action, the legal subcommittee, in effect, could only report its disagreements.

Not surprisingly, the list of proposals made to the legal subcommittee shows that the main problems facing that subcommittee arise out of the sharp differences between the United States and the Soviet Union as to what space law should be and how it should be made.

In general, the United States wants to deal with immediate problems having foreseeable consequences and, so to speak, case by case, precedent by precedent, build a body of law. Such practical matters as agreements on the rescue of astronauts, the return of space vehicles, and liability for accidents involving space vehicles are, in the American view, the proper first steps in building space law.

The Soviet space lawyers, on the other hand, insist that it is necessary to establish a set of general principles and settle individual problems as they arise in the future. It happens that several of the general principles put forward by the Soviets would neatly enable them to attain terrestrial political objectives.

Obstacles to Accord

Limiting satellite ownership and responsibility to states, as the Soviets suggest, would prohibit the launching of future Telstars and banish free enterprise from space. The Soviet proposal that war propaganda be barred from space by international law raises the point that one man's war propaganda may be another man's factual news. A Soviet proposal that it be declared illegal to obtain information over another nation's sovereign territory not only opens up the difficult question of how high sovereignty goes but also seems aimed directly at reconnaissance satellites such as the United States' Samos system.

Obviously, with the two space powers at odds, it will be very difficult to develop the international space code much beyond the two general principles approved last December by the General Assembly: (i) that international law, including the U.N. charter, applies to outer space, and (ii) that outer space is free for exploration and not subject to national appropriation.

The cooperation agreement between the United States and the Soviet Union certainly does not mark a major détente in space on the part of the two countries. NASA appears to have played its cards very close to its space suit in dealing with the Russians, and no major American space project will depend on the agreement, nor will this country be making any important sacrifices in the matter of its space projects. The Soviets take a like position.

The past year, however, has witnessed real if limited progress in international space cooperation. If there has been less progress in space law, it is because the problems of strengthening international law are essentially the same in outer space and at sea level.

—JOHN R. WALSH

Announcements

Brooklyn Children's Museum announces formation of a **Junior Astronomical Society** and a **Junior Geological Society**, for students 12 to 17.

The Junior Astronomical Society plans classes in telescope-making, lectures and planetarium programs, and the use of the museum's refractor telescope.

The Junior Geological Society will have lecture sessions in various areas of geology, and will be able to use the museum's earth science laboratory to learn laboratory methods and to work on special projects.

Manuscripts, personal papers, photographs, references, or other material on the late **Matthew F. Maury** (1806–1873), founder of the U.S. Navy Oceanographic Office, are being sought for use in the preparation of his biography. (W. J. Cromie, 4000 Dunlavy, Houston 6, Tex.)

Meeting Notes

The 3rd international conference on **atmospheric and space electricity** will be held from 6 to 10 May at Montreux, Switzerland. Session topics include a survey on the present state of atmospheric and space electricity, general problems in atmospheric electricity, theories of charge generation in thunderstorms, the physics of lightning and its relation to other geophysical and physical phenomena, and space electricity. (S. C. Coroniti, Research and Advanced Development Division, Avco Corp., 201 Lowell St., Wilmington, Mass.)

Papers on three important scientific space experiments will be presented at the annual AAAS meeting under arrangements that have now been completed with NASA. The papers, dealing with Mariner II, the Alouette Topside Sounder Satellite, and the Orbiting Solar Observatory, will be included in a symposium of Recent Results in Space Research, starting at 2 P.M., 26 Dec., in the Grand Ballroom of the Sheraton Hotel, Philadelphia.

