ences was clearly outside his responsibilities, the Budget Bureau's call for strengthening and revamping the weather operations of the Department of Commerce appears to have fitted in neatly with White's own views. In a speech in April 1964 to a joint meeting of the American Meteorological Society and the American Geophysical Union—more or less deliberately calculated as a trial balloon—White emphasized that, while in the universities "the scientific unity of the geophysical or environmental sciences" was increasingly recognized, within the government these pursuits remained widely scattered. Even in the Department of Commerce, he pointed out, "the Weather Bureau, the Coast and Geodetic Survey, and the Central Radio Propagation Laboratory . . . are all directly involved in the detailed description, analysis, and prediction of all aspects of the physical environment. They are all active in the fields of seismology, oceanography, meteorology, hydrology, aeronomy, geodesy, geomagnetism, and solar physics." While White pointed out that there was a "logic in this dispersal of environmental scientific and technological activities," he made plain his feeling that the logic was open to question. And he concluded his speech by calling for "widespread debate and open discussion" on the basic question: "How may we organize the environmental, scientific, and technological activities of the Federal Government so that we may have the benefits of integration—sound planning and management of programs, the best use of the science and technology dollar, an awareness of significant long-range problems, and an understanding of the relative value of the entire range of environmental scientific and technological activities—without hampering the ability of an agency to perform its primary missions and without sacrificing the ability to concentrate on immediate crucial problems that dispersal gives us?"

White's call for discussion fell on fertile ground. It was quickly taken up by the top science adviser in the Commerce Department, J. Herbert Hollomon, Assistant Secretary for Science and Technology. An intradepartmental committee was formed which included White, Rear Admiral H. Arnold Karo, director of the Coast and Geodetic Survey, and Allen V. Astin, director of the National Bureau of Standards. Assisted by outside consultants, among them Lloyd Berkner, Roger Revelle, and Emanuel Piore, the group made a study of all the environmental science activities in the Department and was influential in formulating the proposal for the merger that was contained in the President's message.

Effect on Department

The Johnson proposal is modest in the sense that it does not grapple with environmental activities outside the Department of Commerce. Its effect within the Department, however, is likely to be considerable. Its purpose is not so much to reduce duplication—the activities of the three agencies involved are closely related but do not really overlap—as to make possible an approach that is more unified in terms of both scientific research and public services. The Weather Bureau, for example, does provide a number of specialized services to clients in agriculture, aviation, and shipping, but its central function is to collect and report weather data for the largest possible general audience; its budget in 1965 was close to $93 million. The major function of the Coast and Geodetic Survey is the preparation of aeronautical and nautical charts, but it is also responsible for reporting information about earthquakes, seismic sea waves, and so forth, to the general public; in 1965 its activities were budgeted at around $38 million. The Central Radio Propagation Laboratory, with a budget of $13 million, is more specialized. It is the main government agency for research and services on the propagation of radio waves—or, as one official described it, "predicting radio weather"—but its predictions are available not only to other federal agencies for military and space programs but to anyone interested in long-range radio communications.

Thus, all three agencies are involved not only in basic research but in communicating with the public, and it is hoped that their fusion will both strengthen basic science and improve public services. One day, it is hoped, a single phone call to a local service station will be rewarded by receipt of all kinds of weather information that now must be collected separately. At the same time, it is hoped that the merger will promote a kind of cooperation between, for example, oceanographers and meteorologists which agency separatism has up till now made difficult.

In addition to its effect on research and services, the Environmental Science Services Administration is likely to have a certain bureaucratic impact. When all the parts are assembled, the new agency will have approximately 10,000 employees (more than the Department of Labor) and will constitute about a third of the operations of the Commerce Department. Also, though details are vague, it appears to be the plan for the merger to result in a universal upgrading of everyone connected with the present enterprises. Certain key jobs, such as those of chief of the Weather Bureau and director of the Coast and Geodetic Survey, are to be abolished, with one administrator and one deputy administrator supervising the newly combined operation. But while there may be some jockeying for position as the functional integration progresses and the old agencies relinquish their separate identities—a process that is expected to be gradual—there seems to be room enough for everyone and little likelihood that jobs or status will be threatened.

