# News Notes

## Space Science Abroad

A number of nations, other than the United States and Russia, have been making news in space developments.

West Germany has agreed to join with 11 other European nations in preparing space probes. France and Great Britain initiated the European space venture, which will cost an estimated $196 million over a 5-year period. The other nations participating are Italy, Switzerland, Austria, Norway, Denmark, Sweden, Belgium, the Netherlands, and Spain.

In early negotiations, the Germans had agreed to help out in the research required but had refused to contribute funds or materials. Bonn's reluctance to be actively committed was attributed to apprehension that the United States might resent German involvement in a project that could establish Western Europe as a third competitor in the race for space. The U.S., however, has consistently supported and encouraged all western European efforts to advance space capability; and economic considerations are believed to have been the major factor behind Germany's hesitation. West German partnership is essential to the multination space effort since that nation's share of the cost is to be 18 percent; 20 percent of the funds are to be provided by France and 33 percent by Great Britain. Germany's continued refusal would have seriously limited the program and might perhaps have doomed it.

### Western Europe

The western European nations, with the exception of Austria, also have reached a preliminary agreement to set up a European Space Research Organization for constructing and launching a satellite. A commission has been appointed to organize and plan the research program.

Among the projects proposed are establishing a base for high-altitude rockets in the aurora borealis zone, studies of the upper atmosphere and interplanetary space with rockets and small satellites, and studies of the moon and its environment from a large satellite in orbit around the moon. Britain's Blue Streak rocket will probably be used as the first stage of the booster for the satellite launching, France's Veronique for the second; no decision has been reached about the third stage. The Blue Streak, a liquid-fuel rocket, was originally developed as an intercontinental ballistic missile. The Veronique has been used to launch biological experiments; earlier this year it was used to shoot a rat into the upper atmosphere.

Another cooperative development in space with South American participation also took place recently when representatives from Brazil met in Paris with officials from France, Britain, West Germany, and the United States to discuss cooperation in a proposed test program for an international communication satellite system. If negotiations are successful, the program will start next year with the launching of two communication satellites by the United States. France will aid in the test with an experimental center in Brittany participating; and a ground radio station will be set up by Great Britain on Lizard Head, in the southwestern tip of England, for the transatlantic portion of the experiment.

### National Efforts

Individual nations also are working to develop national capabilities in space, and the United States is helping. Earlier this year France and the United States joined in a memorandum of understanding on space research. Experiments to be prepared by France to study radio wave propagation, aurora and airglow, and space biology will be launched by the National Aeronautics and Space Administration with sounding rockets from Wallops Island, Virginia. Britain is working on a satellite for ionospheric research to be launched next year from Wallops Island with a Scout booster. Two-stage, solid-fuel sounding rockets also have been built and launched by Australia and Canada.

Italy plans to launch a rocket early this fall to test instruments for getting information from space. In April, Italy had three successful rocket launches, aided by the National Aeronautics and Space Administration. These released sodium vapor for upper atmosphere studies. Optical observation of the chemical cloud provides scientific information on wind velocity, density, temperature, and turbulence in the upper atmosphere.

There has been speculation that Italy also may attempt to orbit a small satellite. This has been officially denied; but the rumors persist and stem from the fact that Italy has been involved recently in discussions with Great Britain and France for a satellite launching using Great Britain's Blue Streak rocket.

Sweden also is getting into the space business and has announced plans to fire meteorological research rockets from Lapland. One or two of five Arcas rockets developed by the U.S. Navy for low altitude weather studies and given to Sweden by NASA will be used as part of a series of tests being carried out by the International Meteorological Institute in Stockholm to investigate the phenomena of noctilucent clouds. These clouds appear at certain times in latitudes near the Arctic Circle and are visible at night. The Swedish space researchers hope to obtain some of the material of the clouds to determine what it is and how and where the clouds originate.

Israel became the eighth nation in the world and the first nation in the Middle East to demonstrate native space capability with the launching of the Shavit (Comet) II, a multistage, solid-fuel rocket. The other nations are Australia, Canada, France, Great Britain, Japan, the U.S.S.R., and the United States.