A technical symposium on **streamflow regulation** for quality control, sponsored by branches of the U.S. Public Health Service's Division of Water Supply and Pollution Control, will be held in Cincinnati from 3 to 5 April. Emphasis will be placed on the quality changes taking place within impoundments and in downstream reaches, including changes resulting from the method of release. (John E. McLean, Field Operations Section, Robert A. Taft Sanitary Engineering Center, 4676 Columbia Pkwy., Cincinnati 26, Ohio)

An international symposium on the use and application of **radioisotopes and radiation in plant and animal insect control**, jointly sponsored by the International Atomic Energy Agency and the U.N. Food and Agriculture Organization, will be held from 22 to 26 April in Athens, Greece. The program will include discussions on the use of radioisotopes in insect ecology; labeling, application, mode of action, and fate of insecticides; the determination of residues in plants and animals; and the effect of radiation on insects and related arthropods. Deadlines: abstracts (maximum 350 words, 5 copies, in English, French, Russian, or Spanish), *1 February*; completed papers (maximum 5000 words, 5 copies), *8 March*. (J. H. Kane, International Conferences Branch, Division of Special Projects, U.S. Atomic Energy Commission, Washington, D.C.)

Grants, Fellowships, and Awards

Predoctoral traineeships in **radiation biology**, which permit recipients to devote full time to graduate training, are available at the University of Tennessee. Stipends are $2200 plus tuition and dependency allowances. (J. Gordon Carlson, Institute of Radiation Biology, University of Tennessee, Knoxville)

A limited number of 12-month fellowships for graduate study of the effects, extent, assessment, or control of **air pollution** are available through the U.S. Public Health Service. Consideration will be given to the adequacy, value, and appropriateness of the courses to be taken as related to the general problem of air pollution, and to the qualifications, interest, and potential contribution of the individual. Training must begin no later than 10 months after the date of notification of award. Deadlines for application: *1 February*, for notification before 15 June; *1 May*, for notification before 15 October. (Chief, Research and Training Grants Branch, Division of Air Pollution, Public Health Service, Washington 25, D.C.)

The National Academy of Sciences is offering postdoctoral resident research associateships in the various branches of the **biophysical and biological sciences**—aerobiology, bacteriology, biophysics, immunology, virology, medical entomology, biomathematics, and biochemistry—at the U.S. Army Biological Laboratories, Fort Detrick, Md. Applicants must be U.S. citizens with training equivalent to the Ph.D., Sc.D., or M.D. degrees in one of the above named fields. The 1-year associateships, which carry gross stipends of $9475, may begin after 1 July; applications for renewal will be considered. Deadline for receipt of applications and supporting papers: *1 February*. (Fellowship Office, National Academy of Sciences, 2101 Constitution Ave., NW, Washington 25, D.C.)

The U.S. Atomic Energy Commission is offering fellowships in **health physics** to persons now active in the field. Applicants must be U.S. citizens, preferably under 32 years of age, and have had at least 2 years' experience in health physics, exclusive of training. Appointments, effective after AEC security clearance, will begin with the 1963–64 academic year and are for 1 year. They may be renewed for not more than 3 years. Annual stipends are $4000, plus $400 per dependent, with a travel allowance from place of residence to the university at which the work will take place, and tuition and fees. Deadline for receipt of application: *1 February*. (Fellowship Office, Oak Ridge Institute of Nuclear Studies, Oak Ridge, Tenn.)

Films

Courtship Behavior of the Queen Butterfly, Danaus gilippus berenice (Cramer), 18 minutes, color; rental $5.75; purchase $180; mating behavior of butterflies released in their native habitat, and methods of raising individuals in the laboratory and of obtaining data on their courtship in the field. (Psychological Cinema Register, Pennsylvania State University, University Park. No. 2123K)

Laboratory Diagnosis of Rabies in Animals, 30 minutes, color, free loan; laboratory techniques for examination of animals, preparation of brain impressions, inoculation of animals, serum neutralization test, and fluorescent antibody test. (Communicable Disease Center, U.S. Public Health Service, Atlanta 22, Ga., Order M-458)

Silicon and Its Compounds, 13 minutes, $75, color $150; basic atomic structure and bonding properties of silicon, stability of silicones under extremes of physical and chemical stress. (Coronet Instructional Films, 65 E. South Water St., Chicago 1)

Recordings

Frontiers in Research; tape, free loan. A radio documentary on medical research in mental retardation, including treatment of phenylketonuria (PKU). (Westinghouse Broadcasting Company, 1170 Soldiers Field Rd., Boston 34, Mass.)

