EED is a European organization, based in Luxembourg, with the stated aim of providing venture capital and managerial assistance for the building up of new companies or the further development of existing ones. But the condition is that the company has to be based on a development which makes a significant advance over existing products, processes or services. How significant the advance has to be is not well defined—one of EED's investments is a Swiss firm called Jiffy-Pot, making plant pots which obviate the chore of repotting by their construction of peat and fertilizer allowing the roots to come through. But EED's interest in Jiffy-Pots is more than balanced by a portfolio of investments in companies such as Computer Technology, Ltd (Britain), and Steigerwald Strahltechnik (a German firm specializing in electron beam technology), where the technological worth of the projects is more obvious.

Apart from the obvious aim of making money, EED hopes to narrow the now infamous technology gap, and the signs are that its existence is appreciated by the electronics industry at least. EED's American brother, the American Research and Development Corporation (both were set up by the same man, Georges F. Doriot, and share the same credo), founded in 1946, made most of its money in the electronics boom, after only a fair showing in the forties and fifties. Between 1965 and 1967, ARD's net asset value rocketed from $40 million to $349 million. Whether EED, started in 1964, can imitate this performance, in electronics or some other field, is by no means certain. For one thing, Europe has no equivalent of Route 128, within a bus ride of the Massachusetts Institute of Technology. But EED still has faith that it can make its fortune in the electronics industry. And the industry seems to be short of sources of money for the setting up of companies to exploit new ideas. Electronics is a fast-moving industry, and the conventional sources of venture capital are sometimes too painfully slow to be of use. This seems to be where the EED can help. One of its British shareholders, the Midland Bank, has an arrangement whereby projects which fall on the deaf ears of bank managers are forwarded to EED. The other forty-two shareholders in seventeen countries, all financial institutions, also search for possible projects. So far, EED has fourteen investments at various stages of negotiation, and is said to have committed $2 million out of its total funds of $8 million. Just now, the company seems to be searching for ways to encourage possible European entrepreneurs to surface.

Once the investment has been set up, with EED supplying venture capital and possibly a loan to the company, EED continues to help with technical or managerial advice whenever it is needed. The intention is to build the company as large as possible—if anything goes wrong, all the entrepreneur loses is his reputation.

PATENTS

Sign of Easier Times

THE intergovernmental conference on a European patents system in Brussels on May 21 seems to have been a success and also a healthy sign of the renewed determination of EEC countries to cooperate in industrial and technological fields. After the French Government withdrew its opposition to the inclusion of non-member states last November, the six foreign ministers agreed to invite seven other west European nations—Austria, Denmark, Ireland, Norway, Britain, Sweden and Switzerland—to take part in negotiating a European patent convention (*Nature*, **221**, 1087; 1969), and Spain, Greece, Turkey and Portugal are also interested in participating. At the conference all the delegations approved a basic memorandum outlining the principles of a European patent system.

The system will be in the form of two conventions, the first of which will establish the legal and procedural rules for granting European patents. Such a patent, comprising a set of national patents for non-member states and a single patent for the EEC countries, would be registered, examined and issued by a European patent office, while national courts would deal with infringements. The convention will probably be based on a draft, prepared by EEC under the chairmanship of Dr Kurt Haertel in 1962, under which the examination of applications can be postponed for up to seven years after registration. This is the system already in use in Germany and the Netherlands and the idea is to give applicants time to judge the industrial potential of their invention and decide whether it is worth a detailed examination. There is an obvious advantage in reducing the burden on already overworked patent offices, but the problem, which the British delegates raised at the conference, is to protect the inventor in the meantime. This would have to be done by some sort of preliminary examination which could later be challenged.

The other convention will lay down the uniform legal system applicable to the patent on EEC territory and will only be open to the Six. The idea here is to stop market sharing resulting from protection on a national basis by forbidding holders to surrender or transfer patents for only part of EEC.

The next step is for a working group which has three members—France, Germany and the Netherlands—from EEC, and three—Britain, Sweden and Switzerland—from EFTA, to meet in Luxembourg to discuss the detailed legal aspects of the problem. They hope to produce a draft agreement by the end of the year.

