For one, its prestigious members are busy with other matters. Although two or three have invested considerable personal effort in the committee, others, including some of its sharpest critics, confess that they haven't had time to read all the papers that the State Department has been sending them. The burden of reading material may taper off for awhile, however, since the committee's lone staff man at the State Department has temporarily run out of money for transportation, postage, and printing.

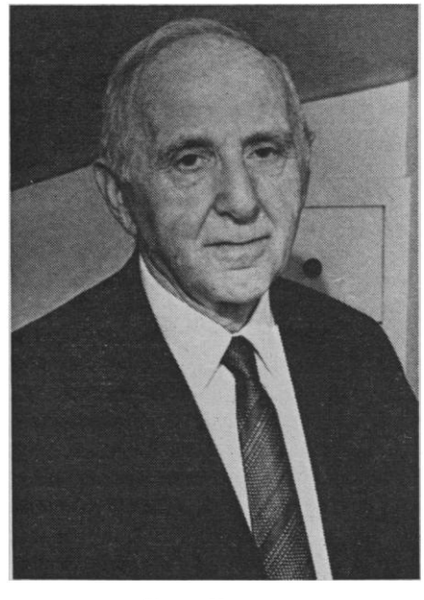
The State Department's advisory committee may yet have a significant impact on the proceeding at Stockholm, but the odds are against it. Apart from all its other difficulties, one of its more judicious members is convinced that members of the advisory committee do not form a terribly compatible working group. "It's such a mixed bag of people . . . it's not the kind of atmosphere that lends itself to a consensus, to buckling down to hard work." If nothing else, however, the committee serves at least to illustrate the inherent drawbacks of blue-ribbon panels, and it may give the State Department some reason to pause before trying again to solicit public advice on diplomatic matters.—ROBERT GILLETTE

Nobel Prize for Economics: Kuznets and Economic Growth

Simon Kuznets, who won the 1971 Nobel Prize in Economic Science, was born in Kharkov in 1901. He came to this country at the age of 20, together with his brother Solomon. The two young men taught themselves English in the course of a summer, and Simon, having been admitted to advanced standing in Columbia College, gained the B.S. degree from Columbia in 1923 and a Ph.D. in 1926. Kuznets then taught successively at the University of Pennsylvania, at Johns Hopkins, and at Harvard. During much of that time, however, he carried on his remarkably far-ranging studies at the National Bureau of Economic Research, and, in the minds of economists, his name and research, like those of Wesley Clair Mitchell and Arthur F. Burns, remain linked with the Bureau and its great half-century of contribution to empirical economics.

When Kuznets began his work some 45 years ago in the mid-1920's, the character of economics had barely begun to change from the form in which it had been fixed by Ricardo a full century before. It was, for the most part, a speculative discipline. It preceded from uncertain premises by logical deduction to imperfectly verified conclusions. This method yielded moderately useful and reliable insights into the behavior of relative prices and the allocation of resources among different uses. In this sphere, a model of rational behavior subject to the constraints of limited budgets and a specific form of the relation between output and resource input generated results that were, at least qualitatively, consistent with common knowledge about the operation of markets.

Knowledge about great branches of economic life, however, was in a primitive state, and none more so than that concerned with the aggregative behavior of the economy. No amount of casual observation and intense thought alone could return useful and reliable intelligence about an economy's aggregate growth and its sources. Neither could they give well-founded knowledge about general economic fluctuations and their pathological concomitants, unemployment and inflation. How these phenomena occurred and why they differed from time to time and country to country, required systematic observation and measurements. To deal with them, economics had to change from being a branch of applied logic into a positive, quantitative science.



Simon Kuznets

Such a transformation, still incomplete today, but certainly well advanced, has occurred within the span of Kuznets' working life. It has been accomplished by the confluence of three streams of efforts. One is the econometric movement, the pioneers of which, Ragnar Frisch and Jan Tinbergen, received the first Nobel prize to be awarded in economics. The second stream is theoretical economics and especially its further development by mathematical methods, the contribution of which was marked by the award of the second prize to Paul Samuelson. The third stream of effort is the systematic statistical measurement of economic behavior and its results, and in this Kuznets was the leading figure. If economic science is the theoretical modeling of the economy and the testing and estimation of models against statistical observations by econometric methods, the very foundation of the science may be said to have been celebrated by the award of these first three Nobel prizes.

A large portion of the massive organization of economic statistics on which the modern science rests is provided by the national income and product accounts. Because there appears to be some mild confusion about the matter, one should say at once that Kuznets did not invent the concept of national income. Estimates of the "national revenue" or "national dividend" of greater or lesser degrees of crudity have been made for some hundreds of years. A famous early estimate by Gregory King for 1696 is still a useful adjunct of studies of the growth and

distribution of income in Britain. Continuous, reliable, and conceptually well-founded estimates, however, had to wait until a relatively few decades ago, when the improvements of the population and industrial censuses, as well as of the statistics generated by income tax collections, began to yield the underlying data on which such estimates could be built.

