tional security." The whole effort for a military-commercial link was summed up by the subcommittee as "ill-advised, poorly timed and badly coordinated." Although the committee expressed gratification that the Pentagon was finally going ahead with its own system, it complained that "uncertainty and over-economizing" could still be detected, and asked why a "new large element of uncertainty" had been brought into the long-delayed program by the Pentagon's proposal to rely on the unproved Titan booster. The committee recommended that this plan be dropped and a reliable booster utilized instead. So far, however, there is no indication that the Pentagon intends to follow the committee's advice and give up its money-saving plan for free rides on Titan.

Domestic Dispute

Comsat itself, after a respite from its international debut, is again turning its attention to domestic issues. The chief problem currently on hand is the contested issue of who is to own the ground stations located on U.S. territory—Comsat or the communications carriers. Although this was the subject of extensive debate at the time Congress was considering the satellite bill, in the end Congress failed to supply a legislative solution. Instead, the problem was put off to another time and placed under the jurisdiction of the Federal Communications Commission, which was directed to decide between the competing claims of the carriers and the corporation for each station on the basis of which was more likely to "best serve the public interest, convenience and necessity," and "without preference for either."

If there is a surer formula for a free-for-all it is difficult to imagine, and Comsat precipitated one by proposing to the FCC last August that Comsat alone be authorized to construct and own four initial terminal stations on U.S. territory. Comsat's principal arguments, as they have developed, are (i) that "the critical relationship between satellites and terminal stations calls for station ownership and operation by [Comsat]"; (ii) that "competition will be strengthened by placing the maximum amount of control of satellite communication in an entity that has no interest in competing forms of communication"; and (iii) that Comsat "can be most effective as the U.S. representative on the international body governing the global system" if it owns and operates the domestic terminals.

Comsat's arguments set off wide protest among the communications carriers, who, with the exception of one company, Western Union, all dashed off briefs opposing Comsat's claims. Although the objections were phrased in various ways, one common element was insistence that the law directed the FCC to consider applications for *each* ground station separately, and that the commission lacked authority to grant Comsat the blanket ownership requested. This point was raised even by A.T.&T., which, even though it has such a dominant position in Comsat that it could hardly be adversely affected by the outcome, would still prefer to see the awards made on a case-by-case basis.

Fear that Comsat ownership would in effect be a smoke screen for further extension of the communications monopoly already enjoyed by A.T.&T. was implicit in most of the opposing briefs and explicit in several. "Should Comsat achieve the monopoly it presently seeks," said I.T.T. World Communications, Inc., "the end result may well be that the international record carriers will be forced from the field and that two entities, A.T.&T. and Comsat, will completely control United States international communications traffic." This point was also raised by the American Communications Association, a labor union operating in the communications field, which said that the Comsat proposal would "tend to strengthen the already pervasive monopoly control by [A.T.&T.] . . . and would result in loss of employment to employees now employed in the international communications industry." None of the carriers appear to accept Comsat's contentions that ownership of the terminal stations by an entity other than Comsat would produce insurmountable technical and administrative problems, or that the interest of the carriers in other means of international communication would make them less sensitive to the special requirements of the satellite network. And, indeed, since high-level representatives of the carriers are no further away than Comsat's own board room, and since everyone's hands are more or less in the same pocket, it is hard to see why either coordination or "subversion" should be a major problem. Comsat, however, continues to promote its position that the only way to secure sufficient devotion to the interests of the global system is to advance competition by giving Comsat a monopoly.

The principal reason for the intense concern that lies behind the so far rather gentlemanly discussions of principle and "the public interest" is, rather simply, money, for ground stations are the tollbooths through which all communications traffic from the satellites must go, and in this monopoly as in the other, whenever you pass "go," someone is going to collect the $200. Quite aside from the cash angle, however, it is plain that the FCC's decision will have an enormous impact not only on the development of the satellite system and the evolution of Comsat but on domestic relations between Comsat and the carriers and on the tenuous balance of power between the domestic carriers themselves. How the FCC will untangle the confusing claims is still unknown, but it is probable that, however the commission rules, the issue will still find its way into court for final resolution, for it is sufficiently important for all the contenders that none of them is likely to give up gracefully.

—ELINOR LANGER

(This is the second of two articles on the Communications Satellite Corporation.)

Announcements

Boston University's new division of **communication research** is now accepting applications for admission to the graduate program leading to an M.S. in communication research. Research internships are offered between the second and final semesters, allowing interns to work in organized research under the direction of a senior researcher. Further information on the program is available from E. J. Robinson, Chairman, Communication Research Division, Boston University, 640 Commonwealth Avenue, Boston, Mass. 02215.