Spring Joint Computer Conference, informal interviews and highlights; magnetic tape, 1 hour; purchase price $20. Includes discussions on sessions and papers by some participants, and on trends and problems in the computer field. (Interdisc, Communications Contact, P.O. Box 3665, Stanford, Calif.)

Sounds of Insects (order No. SLR 20); 12-inch, long-play, $5.95; crickets' chirp at low speed, insect flight, cicada warm-up and flight, long-horn and click beetles, and wasp chewing. (Curriculum Materials Center, 5128 Venice Blvd., Los Angeles 19, Calif.)

Publications

A bibliography of 1145 references to unclassified reports and published literature on **criticality** has been compiled by the U.S. Atomic Energy Commission. Included are citations on calculations of critical parameters for various reactor fuels and moderators, critical and exponential experiments, and nuclear safety criteria for processing, handling, and storage of fissionable materials. (Office of Technical Services, U.S. Department of Commerce, Washington 25, D.C. $2.75. Order TID-3306)

International Peace/Disarmament Directory, listing some 600 organizations and individuals "working for peace and disarmament." (Lloyd Wilkie, 327 Dayton St., Yellow Springs, Ohio. 20¢ per copy, bulk rates upon request)

A "steerable parachute," a puncture-proof tire, and a stair-climbing wheelchair are listed in **New Inventions Wanted by the Armed Forces and Other Government Agencies**," publication of the National Inventors Council. The council, composed of scientists, engineers and research heads of the Army, Navy, and Air Force, advises civilian inventors of some of the problems facing national defense developments, and evaluates inventors' proposed solutions, relaying promising ideas to the proper military agencies. The booklet, available free of charge, lists 32 new inventions and techniques needed, including such items as a permanent dry-film lubricant for vehicles, a maintenance-free battery with a long storage life, high-energy explosives, and a device to filter tear-producing elements from diesel engine exhaust fumes. (National Inventors Council, Office of Technical Services, U.S. Department of Commerce, Washington 25, D.C.)

Scientists in the News

The following members of the Australian Commonwealth Scientific and Industrial Research Organization plan to visit the U.S. during 1963:

Warick Bottomley, from the division of plant industry, is scheduled to arrive at the University of California (Los Angeles) 28 December for a 12-month fellowship in the chemistry department. Following that he is scheduled to spend 6 months at the Yale University botany department.

F. Gordon Lennox, chief of the division of protein chemistry, is to be in the U.S. 3–11 January. His agenda includes visits to the University of Cali-

fornia (Albany), Harris Research Laboratories (Washington, D.C.), Wool Bureau (New York), and textile firms near Boston.

G. B. Sharman, of the division of wildlife research, plans to visit Swarthmore, Cornell, Smith, Rice, and Duke Universities, as well as the Universities of British Columbia and California (Berkeley and Los Angeles), during his visit from 27 January to 26 February.

Joseph P. Kennedy, Jr., Foundation international awards for outstanding achievement in research on mental retardation have been awarded to:

Samuel A. Kirk, director, University of Illinois Research Institute, for his work in education of the retarded, $25,000, plus $50,000 in support of his research program; Ivar Asbjørn Følling, retired chief, Oslo, Norway, University Hospital Clinical Laboratory, for his discovery of phenylketonuria, $25,000.

Each of the following received one-third of a $25,000 award:

Murray L. Barr, head, microscopic anatomy department, University of Ontario, for his discovery of sex chromatin; **Jerome Lejeune**, director, department of human genetics, University of Paris, for his discovery of chromosomal abnormality in mongolism; **Joe Hin Tjio**, visiting scientist from Indonesia, at NIH, discoverer of the exact number of chromosomes in man. Barr and Lejeune also received $25,000 for further research.