In the United States, the first annual estimates covering any considerable stretch of years were those published at the National Bureau in 1921 and 1922 by W. I. King and Oswald Knauth (*1*). They covered years 1909 to 1918 and were later revised and extended to 1928 by King (*2*). It was on the basis of these experiments that the Department of Commerce undertook to establish its famous official estimates of national income, and it is in conjunction with this historic departure that Kuznets entered on the central area of his lifework. The Commerce Department's first publication tells the story (*3*).

> In view of the previous extensive investigation [by the National Bureau of Economic Research], a member of its staff, Dr. Simon Kuznets, was retained by the Bureau of Foreign and Domestic Commerce to plan and supervise this study. Dr. Kuznets, who was in full charge of the work, was responsible for the preparation of the final estimates, as well as the organization and text of the report.

Kuznets' work on national income is notable, in the first place, for its scrupulous attention to the conceptual foundations of the estimates. He insisted on the social judgments needed to separate economic activity from the rest of life and productive from nonproductive activities. He dealt openly with the desired reach of the estimates from marketed production to activities outside the scope of markets, with the consistent treatment of intermediate goods, and with the tangled problems of valuing varied outputs at a given time and of correcting for price changes over time. Kuznets stressed the relativity of his or any answers to the social values of time and place, to the nature of family, industrial, and governmental organization, and to the problems to which the figures are designed to apply. Nor was he satisfied with the provisional answers he gave. He early saw that solving the problems of national income estimation would need continuing work. He helped to found the Conference on Research in Income and Wealth and for many years guided its program. The year 1970 saw the appearance of volume 33 in the series *Studies in Income and Wealth.*

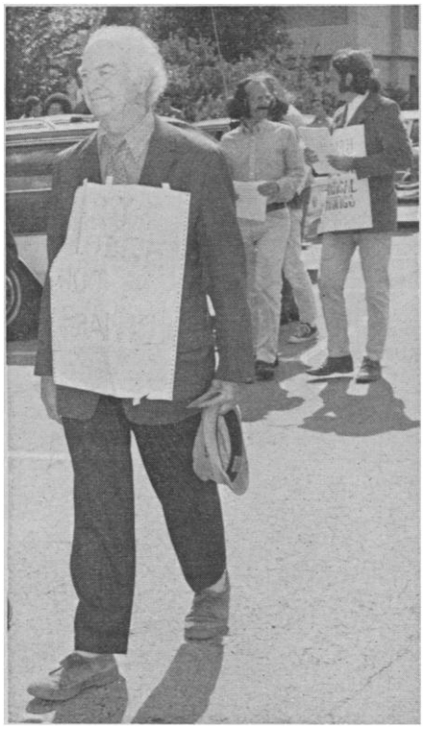
In this country, Kuznets himself did the pioneer work in establishing the modern estimates of national product in each of its three principal manifestations. In the first, national product emerges as the sum of expenditures by different classes of users on different classes of goods (*4*). In this form, it is the principal statistical basis for modern studies of the relations between income, consumer expenditure, and investment. It is, therefore, the empirical counterpart of the Keynesian model of the economic system and of the short-term changes in output and employment that it illuminates. It was, indeed, the joint appearance in the mid-1930's of Keynes's general theory and of the early Kuznets report on gross national product and its expenditure components which made it possible to give quantitative expression to the Keynesian revolution in economic thought.

Next, as the sum of "incomes produced," national product is built up as the sum of the wages, interest, rent, and dividends paid out, and of the retained earnings of firms in the economy's many industrial sectors (*5*). Taken in conjunction with information about the labor and capital employed, national product in this form allows us to study the relations between resource input and productivity, on the one side, and output, on the other. It is, therefore, the basis of much of what we know about the physical sources of output growth.

Finally, as the sum of incomes of all types received by individuals or families, national income provides the framework for studies of income distribution and of the changing relative status of the rich and the poor, the blacks and whites, the rural dweller, and the urbanite (*6*).

Kuznets pushed his work on national problems back in time and across international boundaries. Having established the American estimates for the years since 1919, he was anxious to project them into the 19th century as the basis for studies of long-term growth. With the help of W. H. Shaw (*7*), Kuznets extended his own estimates to 1869 (*8*). Others have now pushed the calculations by years as

Pauling Pickets



Where did the campus revolution go? To the Western front, apparently, where all is not so quiet at Stanford University. At left is Linus Pauling, winner of Nobel prizes for chemistry and for peace. Pauling took to the picket lines last month to protest the university's prosecution of a tenured professor of English, H. Bruce Franklin. Franklin was suspended with pay by Stanford President Richard W. Lyman in February of this year and barred from the campus by court injunction. The university's formal charges against Franklin are that he prevented Henry Cabot Lodge from speaking on Vietnam and later "incited" students to occupy a computer center.