Designed and built by Israeli scientists and technicians and made from materials native to Israel, the 560-pound booster was fired from a site on the Mediterranean coast to an altitude of 50 miles to get information about the upper atmosphere. The scientific nature of the rocket was underscored by the fact that it had no guidance or radio system. Optical observations were made of the vapor trail from metallic sodium discharged from the nose of the rocket when it reached its final stage.

The government of Israel said the Shavit II developed from the 1957–58 International Geophysical Year, in which Israel was a participating member, and announced that the results of the probe will be made available to "scientific institutions abroad with which Israel is in constant contact."

Israeli scientists and institutions have been working under U.S. grants on basic research projects, some in upper-atmosphere research but none involving rocket technology. France and Israel have worked closely together in areas involving atomic research; and it is believed that French economic aid may have helped the Israeli project.

Israel's exclusive claim to space fame among the nations of the Middle East may be short-lived. Export licenses have been issued by the State Department for the sale of research rockets

to the United Arab Republic by private U.S. manufacturers. The U.A.R. has given assurances that the rockets will be used strictly for scientific probes in the upper atmosphere like the one made by Israel. The proposed shots will release a sodium vapor trail in upper altitudes. Some weeks ago, prior to the Israeli rocket launch, the U.A.R. tried to get rockets through NASA in time for a scientific firing this month. The U.A.R. was told by NASA that a try for a space shot of scientific value on such short notice was not practicable, but the space agency indicated interest in working with Cairo on a space program with a longer time span. NASA's program with Italy has taken a year to become operational. In the Italian program the Italians bought Nike-Asp and Nike-Cajun rockets from American manufacturers, and NASA supplied technical and scientific help in addition to the sodium vapor payloads used. The rockets to be bought by the U.A.R. are like those used in the Italian firings and in U.S. experiments at Wallops Island on Virginia's eastern shore. Israel has not approached NASA for rockets. She has scheduled another Shavit launching later this month.

In the Far East, Japan is the only nation that has built and launched rockets. She has developed Kappa, a two-stage, solid-fuel sounding rocket, several of which have been launched. Positive ion and electron densities in the ionosphere, as well as cosmic radiation, have been measured.

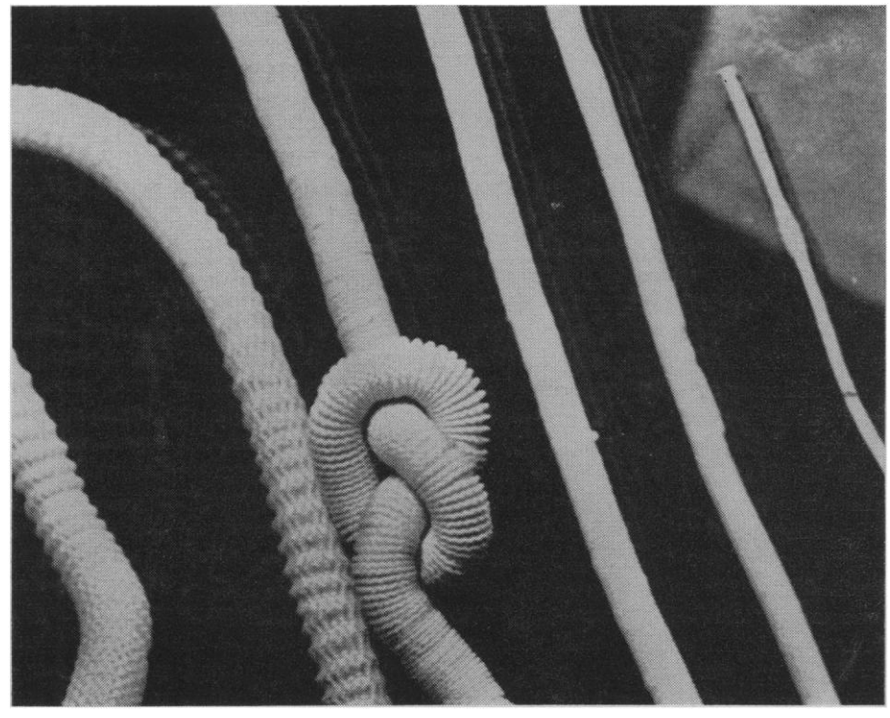
Red China has been asking for rockets from the U.S.S.R., but so far the U.S.S.R. has not shared its knowledge or equipment with other nations of the communist bloc.