The **National Association for Retarded Children** was also honored with a $50,000 award for lay leadership, in their public information program.

Appointments to the National Magnet Laboratory at M.I.T.: **Arthur Freeman**, formerly with the Ordnance Materials Research Office; **Jacek Furdyna**, former research associate at the Materials Research Center, Northwestern University; and **Peter Carden**, research engineer on leave from the Australian University at Canberra.

Lt. Col. William Hausman, formerly chief of psychiatry at Letterman General Hospital, has been named head of the Army's newly formed behavioral sciences research branch, at the Medical Research and Development Command, Washington, D.C.

Paul R. Saunders, professor of pharmacology and associate dean of medical education in the University of Southern California school of medicine, has been named to head the new department of biological sciences, which will be established at the university 1 January.

Appointments to Michigan State University's mechanical engineering faculty: **Harold G. Elrod**, formerly professor of engineering science at Columbia University; **Matthew A. Medick**, former senior staff scientist for Avco Corp.; **Shankar Lal**, visiting professor at Michigan State, former head of mechanical engineering at Thapar Institute of Engineering and Technology, India.

The following new division chiefs have been appointed at the NASA Office of Advanced Research and Technology group on biotechnology and human research:

Robert F. Trapp, former director of radiation hazards studies for nuclear pilots at Douglas Aircraft Co., chief of the man-system integration division.

M. G. Del Duca, former director of research in environmental controls for space vehicles at Thompson-Ramo-Wooldridge, chief of the biotechnology division.

Frank B. Voris, Capt., USN, transferred from the aerospace medicine group in NASA's office of manned space flight, chief of the human research section.

Vincent D. Roth, of the University of California Agricultural Extension Service, El Centro, has been named resident director of the American Museum of Natural History's Southwestern Research Station, near Portal, Arizona.

W. Albert Noyes, Jr., of the University of Rochester, will be visiting professor of chemistry at the University of Texas for the 1963 spring semester.

Xenia Machne, formerly of the University of Illinois, has become associate professor of physiology at Tulane University School of Medicine.

Thomas E. Mitchell, a director of Nuclear-Chicago Corp., has been named vice president and director of research for the firm.

James L. Dyson, head of geology department of Lafayette College, Easton, Pa., has received the 1962 Phi Beta Kappa science award for his book, *The World of Ice.*

Aaron S. Posner, physical chemist in the National Institute of Dental Research Laboratory of Histology and Pathology, has been named chief of the laboratory's new crystal chemistry section.

Lawrence Curtis, director of the Fort Worth Zoological Park, was elected president of the Texas Academy of Science for 1963–64.

Robert M. Fitch, polymer chemist with the DuPont company, has joined the staff of North Dakota State University's department of polymers and coatings.

Bernard A. Lippmann, of the University of California's Lawrence Radiation Laboratory, has been appointed to the newly created post of director of physics at Defense Research Corporation, Santa Barbara, Calif.

Recent Deaths

Percy Cudlipp; editor *The New Scientist,* in London; 5 Nov.

Taylor Hinton, 45; geneticist, former associate zoology professor, UCLA; 28 Nov.

Wencelas S. Jardetzky, 66; translation editor for the American Geophysical Union; retired mechanics professor, Manhattan College; 21 Oct.

Joseph L. Pawsey, 54; assistant chief, division of radiophysics, Australian Commonwealth Scientific and Industrial Research Organization; 30 Nov.

Granville M. Read, 68; retired chief engineer, the DuPont Company; 1 Dec.

Joseph F. C. Rock, 79; research professor of oriental studies, University of Hawaii; 5 Dec.

John J. Thornber, 90; retired professor of agriculture, University of Arizona; 22 Nov.

Gordon Herschel Tucker, 53; zoology professor, San Diego State College; 27 Nov.

Israel S. Weschler, 76; chief of service in neurology, Mt. Sinai Hospital; former president, American Neurological Association; 6 Dec.