The relative painlessness of the proposed transformation seems to account for the total absence of opposition the reorganization plan has encountered so far. Under the executive reorganization statute the Congress has 60 days to study the plan; after that, unless the House or Senate votes to disapprove it, it automatically goes into effect. Although the Government Operations committees of both House and Senate are planning to hold hearings on the plan, the motives appear to be a sense of constitutional responsibility and general interest, rather than uneasiness or disapproval. Thus, if matters work out as anticipated, the Environmental Science Services Administration should be in existence by the middle of July. And there is a feeling that while it is not the meteorological millennium, the new agency is a sound first step in making a more far-reaching unification possible.

—ELINOR LANGER

Announcements

The National Aeronautics and Space Administration invites scientists to propose research experiments and design studies for forthcoming manned and unmanned space missions, and to propose **space investigations** not now scheduled. Most of the scheduled flights will take place from 1967 to 1970. Detailed

descriptions and timetables are included in a booklet, "Opportunities for Participation in Space Flight Investigations," prepared semiannually and distributed in the U.S. by NASA's Office of Space Science and Applications, and distributed abroad by the NASA Office of International Affairs. The opportunities include placing scientific instruments in available space on unmanned satellites and orbiting observatories, sounding rockets, balloons, the X-15 research plane, Apollo manned flights, and advanced manned lunar orbital and surface missions. Proposals may also include experiments involving the design and construction of an entire spacecraft, or those which involve special characteristics or requirements calling for the development of a new Explorer spacecraft or scheduling additional missions for Explorers already developed. Proposals from outside NASA should be sent by 1 January to the Director of Grants and Research, Code SC, NASA, Washington, D.C. 20546.

The **Heron Island Research Station**, at the southern end of Australia's Great Barrier Reef, is increasing its research facilities. The station offers laboratory space, with basic equipment and living quarters for scientists from anywhere in the world to conduct research programs in the marine sciences. The projects and length of stay are determined by the researchers themselves. The fauna of the area is protected by law, but scientists may collect specimens for their research under government permits. Additional information on the station and opportunities for research are available from the honorary secretary of the Great Barrier Reef Committee, R. Endean, Department of Zoology, University of Queensland, Brisbane, Australia.

The Pacific Science Center, Seattle, has announced plans for a **regional learning center in mathematics**, under grants of $176,000 from the Carnegie Corporation and $100,000 from the Sloan Foundation. The center will be accessible to all schools in the region and to the public; it will feature materials that "contribute to understanding mathematics and to its more effective teaching," according to Dixie Lee Ray, director of the Science Center. Plans call for an extensive exhibit, a reference center and reading alcove, workshop for constructing new teaching aids, and an area for in-service training of teachers, for meetings, and for both school-oriented and public demonstrations. The development of the center will be guided by a mathematics advisory committee, headed by Carl Allendorfer, a professor of mathematics at the University of Washington.

The Pacific Science Center Foundation has announced the postponement of the first **Warren G. Magnuson Lecture**. The lecture, which was to have been presented 1 June by Vannevar Bush, will be given later in the summer, at a date to be announced.

About 325 U.S. and Canadian scientists are charter members of the newly formed **Animal Behavior Society**. The organization, which will promote the biological study of animal behavior, is intended to serve scientists in a variety of disciplines who use animal studies in the attempt to understand human behavior. The society initially plans to hold two meetings a year—one in August with AIBS, the other in December with AAAS. The president is Edgar B. Hale, of Pennsylvania State University. Additional information is available from the society, 207 Old Main, University Park, Pennsylvania.

