

his own principal subordinates to undertake a systems study of his agency's procedures. The Northeast Corridor transport studies (*Science*, 4 March 1966) illustrate strikingly how the government can use systems analysis as an integral part of its process of program development, however.

In view of the very gradual—in some cases grudging—acceptance of systems analysis techniques within the federal government, it is not surprising that the states and localities should need help and encouragement in using these techniques. Inquiries received by the Bureau of the Budget about the new planning, programming, and budgeting (PPB) system indicate that interest in this approach to management and decision-making is becoming widespread.

The PPB methodology involves a comprehensive and precise statement of government objectives, together with cost-benefit studies of various alternatives for attaining those objectives. Mastering this methodology can be a first step toward effective use of systems analysis studies of major social problems.

The Bureau of the Budget is helping to organize a 12-month pilot project for the development of PPB systems by five states, five counties, and five cities in several program areas, such as health and public housing, which receive substantial federal support. The operational phase of the project has not yet begun, and the states and localities which will participate have not yet been identified. New York City has moved on its own initiative to adopt the PPB system, to make greater use of computers (in police work, for example), and to undertake systems studies leading to a reorganization of the city government.

If effective use of the new approach to government decision-making and problem-solving is to be widespread, a much larger federal effort to assist the states and localities in that regard apparently will be necessary. Systems analysis of major problems is not cheap, and, furthermore, it demands special training of those who sponsor the studies as well as of those who conduct them. When California began its four initial systems studies, for which it paid \$100,000 apiece, the state found that it lacked the competence to monitor them. It hired System Development Corporation to oversee the methodological aspects of the studies conducted by the four aerospace com-

panies—Aerojet General, Space-General, Lockheed, and North American Aviation.

After several days of hearings on his bill, held in Los Angeles and Washington, Senator Nelson has concluded that the measure should be revised to provide for more than just funds for the financing of systems studies. He would provide also for at least enough training of state and local officials in systems analysis techniques to enable them to monitor studies done on contract. Not only is some technical expertise required of those who monitor studies, but some grasp of systems analysis methods by government policy makers is necessary if the study results are to be used and appreciated.

Brown Enthusiastic

Governor Brown of California has enthusiastically endorsed the Nelson bill. Although some people are disappointed that the first California studies have not yet led to dramatic action programs, the state has shown enough interest in the results to follow them up with further investigations. For example, a \$200,000 contract for a study of social welfare problems has been awarded to Space-General Corporation, partly as an outgrowth of the crime control study which Space-General conducted. A \$200,000 contract also has been awarded for a study of land-use data, a project closely related to the study of a statewide information system. If some urgency has gone out of the California study program, it is because the aerospace industry has not suffered the heavy loss of defense and space contract work once feared.

Some large questions must be answered before "systems" to combat pollution, crime, urban blight, and other social ills are not only formulated but established and put in operation. Just what such systems would be, and how they would operate, generally remains vague.

Having a private firm establish a waste disposal system for a large metropolitan region is perhaps one way of overcoming the region's political fragmentation. But that fragmentation may prove one of the greatest obstacles in creating the system in the first place. How can the multitude of individual political units within metropolitan regions be brought to collaborate in so novel a venture? And will they simply have a company establish the system, then turn it over to a regional

political authority for operation? Or will the operating authority be delegated to the company? And, if the latter, how will the voters react to the fact that a profit-making enterprise has been given authority to run a service affecting their interests?

These and other questions involved in the application of systems analysis to social problems are indeed important and difficult—so much so that the Republican enthusiasts for the "systems approach" believe that establishment of their proposed National Commission on Public Management should precede any other steps. The commission would be asked to identify those social problems to which the systems approach is most applicable and to suggest how that approach can best be applied. The 13-member commission would consist of two senators, two congressmen, and nine members to be appointed by the President from among persons in government, education, business, or research, who have special training or interest in the matter which the commission will consider.

For his part, Senator Nelson calls the Republican bill a "half-hearted step," and says that no national study is needed. However this may be, it now seems evident that political interest in the systems approach to the problems of government and society is fast growing. This may be taken as a hopeful sign by those who believe that this approach offers the only real solution to problems which are among the nation's most important and vexing.

—LUTHER J. CARTER

Announcements

The **National Endowment for the Humanities**, part of the National Foundation on the Arts and the Humanities, recently awarded its first grants. The recipients are:

The Modern Language Association of America: \$300,000 for a center to edit and publish accurate editions of the works of several American writers since the mid-19th century.

The American Classical League: \$32,500 to study and make plans for improving Latin instruction in secondary schools.

American Council of Learned Societies: \$25,000 to help meet the expenses of U.S. scholars participating in international conferences.

The Frederick Douglass Institute, Washington: \$20,000 for its education program on contributions of the African heritage to human history and culture.

American Society of Papyrologists: \$14,000 for a summer institute on papyrology, for graduate students and scholars.