Formation of an information exchange group for **research on interferon** has been announced by the National Institute for Medical Research in London, and the Laboratory of Biology of Viruses, National Institute of Allergy and Infectious Diseases. It will enable scientists working on interferon to communicate research findings or scientific information to others in the field throughout the world by sending communications to the "center" where duplicate copies will be printed promptly and mailed out. The chairman of the exchange is Alick Issacs of the NIMR in London. Further information is avail-

able from Samuel Baron, co-chairman of the exchange, Laboratory of Biology of Viruses, NIAID, Bethesda, Md. 20014.

The North Atlantic Treaty Organization has announced plans for the organization of its 1965 **Advanced Study Institutes**. Their purpose is to provide advanced teaching on selected topics by bringing scientists and research workers together at meetings lasting for a minimum of 2 weeks. Participants are selected from several countries, and any scientific topic is eligible for consideration. Meetings take the form of practical experimental courses, as well as lectures and discussions. Grants from NATO are available to cover traveling and living expenses of visitors. Persons interested in organizing an Advanced Study Institute should write NATO. Deadline for application: *15 December*. (Scientific Affairs Division, NATO, Place du Maréchal de Lattre de Tassigny, Paris 16e France.)

Meeting Notes

The 1965 **Heat Transfer and Fluid Mechanics Institute** is scheduled 21–23 June at U.C.L.A. Topics to be discussed include: boundary layer flows and stability, including mass transfer and non-equilibrium; free shear flows and separated regions; radiation heat-transfer and radiation gas dynamics; plasma flows, arc facilities, MHD, general hypersonic flow problems, and special problems—low density flows, non-Newtonian fluids, and fluid dynamics of biological systems. Deadline for 2-page abstracts, in triplicate: *15 December*. (A. F. Charwat, general chairman, Department of Engineering, University of California, Los Angeles 90024.)

Grants, Fellowships, and Awards

U.S. **medical students** may be eligible for fellowships to work in remote medical stations in underdeveloped areas of Africa, Asia, Latin America, and Oceania. The grants will cover travel costs and living expenses for periods of at least 10 weeks; husband and wife medical teams will be considered. The grants are available only for medical students in their junior or senior year; seniors must plan to complete the fellowship before starting their internship. The grants are being awarded by the Association of American Medical Colleges from funds provided by Smith Kline and French Laboratories. Deadline for applications: *31 December*. (AAMC, 2530 Ridge Avenue, Evanston, Ill.)

The National Academy of Sciences–National Research Council announces the availability of **postgraduate and graduate** fellowships for 1965–66. Graduate fellowships are available in the mathematical, physical, medical, biological and engineering sciences; also in anthropology, economics, geography, history and philosophy of science, linguistics, political science, psychology, and sociology. U.S. citizens who are college seniors, graduate students working toward a degree, postdoctoral students, and those with equivalent training may apply. Applicants will be required to take the Graduate Record Examination, administered by the Educational Testing Service, on 16 January. Deadline for application: *11 December*.

Postdoctoral fellowships are also available in the above-named fields, as well as in geochemistry, meteorology, and oceanography. U.S. citizens who have earned a doctoral degree in one of the fields of science mentioned are eligible to apply. Deadline for application: *14 December*. Further information on both fellowship programs is available from: Fellowship Office, NAS-NRC, 2101 Constitution Avenue, NW, Washington, D.C. 20418.

Postdoctoral and predoctoral **research training fellowships** are available through the Social Science Research Council. They are being offered to recent recipients of the doctoral degree in a social science field and to candidates who will have met all requirements except the dissertation at the time they intend to begin their fellowship terms. Normal age limits are about 30 years for predoctoral and 35 years for postdoctoral appointees. Appointment is limited to U.S. and Canadian citizens. Requests for application information should include the following information: nature of the proposed training or research, amount and duration of support sought, age, citizenship, permanent residence, present employment and academic degrees (specifying fields). Application deadline: *1 December*. (SSRC, Fellowship Office, 230 Park Avenue, New York 10017.)

The biochemistry department, University of Washington, and the clinical chemistry laboratories, University Hospital, have announced the availability of traineeships in **clinical chemistry** to begin next summer. They carry a stipend of $5000 to $6000, depending upon experience, as well as an NIH allowance of $500 per dependent. Emphasis will be placed on providing trainees with investigative experience directed toward the study of normal and abnormal biochemical functions. Trainees will study in the following active research and diagnostic laboratories of the University Hospital and Medical School: clinical chemistry, radioisotope, hemodialysis, immunoelectrophoresis, and diagnostic endocrine research. Graduates with a Ph.D. in biochemistry or chemistry are eligible to apply. Deadline for application: *31 December*. (Alex Kaplan, associate professor, biochemistry, and director, Clinical Chemistry Laboratories, University of Washington, Seattle 98105.)