Meeting Notes

The 10th symposium on **space and ballistic missile technology** will be held 4–6 August at the U.S. Naval Training Center, San Diego, California. It will be sponsored by the space systems, ballistic systems, and research and technology divisions of the Air Force Systems Command. The objective of the meeting is to present technical progress and potential military space and ballistic missile systems, as they interact with technological advances, military requirements, and effective utilization of resources. Only invited papers will be presented. (Miss C. Budelier, Aerospace Corporation, P.O. Box 95085, Los Angeles, California 90045)

The Society for Nondestructive Testing will hold its spring national convention 7–11 March in Los Angeles. Papers are invited on all aspects of **nondestructive testing**. Deadline for receipt of abstracts: *2 August*. (E. L. Criscuolo, U.S. Naval Ordnance Laboratory, White Oak, Silver Spring, Maryland 20910)

A seminar on **control procedures in drug production** will be held 23–27 August at the University of Wisconsin, Madison. The sponsors are the U.S. Department of Agriculture, Pharmaceutical Manufacturers Association, and the University of Wisconsin's school of pharmacy and its extension services in pharmacy. It will be open to about 100 quality control and production supervisors of drug manufacturing firms who are responsible for meeting drug standards. The program will include discussion of "current good manufacturing practices" and FDA's regulations in the area. It will feature lectures and discussions on the following: general principles of quality control; buildings, engineering, and maintenance; raw materials control; packaging and labeling control; quality control administration; drug control inspection; drug recalls; and personnel management. (W. Blockstein, Extension Services in Pharmacy, University of Wisconsin, Madison)

The 15th annual instrument symposium and research equipment exhibit will be held at NIH 4–7 October. The symposium will be on recent developments in **research methods and instrumentation**; primary topics of discussion will include comprehensive medical data profile system, retrieval of scientific information, fiber optics, trace contaminants in closed atmospheres, oceanographic research and instrumentation, special infrared sampling techniques program, germfree animal research, and single cell research. (J. B. Davis, National Institutes of Health, Bethesda, Maryland 20014)

The Oak Ridge Institute of Nuclear Studies will present a conference on **radiation biology**, 2–5 August in Oak Ridge, Tenn. Participants will be college and university faculty members interested in keeping abreast of new developments in the field. The program will include discussion of how information from radiation studies can be incorporated into the undergraduate curriculum in the natural sciences, and it will consider curriculums that should be designed to prepare students for graduate work in radiation biology. Some stipends are available, of up to $15 a day, plus round-trip travel expenses to Oak Ridge at the rate of 4 cents per mile. (W. W. Grigorieff, Oak Ridge Institute of Nuclear Studies, P.O. Box 117, Oak Ridge, Tenn.)

Courses

The University of Michigan and the University of Detroit will cosponsor a course on the applications of **computers** to automated design, in Ann Arbor, 2–6 August. Applicants must have a bachelor's degree in engineering, mathematics, or physical science, or the equivalent background. The course will discuss total concept systems, from design intent through engineering, manufacturing, and quality control. Emphasis will be on advanced design practices and techniques which are currently being phased into commercial industrial practice. The fee is $160. (Conference Secretary, Engineering Summer Conferences, University of Michigan, Ann Arbor)

The **management of research and development** will be the subject of a course at M.I.T. 2–13 August. It is intended for persons in industry and government responsible for directing research and development programs, and for managing-engineers and scientists. Lectures and workshops will emphasize two themes: the findings of behavioral-science research on the communication and motivation factors affecting the performance of scientists and engineers, individually and in groups; and the developments stemming from economic research and systems analyses of problems of planning, organizing, and controlling research and development. (Director of the Summer Session, Rm. E19-356, M.I.T., Cambridge 02139)

Georgia Institute of Technology will offer a course on the foundation of **gaseous kinetics**, 13–24 September in Atlanta. It is designed for research workers and teachers who are concerned with activities in which the rate of chemical processes and of energy exchange in the gaseous phase are important considerations. Applicants should have a bachelor's degree in engineering or one of the physical sciences and have a good working knowledge of calculus. A $300 working registration fee is required. (Director, Department of Continuing Education, Georgia Institute of Technology, Atlanta 30332)

Applications are being accepted for a course on **cancer chemotherapy** 25–30 October in New York. The course is designed primarily for physicians. It will cover pharmacological techniques; methods for clinical evaluation of potential chemotherapeutic agents; and a review of the chemistry, pharmacological effects, and clinical applications of the polyfunctional alkylating agents, the antimetabolites, steroid hormones, and miscellaneous agents in the treatment of cancer. Applications should include brief summaries of the applicants' clinical training and current appointments. (D. A. Karnofsky, Sloan-Kettering Institute for Cancer Research, 410 East 68 Street, New York 10021)

New Journals

Hydata; vol. 1, No. 1, January 1965. Icko Eben, Editor. (American Water Resources Association, P.O. Box 434, Urbana, Illinois 81802). "An international review of the contents of periodicals in the field of water resources." Monthly; $2 per issue, $18 per year.