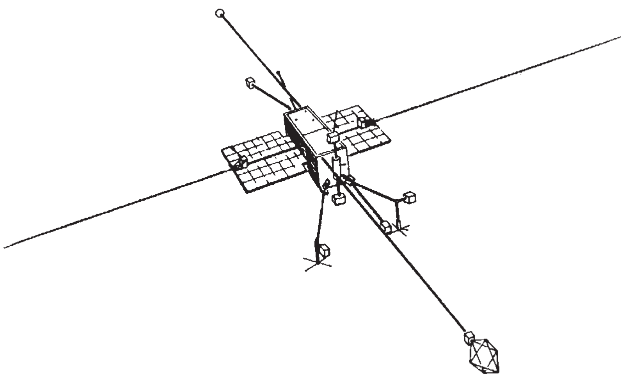
SPACE

End of an Era

from our Astronomy Correspondent

THE launch of the sixth and last Orbiting Geophysical Observatory due on June 5, with luck, into a 680 mile apogee, 245 mile perigee orbit from the Western Test Range, California, ends something of an era in the history of space exploration. When the first of the series was launched, in September 1964, it was one of the most advanced unmanned spacecraft of its time. With its array of two solar paddles, two twenty-two-foot booms, four four-foot booms, several radio antennae, and other items making a total of twelve appendages to the six-foot long by three-foot wide and three-foot deep body, OGO is as ungainly as its name suggests. Some said the spacecraft was too complex, and nobody was surprised by the fate of the first of the series, which failed to orient itself correctly with respect to the Earth when two of the booms failed to deploy, one of them obscuring the horizon sensor. Nevertheless, NASA reports that four and a half years later about half of its twenty experiments are still working and sending back useful measurements. OGO-2, launched in October 1965, was not a complete success either. Although unobscured, its horizon sensor seems to have been too sensitive, so that it continually picked up false horizons and rapidly exhausted its gas supply as it reoriented itself. One explanation is that the sensor was locking on to a mass of cold air over the equator, but even with its attitude control gas used up, most of its experiments worked for two years.

Eventually the spacecraft design was borne out by OGO-3 (June 1966) and its successors. The latest model, classified OGO-F until successfully launched when it will be redesignated OGO-6, is the heaviest so far, weighing 1,393 pounds and containing twenty-five experiments. The observatories are designed to be standardized platforms accommodating large numbers of experiments—OGO-1 had twenty—and one of the problems in addition to that of deploying the booms correctly has been to integrate the payload without causing interference between experiments.



OGO-F spacecraft.

Goddard Space Flight Center is responsible for managing the project, and must take much of the credit for the success of the series, paving the way for the development of large space laboratories. NASA claims several scientific "firsts" among the OGO results—first satellite map of the terrestrial magnetic field, first map of the airglow, first observation of the non-ducted propagation of VLF waves, first measurement of electric fields in the Earth's bow wave.

OGO-1, 3 and 5 were launched into highly elliptical orbits to probe the magnetosphere, but, like its other predecessors, OGO-F is to have a near-Earth orbit to investigate the atmosphere, the ionosphere and the lower levels of the radiation belts at a time of maximum solar activity. The twenty-five experiments are the responsibility of ten American universities, four government laboratories, five private companies and a team led by Professor J. E. Blamont, of the University of Paris. The experiments fall under four headings—atmospheric and ionospheric studies, solar radiation measurements, airglow and auroral studies, and magnetic and electric field studies. The French team will be measuring airglow and auroral emissions at 6300 and 3914 Å, and the sodium airglow. Two thirty-foot aerials attached to the solar paddles are the longest protuberances on this OGO, and are for electric field and VLF measurements.

PHYSICS

Laser follows Bubbles

The Science Research Council has announced an award of £40,473 towards the cost of bringing into full operational use a novel machine known as Sweepnik, which automatically analyses bubble chamber photographs. Sweepnik is the brainchild of Professor O. R. Frisch at the Cavendish Laboratory, Cambridge, and is essentially a laser beam, guided by a small computer, that follows tracks on a photographic film. Most of the money will go towards an extra 8K memory store and magnetic tape for the computer. But plans are under way for the production of a commercial version of Sweepnik which, it is hoped, will sell for considerably less than the £100,000 or so that is the price of rival commercial machines, even without associated computers.

In nuclear physics the analysis of bubble chamber photographs is a well established source of information about elementary particle interactions. Beams of high energy particles are shot into liquid hydrogen in a bubble chamber and the tracks of any charged particles produced show up on photographs as lines of bubbles. The tracks are curved because the chamber is in a strong magnetic field and accurate measurement of the radius of curvature of the tracks gives the momenta of the emitted particles. One bubble chamber experiment may require something like a hundred thousand pictures, and with a manual machine it still takes about fifteen minutes to process a typical event—which explains the need for much faster machines like Sweepnik which will be able to process an event a minute.

The way Sweepnik works is to focus a fine laser beam to a thin line using an astigmatic lens; a spinning prism rotates this line which is then projected by two mirrors on to the film. A condenser lens focuses the transmitted light on to a photomultiplier which registers a sharp dip in intensity when the slit is lined up with the direction of the track. By moving the mirrors the computer can direct the line to different positions along a particular track. The position of the mirrors is controlled by an independent laser interferometric system to an accuracy of 0·1 second of arc and this means that the accuracy of measurement on the film, which is a metre away from the mirrors, is one micron.

The advantage of using a laser beam to follow the tracks is that its intensity and coherence give measurements with a good signal-to-noise ratio compared with conventional machines which use cathode ray tube devices or ordinary light sources. This means that Sweepnik can easily handle poor contrast tracks. A small 18 bit work computer with an 8K store, such as PDP79 or DDP516, is all that is required to direct the mirrors. Sweepnik was built under the direction of Professor Frisch with the help of Dr G. S. B. Street, and Dr S. G. Rushbrooke will be responsible for bringing it into full operational use within the bubble chamber research group.

CHEMISTRY

Union of all Chemists

Two important events are coming up in the calendar of international chemistry. The International Union of