "popularizer," actually did a great deal to educate the public in economics through his books, *American Capitalism* and *The Affluent Society*. Galbraith's critics refuse to face up to the fact that economics is much too important in our lives to be buried in the pages of the learned magazines.

It is fair to make these admissions. But it is also imperative to say that the discussion of public affairs would be much improved if newspapers and magazines grasped the significance of economic news, employed properly trained reporters, and obtained the services of professional economists able to provide interpretation and analysis in depth. The mass media can do a great deal to improve general economic literacy.

Government as a Source of Information

By Karen N. Gerard

The federal government also has a role in raising the level of economic literacy in the U.S. The federal budget, the President's Economic Report and myriad statistics issued by various government departments, for good or ill, all have an impact on public understanding of the economic issues before the country, and, in a democratic society, the economic information emanating from government cannot help being influenced by politics to one degree or another. Karen N. Gerard *is a member of the Economic Research Department of the Chase Manhattan Bank.*

The level of economic literacy in the United States is influenced by much more than what is taught in the classroom. The federal government, for example, as a collector and interpreter of economic data, and as a formulator of economic policy, is in a unique position to influence the economic understanding of the general public.

The government presents the vast material it amasses in a wide variety of forms, from the concise, but potentially explosive, press release giving the monthly unemployment statistics to that gold mine of information, the 1,000-odd page *Statistical Abstract*—not to mention the documents receiving perhaps the widest public attention, *The Budget of the United States Government* and the *Economic Report of the President.*

While granting that the government makes available a wealth of economic material, there are several questions which must be considered. Does the government present its economics in a manner that the public can understand? Is it clear? Is it accurate? Is it objective rather than partisan? Where should the line be drawn between fact and theory, between certainty and conjecture?

It would be easy to give a clear-cut answer of "no" to these questions, and then catalog the shortcomings of government's contributions to economic literacy. But some perspective on the problems involved is in order.

In the first place, the government is confronted with the reality that the basic concepts of economics are difficult to grasp and the general public is not necessarily a keen student. Second, the economic data itself has limitations. Large gaps exist in our statistics, some of which can be filled by more and better numbers. But the statistics themselves will never provide a mirror image of our economy; and even if they did, correct interpretation does not flow from statistics alone. Third, the government serves several audiences. It provides data for its own operations, and it furnishes information of general interest or only of specialized use to a few industries.

The executive formulates economic policy under the standard of a particular political party, and it presents its programs to the Congress and the public at large.

The government cannot perform these multiple functions by gearing all of its published material to one homogeneous, relatively unsophisticated audience. Rather, some data, by their nature, are technical and intelligible to the public only after translation or "popularization" by economists or professional writers.

Government officials themselves are aware of some of the problems. The Department of Labor, for example, gave the Department winner of its Annual Award a year to study the question, "Why is government writing so poor?" Leading publicists and educators in the U.S. and abroad were consulted and a report of the findings has been written.

Government also realizes that at times it may have to educate the press first before it can educate the public. A five-year program revising the components of the Consumer Price Index has recently been completed. Since thousands of wage earners work under contracts geared to the CPI, a clear public understanding of the new Index is imperative. The first step in this effort was the press briefing held last month by the Bureau of Labor Statistics.

Recognizing the magnitude of the problems, the challenge to the government is to make the best use of the economic resources it has available. The stakes are large: the federal government itself is an important economic force, spending roughly $120 billion annually (on a national income accounts basis). Further, it has an obligation, as spelled out in the Employment Act of 1946, "to promote maximum employment, production and purchasing power." An enlightened public would be an asset for success in these endeavors.

It cannot be denied that progress has been made during the postwar period in the quantity and quality of economic material which the government makes

available to the public. To cite only a few of the milestones: the publication in 1947 of the national income series within a systematic accounting framework; the issuance of the flow of funds accounts in 1955 by the Federal Reserve Board; and the speeding up by an entire year of the tabulation of statistics from tax returns.

A growing awareness of the importance of economic information has resulted in increased emphasis on statistical programs. Obligations for federal statistical programs will reach an estimated $121 million in fiscal 1965, a rise of 73 per cent since 1961, or a growth rate three times that of the budget as a whole.

But even with the rise in sums allotted to statistics, shortcomings remain. The balance of the government's statistical programs has not kept up with the times. Obligations for current statistical programs in the Department of Agriculture, for example, will cost $21 million in fiscal 1965, or more than one-sixth of the total government statistical effort. But agriculture now accounts for only four per cent of GNP.

Even with increased expenditures, gaps in basic data remain unfilled—from the point of view of timing, accuracy, comparability and completeness of observations. And perhaps of even more importance, the data we have continue to be presented in a specious form, suggesting an accuracy that does not exist.

The public learns from abbreviated press releases that gross national product reached $600 billion in the fourth quarter of 1963, compared with $588.7 billion for the third quarter. Headlines declared that the unemployment rate for December was 5.5 per cent, against 5.9 per cent in November. The Federal Reserve Board's Index of Industrial Production was 127.2 in December, up from 126.7 in November.

But as Oskar Morgenstern points out in his book, *On the Accuracy of Economic Observations*, the average standard error for most of our economic series has not been computed, or if calculated (as in the employment statistics), it is rarely referred to. However, changes in economic policy can be based on variations in statistical series that are smaller than the margins of error of the estimates. If the margin of error of GNP were only five per cent, the possible error would be equivalent to $30 billion. Morgenstern, however, considers a 10 per cent error—$60 billion in the case of the present GNP—to be more reasonable. In short, users of statistics, from professional economists to the public at large, should be aware of the margin for error.

Statistics, no matter how high their quality, can only form the framework for a solid understanding of economic affairs. But what bridge exists between the presentation of raw data and its interpretation in terms meaningful to the public?

