from abroad

FROM INDIA

Nudging the space leaders

Almost from the start of the space race, scientists and politicians have urged cooperation between the two leaders, the United States and Russia.

There has been much rhetoric but few signs of the two nations working together. Now, from an unlikely source, India, comes a nudge in that direction.

The barrier to U.S.-U.S.S.R. cooperation on space projects has been complex, ranging all the way from the close link both nations' space programs have with their security-clad military efforts, to national pride, mutual suspicion and political hostility.

The need has been for neutral turf, where space scientists can explore the kind of cooperation that has been going on for years in other, less sensitive fields of science. United States and Soviet scientists have been meeting, conferring and cooperating in laboratories of one kind or another all over the world, for a decade or more.

It is now possible, although there are many problems to be worked out, for the U.S. and the Soviet Union to launch sounding rockets from the same test range. The equatorial launching station at Thumba, India, has been formally dedicated to the United Nations, making the facility available to any U.N. member.

Any joint Soviet-American use of the range would be more of a political advance than a scientific one, though neither the U.S. nor the Soviet Union currently has an equatorial launch station. (The French do—in French Guiana.)

Thumba, then, may be of particular value, since it is the only available test range from which the U.S.—and presumably the U.S.S.R.—can launch sounding rockets so that they will circle the earth at the equator. The site is located squarely on the geomagnetic equator near Trivandrum, India. The U.S. has already taken advantage of it, under earlier bilateral agreement with India.

Data collected over the equator are of interest because of the peculiar wind patterns and the direct angle of incoming solar radiation. Rockets already launched from Thumba have aided researchers investigating India's violent monsoons.

In addition to the launch station, there is a plan to set up a satellite tracking station at Trivandrum. One of its jobs will be to help pinpoint the positions of other stations in south India to within an accuracy of as little as 10 yards. This is vital if these stations are to be able to follow satellites precisely.

Though under the guidance of the U.N., the Thumba rocket range will remain under India's control, and India will bear its operating costs.

India's Union Department of Atomic Energy has proposed that a second launch center be established along the country's east coast, to be used for launching communications satellites and deep space probes as well as sounding rockets. The new station would be ready for operation by the early 1970's.

The east coast would be a desirable location because launches could take better advantage of the spin of the earth, both to help boost the craft and to keep them in easy tracking range as they ascend into orbit.

The day after the Thumba range's U.N. dedication, the Indian Rocket Society was formally inaugurated as a member of the International Astronautical Federation. Created last May, the society is the 54th member of the IAF, which includes representatives from 34 countries.

More than 100 scientists attended the Thumba dedication, including representatives from the U.S., U.S.S.R., Britain, Japan, France, Italy, Indonesia, Australia and East and West Germany. Philippe de Seynes, Senior Undersecretary of the U.N., represented that organization, and Indian Prime Minister, Mrs. Indira Gandhi, made the formal dedication.

Mrs. Gandhi pushed the button firing a U.S.-built Nike-Apache rocket to mark the occasion. Two other rockets were successfully launched on the same day, including "Rohini," a sounding rocket produced entirely in India.

This year India plans cooperative rocket experiments with Japan, Germany and Indonesia. Some 60 U.S. launches have taken place from Thumba since the first U.S.-Indian joint flight in January 1964.

K. S. Nayar

FROM ENGLAND

Plastic foredecks for submarines

Trials with new plastics materials have been so successful that most of the British navy's operational submarines now have the foredeck, fin and superstructure of glass fiber bonded with a resin known as Cellobond.

The structure, one-seventh the weight of an equivalent amount of steel, is resilient, noncorrosive and has a longer life. This means far less maintenance.

Earlier submarines without the new superstructures are to be converted. The electric batteries of the Oberon class patrol submarines of 1,610 tons are also made of glass fiber.

F. C. Livingstone

FROM GENEVA

EMBO selects its targets

Europe's molecular biologists have selected medical research projects for their proposed international laboratory, (SN: 5/13/67 p. 451) modeled after CERN's collaboration in high-energy physics.

Prof. Olivier Reverdin, Swiss leader in the movement, reports that the research subjects include: the structure and function of proteins; viruses; the chemical basis of immune response; the functioning of the nervous system, and the K12 strain of the bacterium *Escherichia coli.*

Details have also been worked out for the organization of the laboratory, although not its location. It will have about 150 full-time scientists and engineers plus 60 visiting scientists, 40 post-doctoral fellows and 310 technicians and supporting staff.

Operating costs are estimated at about $10 million a year.

Reverdin explains that, as at the nuclear cooperative CERN, emphasis will be on "not draining highly qualified people away from national universities and research centers."

Clearly the organization, dubbed EMBO for European Molecular Biology Organization, aims to compete with the U.S. and U.S.S.R., while trying to avoid brain drain in any direction.

In meetings in Geneva, representatives of 12 Western European nations —CERN's 13 except for the demurring Belgians—set up a new European Molecular Biology Standing Conference, or permanent intergovernmental agency.

Their financial commitments thus assured survival of EMBO's program of research fellowships, special courses, grants and professorial exchanges. Until now, private professionals at EMBO had relied on grants from the Volkswagen Foundation and from Israel.

German delegates say they are ready to go ahead with the laboratory. So are the Swiss. The French want to have the lab in Nice and will even pay all costs, but the others have refused this offer. The British apologize for lack of funds for the lab, but support the new agency.

David Alan Ehrlich