A unique academic court, a jury of Franklin's peers made up of seven elected faculty members, is deciding whether his tenure should be discontinued. The hearing is expected to last all day every day for weeks. Pauling and some of the faculty object to the entire proceeding. Firing Franklin, they say, would spell doom for academic freedom. Spelled also on Pauling's printout is a further view: "Try Lodge —Not Franklin."—D.S.

far back as 1834 (*9*) and, by indirect method, even as far as 1800 (*10*). Kuznets also saw that well-founded studies of long-term growth would need to be based on the broadest possible comparisons among countries, as well as on long periods of time within countries. He therefore helped to found the International Association for Research in Income and Wealth. He organized and stimulated work on long-term estimates of national products throughout western Europe and in Japan. He served as adviser to some of the newly established statistical bureaus of countries founded after World War II, and the statistical services of many countries, therefore, owe something to Kuznets' help and incitement.

Besides being one of the foundation stones of modern scientific economics, Kuznets' work on national products was also the basis for the long period of study of economic growth, for which he was especially cited by the Swedish academy. As with his work on national product itself, Kuznets began with historical studies of U.S. growth and went on to bring together evidences of growth in every country for which reliable data were available. The key publications are the ten famous papers, really small monographs, which were published serially from 1956 to 1965 under the collected title, "Quantitative Aspects of Economic Growth of Nations" (*11*), and the summary volume, *Modern Economic Growth: Rate, Structure and Spread* (*12*).

Kuznets' work has been directed chiefly toward providing a solid empirical basis for analytical studies of growth and toward revealing its major observable features. The organizing theme of his investigations is the view that growth in the aggregate output of a nation is necessarily connected with a thoroughgoing transformation of its economic structure. This transformation takes the form of change in many aspects of economic life—in the composition of output, in the distribution of workers among industries and occupations, in the relative importance of household and commercial activities, in the income shares of the factors of production, in the size, the age-composition, and the spatial distribution of the population, in the importance of international movements of goods, capital, people, and knowledge, in the organization of industry, and in the role of government. Such transformations, he hypothesizes, are necessary conditions of aggregate growth and, once in train, serve to fashion, constrain, or stimulate subsequent growth.

Kuznets' investigations serve chiefly to establish the nature of the changes and to show which of them, and in what magnitude, have been common to the experience of many countries and periods. The descriptive intention is dominant. We have here the work of a great naturalist, observing and classifying the forms and parts of an order of life in its many species and varieties. Though, in Kuznets' view, this effort of description and classification is essential at this stage in the development of the subject, his own mind turns irrepressibly toward an attempt to understand the causes of events. No table of figures, however aridly descriptive, is left without some suggestion of how the numbers came to be or what significance they may have. No one can read his pages about the connections between output growth and the changes in the size and age-composition of populations, or about the connections between levels and rates of output growth and the uses to which output and income are applied, without feeling that he had been vouchsafed at least a glimpse of a key to the riddle within the enigma of economic growth.

Important and far-reaching as it is, Kuznets' work on economic growth is only one of the many major subjects to which he turned successively during a long career. Business cycles, secular movements in production and prices, seasonal variations in industry and trade, professional incomes, income distribution, the economic status of minority groups—each field, in turn, has been the object of Kuznets' attention, and each has been shaken and advanced by some fresh and penetrating study. To few men is it given to make a truly significant difference in the state of a science, but Kuznets did it more than once.

Does this sound valedictory? No need. Kuznets is alive and well and working in Cambridge, Massachusetts.

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3. *National Income, 1929–32* (Senate Doc. 124 72nd Cong., 2nd session, 1932), p. 11. It is a happy fact that the two unusual women who worked with Kuznets in one investigation after another for many years also make their first appearance in this report: "Particularly valuable assistance was rendered by Miss Lillian Epstein aided by Miss Elizabeth Jenks . . ." How many times this or some similar phrase was to recur in Kuznets' publications! Few scientific teams can have worked together so long and to such good effect.
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APPOINTMENTS

Ronald S. Tikofsky, professor of psychology, University of Michigan, to chairman, psychology department, Florida International University. . . . **Charles W. Merriam III**, professor of electrical engineering, Cornell University, to chairman, department of electrical engineering, University of Rochester. . . . **David B. Wake**, associate professor of zoology, University of California, Berkeley, to director, Museum of Vertebrate Zoology, at the university. . . . **Gerard A. Kaiser**, associate professor of surgery, College of Physicians and Surgeons, Columbia University, to chief, thoracic and cardiovascular surgery division, University of Miami School of Medicine. . . . **Martin R. Baron**, professor of psychology, Kent State University, to chairman, psychology department, University of Louisville. . . . **Michael F. Brewer**, vice president, Resources for the Future, Inc., to president, Population Reference Bureau, Inc.