While the content of educational programs in the elementary and secondary schools is not in the direct province of the federal government, various government agencies in the course of their operations have produced materials suitable for a "popular" audience and made them available to the schools. But only 12 of the 97 Study Materials recommended by the Business Education Committee of the Committee for Economic Development for the teaching of economics in the high schools are published by the U.S. government or the Federal Reserve System. Of these, four come from the Federal Reserve System and are designed to explain how the Federal Reserve and our monetary system work. Most of the other materials (such as the *Economic Report of the President*) were not written primarily as educational teaching aids, but are considered clear enough to be incorporated in the teaching of economics.

Some of the individual Federal Reserve banks have made efforts at producing material aimed directly at the public at large. The Series for Economic Education of the FRB of Philadelphia, which is concise, clear and readable, is a rare but noteworthy example. The Department of Commerce recently published a pamphlet, "Do You Know Your Economic ABCs?"—a simplified explanation of gross national product. But on the whole the contribution of government agencies has been minor. Many staff members of the agencies apparently feel that outsiders can do a better job of interpreting government data and analyses for the public at large than they can.

The vast majority of government publications issued at regular intervals, such as the *Survey of Current Business*, the *Federal Reserve Bulletin* and *Monthly Labor Review*, are aimed at readers with professional training rather than the public as such. By and large the public level of economic understanding is influenced by this material only after it has first been digested by private economists, Ph.D. students or business writers. The articles generally are restricted to descriptive analyses of the trends shown in the data for which the particular agency is re-

sponsible. However, there are occasional forays into "creative" analysis (for example, the recent article on "Economic Change and Economic Analysis" in the September, 1963 *Federal Reserve Bulletin*, or "Long-Term Influences Affecting the Volume of New Housing," in the November *Survey of Current Business*).

"Creative" analysis has also flowered at times in the studies undertaken for the Joint Economic Committee. The make-up of the Joint Committee is intended to reflect, as closely as possible, the representation of the parties in Congress, thus reflecting the pressure of politics. However, some of the reports made for the Committee (such studies are made by other government agencies, and economists from business, labor and the universities) stand up as fairly important documents in economic literature. *Government Price Statistics* and *The Federal Budget as an Economic Document*, to cite just two examples, have a direct impact on government practices.

But constructive use of the material is not promoted by the manner in which it is presented. High caliber material is mixed indiscriminately with bad; objective analysis with partisan. Taking advantage of it requires a discriminating, scholarly mind. Obviously, only a small proportion of the worthwhile material percolates down to the public.

The question of the "objectivity" of the economic information put out by the government is, of course, a thorny and difficult one. It rarely comes up regarding the original written presentations in the regular government periodicals (for the most part, these publications, such as *Survey of Current Business*, are staffed and written by career government economists). But analyses frequently are distorted, or shall we say bent to fit a particular political need, by politicians whose loose use of the material in speeches may receive far wider publicity than the original analysis. (To make a telling point, is it more convenient to use seasonally adjusted unemployment figures, or unadjusted? Will it look better to compare the present month and last month, or the present month and last year?)

It is in the area of economic policy, in fact, that the line between objectivity and politics becomes hardest to distinguish. The *Budget of the United States Government* and the *Economic Report of the President* (together with the Annual Report of the Council of Economic Advisers) are the two documents which illustrate most dramatically the progress that has been made and the serious drawbacks that persist in the manner in which economic matters are presented to the public. Both documents are given lavish press treatment and the seriously interested members of the public can read the original in prose that is quite readily understandable. But what is fact and what is theory? What is certainty and what is conjecture?

Since 1962 the format of the budget has been improved and its content has greater economic relevance. But the budget is more than a financial report and an economic plan. It is also a political document reflecting the President's assessment of the temper of Congress and the public at large. The forces which dominated its overall design are thus a matter for subjective speculation.

An expenditure figure of $97.7 billion was not arrived at only by measuring the funds available and allocating them to alternative uses according to economic standards of efficiency and demand. This played a part in the budget-making process, but clearly President Johnson wanted a tax cut and wanted it quickly for the health of the economy (and for his own political health), and he could not get that cut through Congress without holding the line on expenditures—and the fact that he could not has a bearing on the level of economic understanding in this country. It seems quite probable, then, that a budget total was arrived at first and then broken down into its components.

Further, no range of error in the estimates is even hinted at. Many factors besides "political realities" can contribute to a gap between actual and anticipated spending. Congress may not authorize or provide appropriations for the spending the President requests. The performance of the economy as a whole may not live up to the official forecasts. A cursory look at the record shows that from 1955–63 expenditures averaged $3.5 billion, or four per cent above original estimates, with an underestimation of almost $7 billion, or nine per cent, in two of the years.

The Economic Report of the President and the Report of the Council of Economic Advisers are, in part, a brief for the budget. In recent years the Reports have taken a more "creative" analytical turn. New concepts have been popularized: potential GNP, full employment surplus, wage-price guidelines. And greater use is made of numerical estimates—for 1963 the full employment surplus was $9 billion. GNP was projected at $623 billion for 1964 (given a February 1 tax cut).

Fresh thinking should be recognized and applauded. But to present political philosophy in the guise of basic economic truth, and to clothe what of necessity are rough approximations with a cloak of precision, may be an actual deterrent to economic understanding. The trained economist may be able to make the distinction, but not the general public. It is treated as fact, for example, that it is better for the country to have the tax cut concentrated rather than spread out over two years—but is the economic evidence that clear (or is it the political evidence that points the guiding light)?

Adding it all up, we find that the ways are myriad for government to affect the level of economic literacy. First and foremost, the federal government has a responsibility to the public to see that the data it collects and the economic policies it executes are comprehensible to the citizenry. Progress has been made, but we have a long way to go.

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