World Food Supply: PSAC Panel Warns of Impending Famine

In recent years the Malthusian prophecy of population outstripping food supplies has been approaching or reaching fulfillment in many underdeveloped nations with increasing frequency. This situation has not produced a mood of urgency in the capitals of the well-fed nations of the West, nor, in most cases, has it produced an effective response among the leaders of the hungry nations. The tendency, it seems, is to assume that, by some emergency action or by the discovery of bountiful new food sources, disaster will be averted. In affluent America, catastrophic famine, in which millions die, appears to be a remote, unreal, and unlikely possibility. The latest, and perhaps most important, challenge to this complacent attitude is the three-volume report *The World Food Problem* just published by the President's Science Advisory Committee (PSAC).

In an introductory statement President Johnson warns that "the shadow of starvation and impending famine has grown ever darker" and says that a "massive effort" by the United States and other nations "to help the less fortunate of the earth to help themselves" is necessary. In presenting the report to the press on 16 June, Donald F. Hornig, the President's science adviser and chairman of PSAC, described it as the "most definitive statement" yet of the world food problem and expressed the hope that it will serve as a guide for the development of policy.

Prepared by a PSAC panel headed by Ivan L. Bennett, Jr.,* deputy director of the Office of Science and Technology, the report draws on the talents of more than 100 specialists from government, industry, foundations, and universities. It concludes that there are no insurmountable biological, technical, or economic barriers to finding a solution to the world food problem during the next 20 years. But, as Hornig observed in his comment to the press, one can "seriously question whether the world is up to meeting the problem" in the time available. Once the recommended programs were inaugurated, an estimated 5 to 10 years would elapse before there would be an increase in crop production.

The panel predicted that, if present population trends continue, by 1985 the food requirements of the developing world—which are not being met today—will be at least twice what they were in 1965. Even if it is optimistically assumed that birth control programs are successfully carried out during the next 2 decades, the demand for food in the developing nations will increase enormously. For example, according to the panel's projections, the caloric needs of Pakistan, which at present birth rates will be up 146 percent by 1985, will increase by 118 percent even if the fertility rate is reduced by nearly a third.

However, the panel believes that effective family planning must be started immediately, for, without it, an "economically or ecologically irreversible state of imbalance" between population and food supplies might occur in the years beyond 1985. The difference between the panel's highest estimate of world population (based on assumed continuation of present trends) and its lowest estimate (based on assumed effective family planning) is only 385 million for 1985; the figures are 5.03 billion and 4.65 billion. But, for the year 2000, the difference is 1.15 billion, the world population rising to 6 billion with effective family planning or to 7.15 billion without it.

The panel sees a paradoxical relationship between (i) gains in the quantity and quality of available food and (ii) population trends. With better diets, more children survive, and one might assume that this would lead to rapid population increases. So it might, but the panel believes that, once childhood mortality rates have fallen sharply, parents will start having fewer children, confident that those they do have will survive to look after them in their old age.

The report emphasizes that the food problem of the developing nations is inseparable from the problem of their overall economic growth. Increasing food production will depend in part on increasing the effective demand for food—that is, the number of people with money to buy it—and on creating the infrastructure of transport facilities, credit institutions, fertilizer plants, farm-equipment plants, and the other constituents of a modern agricultural system.

Thus, the panel says, a compound annual growth rate of 4 percent in food production and of 5.5 percent in gross national income must be achieved by the developing nations if they are to meet their food requirements during the period 1965 to 1985. Currently, these countries, in the aggregate, are increasing their food production by only 2.7 percent annually and their gross incomes by 4.5 percent. Only a few nations, such as Mexico and Taiwan, are attaining the rates of growth recommended.

The panel says that, to achieve the necessary growth in food production and economic activity, annual capital investment in the developing nations will have to increase from 15 percent of gross national product to 19 percent. For the 1965 base year, this 4-percent increment would have amounted to $12 billion. "To achieve such a feat will require capital and technical involvement of the developed and developing nations alike on a scale unparalleled in the peacetime history of man," the panel says.

The United States, the report adds, must lead in shaping a "coordinated, long-range development strategy" for raising the economic level of the poor nations, alleviating their hunger, and increasing the volume of world trade. The panel does not say what the American share in the development effort

* Besides Bennett, other members were H. F. Robinson, University of North Carolina, Raleigh (executive director for the study); Nyle C. Brady, Cornell; Melvin Calvin, University of California, Berkeley; Milton S. Eisenhower, Johns Hopkins; Samuel A. Goldblith, M.I.T.; Grace A. Goldsmith, Tulane; Lowell S. Hardin, Ford Foundation; J. George Harrar, Rockefeller Foundation; James G. Horsfall, Connecticut Agricultural Experiment Station; A. T. Mosher, Agricultural Development Council, New York; L. Dale Newsome, Louisiana State University; William R. Pritchard, University of California, Davis; Roger Revelle, Harvard; Thomas M. Ware, International Minerals and Chemical Corporation; and Stuart G. Younkin, Campbell Soup Company. Claire L. Schelske, President's Office of Science and Technology, was technical assistant to the panel. Volume 1, containing the panel's findings and recommendations, is available from the Government Printing Office, Washington, D.C. 20402, for 60 cents. Volume 2, containing the subpanel reports, is available for $2.75. Volume 3, containing technical and other special papers, will be available in July.

should be. But, given the present modest level of assistance by the other developed countries, it is unlikely that the proposed investment goals could be met without a nearly threefold increase in the present U.S. economic assistance program, now running at about $2.5 billion a year.