## Red Blood Vessels

The Russians recently developed a machine that makes plastic artificial blood vessels (see cut) from 4 to 20 millimeters in diameter. The machine resulted from the successful experience of a Leningrad surgeon who used plastic tubing in an emergency operation to replace a damaged artery in the armpit of a patient, thereby saving the man's arm.

Soviet surgeons suture the artificial vessels to living tissue with a surgical stapler they have designed; the staples are made of tantalum and cobalt alloys.

The manufacture and use of artificial arteries in the United States dates back to 1952, but the Soviet stapling technique for body repair work is an innovation. The technique was recently demonstrated before surgeons in Washington by the Russian surgical and engineering teams that developed it. The Russians claim the staplers can give an ordinary surgeon the skill of a master. U.S. surgeons generally have admired the engineering of the devices but do not consider them a substitute for surgical skill. About 12 of the stapling units have been ordered by U.S. institutions, among them Johns Hopkins, Sloan-Kettering, and Miami University.



Samples of various sizes of artificial blood vessels made of lavsan, a synthetic fiber similar to Dacron, manufactured by a special machine designed at the Leningrad Institute for Research for Medical Instruments and Apparatus. [United Press International]

## Six-Year Program for Physicians

Twenty-five students have been selected for a new 6-year medical training program for an M.D. degree to begin at Northwestern University this fall.

Under the plan, students will take 2 years of premedical work in the liberal arts departments, but the courses will concentrate heavily on the basic sciences. The remaining 4 years will consist of the regular program of study in Northwestern's medical school. A similar program is underway at Boston University.

The minimum requirements for admission to a medical school in the United States are 3 years of university studies, including certain specified science courses; but in most cases medical students have completed 4 years in college and have a B.A. or B.S. degree. In no other country except Panama and Lebanon are more than 2 years of premedical college education required; the majority require only 1 year.

Professional medical groups in the U.S. generally have been opposed to cutting the requirements for an M.D. and have said that during the war years attempts to shorten programs often resulted in poorly trained physicians.

Proponents of the shorter premedical training period say that it in no way deprives the student of his professional studies and that it may, in fact, make a career in medicine more attractive to the gifted science student, now attracted to other scientific fields where he can establish himself more swiftly and easily. In general the program is aimed at reducing the high cost, in both time and money, of a medical education, which has contributed to the growing shortage of physicians.

**Paralytic polio cases** in the United States continue to decline. In 1955, the year the Salk vaccine was approved for use, 13,850 cases were reported. There

were 7911 cases in 1956; 2499 in 1957; 3697 in 1958; 6289 in 1959; and 2265 last year.

The rise in 1958 and 1959 is attributed by the Public Health Service to a series of localized outbreaks, mainly in slum sections of urban areas populated by low-income groups; most of the polio victims had not received the Salk shots. A concerted effort was made to provide free Salk vaccine to these income groups in time to protect them from the disease last year and this year. The number of cases reported up to 1 July is 237, whereas 469 cases were reported during the first half of 1960.

Prior to the use of Salk vaccine, polio incidence in the United States was much higher in the higher income groups. The lower level of incidence among the poorer members of the population was attributed to a natural immunity resulting from more frequent exposure to the disease.