Israel Journal of Medical Sciences; vol. 1, No. 1, January 1965. Moshe Prywes, Editor. (P.O. Box 2296, Jerusalem) English-language material in clinical medicine and the basic medical sciences; incorporates *Israel Medical Journal* and *Israel Journal of Experimental Medicine*. Bimonthly; $12 per year. (U.S. and Canadian agents: Intercontinental Medical Book Corp., 381 Park Ave. S., New York 10016)

Nuclear Applications; vol. 1, No. 1, February 1965. Louis G. Stang, Editor. (In care of Brookhaven National Laboratory, Upton, N.Y. 11973) American Nuclear Society publication covering practical applications of nuclear science, nuclear engineering, and related areas. Bimonthly, $21 per year.

Water Resources Research; vol. 1, No. 1, first quarter 1965. Walter B. Langbein and Allen V. Kneese, Editors. (American Geophysical Union, Suite 506, 1145 19th St. NW, Washington, D.C. 20036) Research in the social and natural sciences which pertain to water resources. Quarterly; $2.50 per copy, $6 per year.

Who's Doing What in Biomedicine; vol. 1, No. 1, May 1965. Edward Leyman, editorial director. Listing of research scientists' current investigations and where their work is being done. (Center for Information Resources, 2431 K St. NW, Washington, D.C. 20037. Monthly; $100 per year, nonprofit institutions and staff members; $150, profitmaking organizations and staff members; $115 individuals)

Publications

The Public Health Service has released two new **research and training grant policy statements**, which will become effective 1 July. They provide the essential terms and conditions developed for PHS research and training grants, including the cost principles outlined by the Bureau of the Budget in Circular A-21, revised 3 March. The new statements are *Grants for Research Projects, Policy Statement* (PHS publication 1301), which replaces the current Grants Manual as the source of basic policy requirements under which PHS research grants are administered; and *Grants for Training Projects, Policy Statement* (PHS publication 1302), which contains general terms and conditions for the administration of PHS grants to institutions for research and service training. Each of the publications has a supplement entitled *Operating Procedures*, describing the detailed procedures involved in implementing the grant policies. The statements are available free of charge. (Division of Training Grants, Public Health Service, U.S. Department of Health, Education, and Welfare, Washington, D.C.)

The Scientific Manpower Commission has published a summary of salary surveys, entitled **Salaries of Scientists and Engineers**. It includes starting and median figures in general and specifically for persons in private industry, government, and educational institutions; it also contains a section on Canadian salaries. The 30-page booklet is available for $1 from the Scientific Manpower Commission. (2101 Constitution Avenue, NW, Washington 20418)

The titles of about 400 articles and their authors are included in a recently released bibliography, **Perceptual-Cognitive Development**, published by the Galton Institute. The items were taken primarily from *Psychological Abstracts* (1963) and *Bibliography and Abstracts in Child Development* (1963). Copies are available for 25 cents from the Galton Institute, 1053 South La Cienega Blvd., Los Angeles, Calif.)

The National Bureau of Standards recently published a booklet on the construction, maintenance, and characteristics of **standard cells**. It describes the origin and derivation of the unit of electromotive force and outlines

the procedures by which NBS maintains and disseminates this unit by means of standard cells. The publication emphasizes the precision and accuracy of electromotive force measurements, stability of standard cells, and efforts to construct high quality standard cells. (*Standard Cells, Their Construction, Maintenance, and Characteristics*, NBS Monograph No. 84. Superintendent of Documents, U.S. Government Printing Office, Washington, D.C., 20402. 38 pages; 35 cents.)

Scientists in the News

The Rumford Prize of the American Academy of Arts and Sciences went this year to **Samuel C. Collins** and **William D. McElroy**. The prize includes medals and a $5000 honorarium to each recipient, for work in the sciences of heat and light. Collins, professor emeritus of mechanical engineering at M.I.T. and a consultant to Arthur D. Little, Inc., received the prize for his invention of the Collins helium cryostat and for his work in low-temperature research. The award to McElroy recognizes his research on the molecular basis of luminescence. He heads the McCollum-Pratt Institute at Johns Hopkins University.