The report warns against false hopes and a search for panaceas. Work should continue, it says, on the investigation and development of new sources of food supply, such as the production of high-protein food from petroleum. But the panel sees no likelihood of these endeavors making a major contribution in the near future to the closing of the food-population gap.

The panel concludes that the bulk of the increase in food supplies must come from farm crops, principally through higher yields, although an expansion of croplands in Africa and Latin America is possible. A major expansion of irrigation is recommended to make the raising of more than one annual crop possible in regions of highly variable and seasonal rainfall.

Reading between the lines, one finds in the report strongly implied criticism of the State Department and its overseers on Capitol Hill. Modernizing the economies and agricultural systems of the hungry nations will demand a long-term strategy, and, except in the gravest crises, U.S. assistance should not be withdrawn or curtailed as a foreign policy sanction, the panel says. Moreover, it recommends that foreign aid authorizations from Congress should be for a minimum of 5 years, rather than for 1 year as at present.

The shadow of famine and the political tumult it will bring is growing darker, as the President said, but thus far neither the well-fed nor the hungry nations have shown they prefer light to darkness.—LUTHER J. CARTER

Crime Control: Task Force Urges Use of Science and Technology

Federally sponsored research has regularly been directed at the physical problems of contemporary society—defense, food supply, disease, transportation, and communication. Recently, wide interest has developed in applying the methods and techniques of science and technology to still another category of problems—those that come under the heading of crime. Impetus to this interest is provided not only by the painful prevalence of crime but also by the fact that crime is now a large and easy-to-exploit political issue. In the 1964 presidential campaign Senator Goldwater constantly harped on the theme of "crime in the streets," and President Johnson replied by declaring that his administration could tackle the problem in ways better than anything Goldwater could offer. The President subsequently created a Crime Commission; as part of the commission, a special task force on science and technology was appointed.

After months of study, that task force has now reported its findings. What they boil down to is this: the *sources* of crime extend beyond the reach of any feasible technical treatment, but science and technology, properly applied, can be important components of community efforts to protect life and property.

The work of the science and technology task force represents but a small portion of the Crime Commission study. The full commission report, *The Challenge of Crime in a Free Society,* makes this clear: "For 'crime' is not a single, simple phenomenon that can be examined, analyzed and described in one piece. . . . Its causes are legion. Its cures are speculative and controversial. An examination of any single kind of crime, let alone of 'crime in America,' raises a myriad of issues of the utmost complexity."

The commission itself revised its approach as the "myriad of issues" became more evident. The work initially was divided into four major areas—police, courts, corrections, and assessment of the crime problem. As the work proceeded, the four divisions became nine. Added to the original were organized crime, juvenile delinquency, narcotics and drug abuse, drunkeness, and science and technology. Nine task forces were created, and each has published, or soon will publish, its own report.

The Crime Commission turned to the Institute for Defense Analysis (IDA) to conduct the science and technology study and chose an IDA staff member, Alfred Blumstein, to be director of the task force. A consortium of 12 universities,* IDA serves as a civilian adviser, analyst, and evaluator to the Defense Department, particularly to the Joint Chiefs of Staff Weapons System Evaluation Group and the Director of Defense Research and Engineering.

Three top officials of IDA—Milton J. Clauser, Ali B. Cambel, and Alexander J. Tachmindji—served as general supervisors for the task-force work.†

The task force found parallels between military systems and law enforcement operations but found no similarity in the amount of federal attention paid the two. In the introduction to its report the task force emphasizes how neglected criminal justice operations have been: "More than 200,000 scientists and engineers have applied themselves to solving military problems and hundreds of thousands more to innovation in other areas of modern life, but only a handful are working to control the crimes that injure or frighten millions of Americans each year." The Justice Department was the only Cabinet department in 1965 with no share of the roughly $15-billion federal R & D budget. The task force recommends establishment of a federal R & D program in criminal justice and maintains that within 3 to 5 years this program may profitably reach

* The 12 institutions are University of California, California Institute of Technology, Case Institute of Technology, University of Chicago, Columbia, University of Illinois, Massachusetts Institute of Technology, University of Michigan, Pennsylvania State University, Princeton, Stanford, and Tulane.

† Other members of the task force were Ronald Christensen, University of California; Ronald Finkler, IDA; Saul I. Gass, International Business Machines; Sue Johnson, systems analysis consultant; Peter Kelly, Kelly Scientific Corporation; Raymond Knickel, electronics consultant; Richard Larson, Massachusetts Institute of Technology; Joseph Navarro, IDA; and Jean Taylor, IDA. This staff was augmented by an advisory committee and a group of consultants.