

the University of Birmingham will again be measuring electron densities and electron temperatures. Professor T. R. Kaiser from the University of Sheffield will be sending up a combined experiment with Mr F. Horner from the Radio and Space Research Station, to investigate VLF radiation and lightning impulses. Professor F. G. Smith from Jodrell Bank will also be combining with the RSRS in an experiment to measure radio noise. All that is missing from Ariel 3 is the experiment from the Meteorological Office, which studied the vertical distribution of molecular oxygen in the atmosphere.

Excluding launching costs, the satellite will cost £1 million, which is remarkably cheap. This has presumably been possible because UK 4 will use large amounts of material left over from Ariel 3. Five models of Ariel 3 were built, two of which were used for mechanical and electrical tests, and three of which were flight models. As the first launch was a success, two were left over, providing a good opportunity to launch UK 4 cheaply. It is a pity, however, that room aboard was not found for an experiment from outside a narrow circle of British space scientists. Others must be beginning to feel left out.

#### TELECOMMUNICATIONS

### Whose Monopoly?

THE House of Commons Standing Committee on the Post Office Bill is now well into its examination of the proposal to establish the GPO as a public corporation. Under the new bill, the postal, telecommunications, giro, money remittance and data processing functions of the present department are to be run by the new public authority—the Post Office—while public savings will be hived off into a Department for National Savings responsible to the Treasury. A new Ministry of Posts and Telecommunications is to be set up, which will replace the office of Postmaster-General and will oversee the Post Office. The standing committee has been meeting regularly since November and so far has covered the abolition of the office of Postmaster-General and the transfer of his functions to the new ministry.

Discussion has more recently centred on the extent of the monopoly of the Post Office in telecommunications, and in particular the attachment to the telephone system of equipment not belonging to the Post Office. The growing practice of data transmission along telephone lines, which the GPO is belatedly encouraging and which depends on terminal units at present supplied by the GPO, is particularly affected. But the ban applies to all kinds of equipment which could conceivably be connected into the system.

The fear is that badly designed attachments will wreak havoc in the telephone system. This question has been receiving attention in the United States, where the Federal Communications Commission recently ruled that restrictions imposed by American Telephone and Telegraph were unlawful. The doubts of telephone engineers have been overcome by attaching equipment to the system through what amounts to a fuse box, rented from the telephone company (*Nature*, 219, 1097; 1968).

In Britain, the Postmaster-General, Mr John Stonehouse, is by and large sticking to his guns. The GPO

is seeing to what extent a little more freedom in the supply of equipment can be allowed, he said, but the Post Office must have power to control the characteristics of any equipment attached to the network. Nor could the Post Office give up its responsibility for the maintenance, or deterioration would follow. Nevertheless, last week Mr Stonehouse did soften his words by agreeing that in the past the range of Post Office equipment may have been too small. Now there are to be discussions with other interested bodies to see whether the variety of devices which can be connected to the system can be broadened.

The standing committee has been particularly searching in its examination of the monopoly which the new Post Office will have in the telecommunications field. While the Government's line is that the bill merely transfers the monopoly of the present department to the Post Office, others suspect an extension of the monopoly is involved. Much of the discussion has centred over the claim that the new bill does away with a restriction in an earlier Act limiting the monopoly to frequencies below  $3 \times 10^{12}$  Hz, but Mr Stonehouse argued that all the new bill does is to spell out more clearly restrictions which were inherent in earlier legislation. This is intended to prepare the way for developments still in the future. He went on to make some reassuring noises in the direction of the relay services, which are anxious not only that the Post Office may become their principal competitor if present experiments are successful, but more seriously that in future the Post Office will be responsible for granting licences. To appease the relay companies, the Government has promised that there will be no changes before 1976.

#### COMPUTERS

### Competition for Small Users

FOR the best part of a decade, people have been wondering when the Philips company would enter the computer business, and how. The answer came last week, when the company launched a series of desk-size computers on the markets of nineteen countries. The computers, known as the P350 series, are said to be successors to the present generation of mechanical and electrical office equipment. They are designed for invoicing, payrolls, accounting and similar activities.

There are three models in the series, costing £3,000, £3,850 and £5,750. Philips claims that "the performance to cost ratio" of the new computers is several times greater than that for electro-mechanical machines. The smallest has a store of 200 sixteen digit words and the other two have 400 word stores with a capacity for extension up to 1,000 words. Although one or two small companies have already moved into the minicomputer market, it appears that Philips has stolen a useful march over its rivals. International Computers Limited has no immediate plans for a rival machine, and is concentrating instead on a new computer bureau which is to be opened later this year by its subsidiary, International Computer Services. National Cash Register is naturally jealous of any serious inroad into one of its traditional markets, and Philips is already claiming to have three hundred potential customers on its books.

How will these new machines meet the needs of smaller companies for computer time? ICL is hoping