The U.S. Atomic Energy Commission has announced the availability of eight special fellowships in **industrial medicine** for the 1965–66 academic year. They are open to physicians who are U.S. citizens, have graduated from an approved college of medicine and completed 1 year of internship, are licensed to practice in at least one of the states or territories, and intend to practice industrial medicine. The two-part program includes a 2-year academic phase, covering instruction in the practices of industrial medicine, hygiene and toxicology, nuclear physics, biophysics, biostatistics, and public health aspects of occupational medicine. The field training year stresses the application of knowledge gained in the academic phase and observation and participation in the operation of an industrial medical service under supervision. Application deadline: *1 January*. Further information is available from H. A. Blair, Secretary, AEC Industrial Medicine Fellowship Committee, P.O. Box 287, Station 3, Rochester 20, New York.

Publications

The American Association of Petroleum Geologists has issued a revised edition of the AAPG Slide Manual, a guide to the **preparation and use of projection slides**. It gives basic informa-

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tion on the preparation of copy for slides and transparencies, their production, and their effective use in the presentation of technical papers. (AAPG Slide Manual, AAPG, P.O. Box 979, Tulsa, Oklahoma. 32 pages, $1.25)

The final report of a National Science Foundation survey of 272 private foundations was released by NSF last month. The survey shows that, of the $437 million the foundations spent in 1960 for all purposes, $89 million went for **research activities**, and more than half of that ($42 million) for basic research, mostly in the physical and life sciences. Of this, educational institutions received about $35 million. (Research and Other Activities of Private Foundations, 1960, Superintendent of Documents, U.S. Government Printing Office, Washington 25. 35 cents)

Scientists in the News

Leslie E. Orgel, formerly with the chemistry department at the University of Cambridge, England, has been appointed resident fellow at the Salk Institute for Biological Studies in San Diego, California.

Gordon W. Perkin, formerly assistant director of clinical research for the Ortho Research Foundation, has been appointed associate medical director of the Planned Parenthood–World Population organization.

William R. Upthegrove, research metallurgist with the International Nickel Company, Bayonne, N.J., has been appointed professor of mechanical engineering at the University of Texas.

Fred Wendorf, formerly with the University of New Mexico, has been appointed professor of anthropology and director of an anthropological research center at Southern Methodist University.

George Adomian, head of theoretical studies groups, Hughes Aircraft Co., has been named professor of engineering research at Pennsylvania State University's ordnance research laboratory.

Mariano A. Estoque, chairman of the department of meteorology at the University of Hawaii, has been ap-

pointed visiting professor of atmospheric science at the school of environmental and planetary sciences at the University of Miami, Florida, for the 1964–65 academic year.

Recent Deaths

Walter A. Anderson, 61; dean of the New York University School of Education; 26 October.

Ernest Clare Bower, 74; retired astronomer and former consultant on mathematical astronomy for the Rand Corporation and North American Aviation; 2 September.

Alexander Graham Christie, 83; past president of the American Society of Mechanical Engineers, and professor of engineering at Johns Hopkins University, 1914–1948; 26 October.

George Miles Conrad, 53; director of the board of trustees and staff of *Biological Abstracts*; 9 September.

Edward M. Dorr, 62; president-elect of the American Association of Maternal and Child Health and head of the obstetrical section of Chicago Wesley Memorial Hospital; 26 October.

John David Evans, 53; associate professor of physiology, Temple University; 20 October.

Dwight Gunder, 61; special adviser on rockets and missiles to the Navy Bureau of Ordnance, Washington, D.C., and former head of the department of engineering mechanics, Cornell University; 20 October.

Walter Emil Heck, 49; associate clinical professor of otolaryngology, University of California School of Medicine. San Francisco; 19 September.

Walter C. Jacob, 49; associate head of the department of agronomy at the University of Illinois; 4 September.

Gardner M. Riley, 54; professor of obstetrics and gynecology. University of Michigan School of Medicine; 26 September.

Games Slayter, 67; retired vice president of research and development, Owens-Corning Fiberglas Corporation; 15 October.

Richard L. Weaver, 53; professor of conservation, University of Michigan; 16 October.

Erratum: In the report "Chromatography of ribonuclease-treated myosin extracts from early embryonic chick muscle" by E. F. Baril, D. S. Love, and H. Herrmann (16 Oct., p. 413) the key in the legend to Fig. 1 should have read: "Solid line (optical density at 280 mμ), and short dashes (optical density at 260 mμ), after treatment with 0.005 percent ribonuclease. Long dashes (optical density at 280 mμ) and crosses (optical density at 260 mμ), untreated."