

now considered by other signatories of the MTCR (see *EIR*, May 29).

In addition, India has a series of remote sensing satellites, denoted by IRS. IRS-1A was launched in 1988 and IRS-1B was launched in August 1991. The IRS series has become the mainstay of the National Natural Resource Management System, providing quality imagery for applications including: land use and land cover mapping; agro-climatic planning; wasteland mapping; integrated land and water resources study for combatting drought; crop acreage and yield estimation; and forest mapping. Recently, a hydro-geomorphological map of the entire country covering 447 districts has been completed showing ground water potential using satellite information and conventional data under a project of the National Drinking Water Mission initiated by the late Rajiv Gandhi.

In rocketry development, the ASLV will pave the way for the 44.2 meter high PSLVs, weighing 275 tons. These rockets will be used for launching the IRS series of satellites weighing around 1,000 kg. It is evident from ISRO's announcement that the first of the PSLV rockets will be launched in 1993 that several qualification tests on the stage motor systems, avionics packages, vehicular structurals, etc., have been successfully conducted. The giant mobile service tower for the PSLV assembly at the Sriharikota range has been commissioned. The first stage motor of PSLV is the third largest solid motor in the world. The second stage motor, which has a large liquid engine, has also qualified successfully, reports indicate.

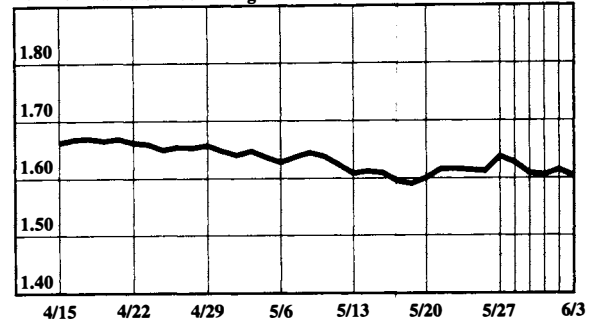
The development of cryogenic engines has also been initiated to permit enhancement of the capability of the PSLV and to be incorporated in the geostationary satellite launch vehicles (GSLVs). This will help launch geostationary satellites of the 2,000 kg class and make India totally self-reliant in launch technology. It is the contracting of cryogenic rocket engines and related technologies from the Russian Federation that has irked the United States, which has slapped on a two-year sanction. Indian scientists claim that the United States is particularly uneasy about India developing the capability to launch 2,000 kg class satellites. If India is allowed to develop this capability, along with its top-notch launch center, it could compete effectively with western nations in commercially launching satellites for other nations.

While the main thrust of the Indian space program in the coming decade is to make operational all services related to communications, remote sensing, television broadcasting, and meteorological data, and to achieve self-reliance both in rocket launching and satellite capabilities, ISRO has drawn up a profile for the decade 1990-2000, which envisages new initiatives in the areas of new materials, development of reusable vehicles, materials-processing in space, satellite navigation, ocean resource surveillance, and a host of new technologies which will cater to the requirements of the next century.

## Currency Rates

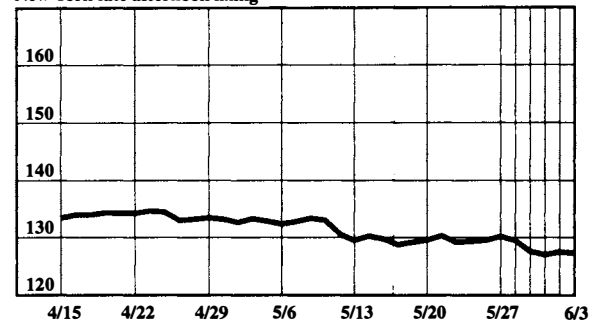
### The dollar in deutschemarks

New York late afternoon fixing



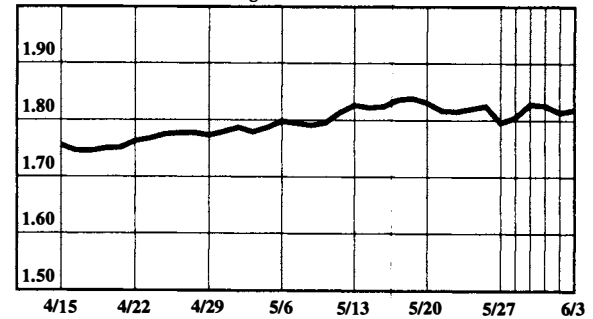
### The dollar in yen

New York late afternoon fixing



### The British pound in dollars

New York late afternoon fixing



### The dollar in Swiss francs

New York late afternoon fixing