A bill to consolidate and strengthen the various **cultural and educational exchange programs** that began with the establishment in 1944 of the Fulbright scholarships easily passed the Senate. About $30 million a year is now being spent on the programs. Senator Dirksen of Illinois, opposing the bill, called it a sort of "world federal aid to education" paralleling the Administration's school aid bill. Senator Fulbright, now chairman of the Foreign Relations Committee and floor manager of the bill, said he was in favor of both programs, but that $30 million didn't go very far when spread around the world, and that the United States, in its own interest, ought to be spending more. Dirksen said he was afraid that was just what was going to happen if the bill was passed. But Dirksen, and most others who criticized the bill, aimed only to limit its scope, not to defeat the program. On the final vote only Senators Goldwater, Tower (R-Tex.) and three of the most conservative Southerners opposed the bill. The vote was 79 to 5. The House version of the bill is still in the Foreign Affairs Committee, which will act later in the month, after it has completed work on the foreign-aid bill.

The Joint Committee on Atomic Energy will hold public hearings next week on developments in detection and identification of **nuclear explosions** underground and in outer space.

# Announcements

The United States will make **nuclear equipment** costing $80,000 available to the International Atomic Energy Agency, Vienna, to assist atomic energy projects in Argentina, Brazil, and Israel through the agency's technical assistance program. Argentina will receive a mass spectrometer ion source and an electron paramagnetic resonance spectrometer, Brazil will receive equipment for research in the use of isotopes in agriculture, and Israel will receive monitoring stations for use in the area surrounding its research reactor at Rehovot.

The committee of judges for the 1961 **AAAS Theobold Smith award** [*Science* **133**, 2003 (23 June 1961)] consists of:

Thomas Butler, University of North Carolina School of Medicine.

Jacob Furth, Roswell Park Memorial Institute, University of Buffalo.

Francis D. Moore, Harvard Medical School.

Maxwell M. Wintrobe, University of Utah College of Medicine.

John B. Youmans, American Medical Association, *chairman*.

Nominations, which must be received *before 1 September*, may be sent to Oscar Touster, Department of Biochemistry, Vanderbilt University School of Medicine, Nashville 5, Tenn.

A bibliography of **interlingual scientific and technical dictionaries** has been published for scientists and technicians engaged in work outside their own countries. The UNESCO publication, aimed at the standardization of scientific terminology, covers 350 subjects. (UNESCO Publications Center, 801 3rd Ave., New York)

Photographers and scientists are invited to submit **scientific and technical photographs** for consideration for inclusion in a 16-page insert in the *McGraw-Hill Yearbook of Science and Technology*. (John T. Westlake, McGraw-Hill Book Co., 10 Elliewood Ave., Charlottesville, Va.)

A new **faculty fellowship program** will be inaugurated next fall at Dartmouth College that will allow two to five faculty members to devote a year to research or other scholarly and creative activities. Recipients will receive their regular full compensation and a grant of up to $2500 for travel and other expenses related to their work. The fellowships, available to assistant, associate, and full professors, will supplement the college's regular sabbatical leave program and outside awards and fellowships.

The Johns Hopkins School of Hygiene has received a $250,000 grant from the **State Department** for the improvement of **foreign aid health programs** during the next 3 years.

Samples of **unsaturated fatty acids** are available to qualified investigators through the National Institutes of Health lipid program. A brief description (in duplicate) of the research program for which the samples are to be used should accompany each request. (William H. Goldwater, Division of Research Grants, NIH, Bethesda 14, Md.)

A selected reading list on **space flight** has been compiled by the Bell Telephone Laboratories' Technical Information Library. (*Space Flight*, Bell Telephone Laboratories, 463 West St., New York 14)

## Meeting Notes

An international symposium on **photoelasticity** will be held 29–31 October at Illinois Institute of Technology. The program will cover photoelasticity, photoplasticity, photothermoelasticity, dynamic photoelasticity, and special equipment. (M. M. Frocht, Illinois Institute of Technology, Technology Center, Chicago 16)

An international conference on **nuclear physics** will be held at Manchester University, England, 4–8 September. The conference is sponsored jointly by the university, the International Union of Pure and Applied Physics, the Royal Society, and the Institute of Physics and the Physical Society.

A **food science conference** will be held 19–22 September at the Food Preservation Research Laboratories, New South Wales, Australia. The conference, sponsored by the Commonwealth Scientific and Industrial Research Organization, is open to scientists, technologists, and managerial staff from the food industry and food re-