The humanities endowment is also accepting applications for the three types of financial aid to be given next year.

Postdoctoral fellowships and summer stipends: support for the summer or for 6- to 8-month periods for persons who have had the Ph.D. for up to 5 years; candidates must be nominated by their institutions, and no institution may nominate more than one person; deadline: 10 October.

Senior fellowships: for individuals "of already distinguished achievement as humanists"; stipends may be up to \$15,000 but may not exceed the recipient's present salary. Some dependent and travel allowances may also be provided. Deadline: 17 October.

Support for projects: applicants may be either individuals or institutions in the U.S.; proposals may be for any of a number of research, educational, or publication projects. Deadline: 17 October.

Additional information is available from the Office of Grants, National Foundation on the Arts and the Humanities, 1800 G Street, N.W., Washington 20506.

The National Institute of Mental Health has published a **Bibliography in Neuropsychology**, which lists reviews and books for the years 1960-65. The entries deal with research involving the effects on behavior of manipulating the central nervous system by anatomical, physiological, or biochemical means and effects on the CNS caused by manipulating the behavioral processes. The booklet is approximately 25 pages long and is divided into separate sections on articles and books; both sections include listings by senior author and by general topic. Copies are available free of charge from Richard T. Louttit, Behavioral Sciences Research Branch, NIMH, Bethesda, Maryland 20014.

The Analytical Methods Evaluation Service was established recently by the Public Health Service's division of **air pollution** at the Robert A. Taft Sani-

tary Engineering Center in Cincinnati, Ohio. Headed by Bernard E. Saltzman, of the center, the service is aimed at developing and standardizing methods by which laboratories can collaborate in testing procedures for measuring and analyzing air pollutants. It will work in cooperation with the Intersociety Committee on Manual of Methods for Ambient Air Sampling and Analysis and will give priority to testing its methods. The committee represents the Air Pollution Control Association, American Conference of Governmental Industrial Hygienists, American Industrial Hygiene Association, American Public Health Association, American Society for Testing and Materials, American Society of Mechanical Engineers, and the Association of Official Analytical Chemists.

Scientists in the News

The National Science Foundation has announced the following appointments in its education organization:

Thomas D. Fontaine, associate director for education; he was division director for graduate education in science but has been acting associate director for education since June when Henry W. Riecken resigned.

Howard D. Kramer, division director for graduate education in science, a position he has held on an acting basis since June; he was formerly head of the division's fellowships section.

Keith R. Kelson, deputy associate director for education, a newly established position; he will continue as director of the division of pre-college education in science until a successor is named.

Harold J. Coolidge, executive director of the Pacific Science Board, in the office of the foreign secretary of the National Academy of Sciences, has been elected president of the International Union for Conservation of Nature and Natural Resources. He is the first American to hold this office; he will serve for 3 years. The IUCN is composed of delegates from government and other organizations in 67 countries.

Henry S. Rowen, assistant director of the Bureau of the Budget, will succeed **Frank R. Collbohm** as president of the Rand Corporation on 1 January. Collbohm will continue at Rand as a

special consultant. Rowen, a graduate of M.I.T. and of Oxford, was in the corporation's economics department from 1950 to 1961, when he entered the federal service as Deputy Assistant Secretary of Defense for International Security Affairs. He joined the Budget Bureau last year.

The Soviet Academy of Sciences has announced the appointment of **Jan Paive**, of Riga, Latvia, as chief academic secretary. He succeeds **Norair Sisakyan**, who died in March, to the academy's second highest post. Paive is an agricultural specialist and former chairman of the lower house of the Soviet Parliament.

O. Meredith Wilson, president of the University of Minnesota, has been named director of the Center for Advanced Study in the Behavioral Sciences, in Stanford, California, effective next July. He will succeed **Ralph W. Tyler**, the center's first director, who plans to retire from that post but to continue serving on several national and international committees of which he is a member.

Kenneth O. Wright, astronomer at the Dominion Astrophysical Observatory in Victoria, British Columbia, Canada, has been appointed director of the observatory, succeeding **Robert M. Petrie**, who died in April.

Clifford A. Spohn, who recently retired from the Air Force, has been appointed director of the Environmental Science Services Administration's national environmental satellite center. He had been commander of the 6th weather wing at Andrews Air Force Base, where he had been staff meteorologist to the commanders of the Air Force Systems Command, Office of Aerospace Research. Spohn succeeds **Arthur W. Johnson**, now deputy director of ESSA.

The 1966 Vetlesen prize for achievements in the earth sciences will be presented to **Jan Hendrik Oort**, professor and director of the Leiden Observatory, University of Leiden, Netherlands. Oort, whose major studies have been on the rotation of our galaxy and on radio astronomy, is to receive the \$25,000 award 18 October at Columbia University. He will be the principal speaker the next day at a symposium on "galaxies and the universe."