William F. Caveness, formerly of Columbia University, has been appointed to the recently created position of associate director of the National Institute of Neurological Diseases and Blindness.

David Yphantis, associate professor of biochemistry at the Rockefeller Institute, New York, will join the State University of New York at Buffalo in July as professor of the biology department.

The University of Michigan announces the appointment of **H. R. Crane** as chairman of the physics department, as of 1 July. He is a professor of physics at the school.

Howard P. Wile, administrator of research at the Polytechnic Institute of Brooklyn, will become executive director of the Committee on Governmental Relations of the National Association of College and University Business Officers, in September. He will succeed **Nelson A. Wahlstrom**, who has announced plans to retire.

John W. Evans, director of the Sacramento Peak Solar Observatory, has been presented with the Defense Department's highest honor for a civilian employee, the Distinguished Civilian Service award. He was cited for his research on the physical processes of solar magnetic fields, mass motions of the solar photosphere, and the growth and development of solar flares.

William Maurice Ewing, director of Columbia University's Lamont Geological Observatory, recently received the Swedish Society for Anthropology and Geography's 1965 Vega medal, for his "pioneering researches in the history of the earth, particularly in the fields of climatic changes, ocean sediments and the morphology of the ocean floors which have stimulated much fundamental research. . . ."

The U.S. Coast and Geodetic Survey has named **Milton G. Johnson** as chief economist. He had been deputy chief of the technical projects division in the Commerce Department's Area Redevelopment Administration.

J. Neils Thompson, professor of civil engineering at the University of Texas and director of the school's Balcones Research Center, has been elected president of the National Society of Professional Engineers.

Joseph K. Hichar, dean of biology at Parsons College, Fairfield, Iowa, will become dean and professor of biology at Hiram Scott College, Scottsbluff, Nebraska. Hiram Scott is a new college, scheduled to open this fall.

M. Brewster Smith, professor of psychology at the University of California, Berkeley, has been appointed director of the Institute of Human Development at the Berkeley campus of the university.

John W. Josse, of Washington University's medical school, has been named head of the department of physiology at the medical school, as of 1 July. He succeeds **Harvey L. White**, professor emeritus of physiology.

Horace R. Byers, chairman of the department of meteorology at the University of Chicago, will become the first dean of the college of geosciences at Texas A&M University, in September.

Frederick B. Llewellyn, formerly deputy for the director of the Institute of Science and Technology, University of Michigan, has become director of research at the Polytechnic Institute of Brooklyn.

The University of Tennessee has announced the appointment of **J. Sherman Davis** as assistant dean of the school of basic medical sciences. He is head of the research career section, research fellowships branch, National Institute of General Medical Sciences.

Luther Terry has been reappointed to a 4-year term as Surgeon General of the Public Health Service.

Parker R. Beamer, former chairman of the department of pathology, Indiana University school of medicine, has become professor of pathology at the University of Southern California medical school and chief pathologist at Los Angeles County General Hospital.

Charles P. Huttrer, formerly chief of the European Office, NIH, American Embassy, Paris, has become biomedical attaché to the U.S. Mission, Geneva, Switzerland.

The new associate director of development at the University of Chicago's division of biological sciences is **Malcolm D. Ferrier**, formerly managing editor of the American Nuclear Society's publications.

Max Solow, formerly a senior scientist with the Martin Company, Baltimore, Md., has been appointed research coordinator for physics at the U.S. Navy Marine Engineering Laboratory, Annapolis.

John T. Goodwin, Jr., has been appointed director of the department of chemistry and chemical engineering at Southwest Research Institute, San Antonio, Texas. He had been vice president for research of the Corn Industries Research Foundation, Washington.

Mark C. Paulson, head of the chemistry department at Bradley University, Peoria, Ill., has been appointed professor and chairman of the chemistry department at Chatham College, Pittsburgh, Pa., effective in September. He will succeed **Earl K. Wallace**, who will become professor emeritus.