

## ROCKETRY

**Olympics in Space**

FOR a few moments last week, the Russians were able to divert attention from Czechoslovakia by the flight of the Zond 5 probe, launched from a parking orbit around the Earth on a trajectory which took it behind the Moon, ending in a landing by parachute in the southern Indian Ocean and a delayed recovery by a Russian vessel. Once the launching of Zond 5 had been announced, it was tracked throughout its journey by the Nuffield Radio Astronomy Laboratories at Jodrell Bank until it disappeared below the horizon at 1400 BST on September 21, shortly before landing. It seems clear enough from the signals picked up at Jodrell Bank that the flight is a prelude to a manned flight around the Moon. One interesting piece of evidence pointing in this direction was the recorded voice transmissions picked up from the spacecraft. The wide-band data transmissions also distinguish Zond 5 from previous Luniks. Professor Sir Bernard Lovell, director of the laboratories at Jodrell Bank, says there was obviously enough wide-band capability to accommodate television transmissions, although none was detected on this occasion.

The importance of Zond 5 in the race to put a man on the Moon may, however, have been overestimated. The Russians are probably now able to carry out a manned flight around the Moon—although they will probably want to have another unmanned test flight—but a journey to the surface of the Moon and back needs more sophistication and more weight. Professor Lovell points out that there has been no announcement from Moscow of the weight of Zond 5. The assumption is that Zond 5 was of the Soyuz type. Nevertheless, the Russians have a right to be pleased with the results of the flight and their opponents in this astronomical olympics are likely to come under increasing pressure to speed up the Apollo programme.

This is the first time the Russians have used a landing at sea to recover a space probe. This departure from previous practice seems to have been made necessary by the trajectory of Zond 5, but it may also be important that landings in the sea may help with making manned flights during the winter months, when much of the Soviet Union itself is inaccessible. Judging by the delay in recovering the probe from the sea—the probe was kept waiting more than three hours—all did not go perfectly well with the recovery procedure. Given the dubious fate of the previous Zond probe, which was launched in March this year in what is now presumed to have been an attempt to carry out the programme accomplished by Zond 5, the Russians will probably carry out another trial of the unmanned system in the near future. One peculiar footnote to the flight was the reaction from Moscow to the early announcements last week from Jodrell Bank that Zond 5 was on its way to the Moon. This met with an instant denial by the Foreign Ministry in Moscow, but later Russian announcements confirmed the reports from Jodrell Bank. Professor Lovell has since confessed he is baffled by the initial Russian denial.

This latest achievement seems to have caught the American space programme in some disarray. Last week saw the resignation of the chief administrator of NASA, Mr James Webb. Although the cuts in

spending do not affect the Apollo programme, there is probably now no hope of an acceleration of the programme. The first manned Apollo flight is expected on October 12, when three astronauts will orbit the Earth for ten days.

## BUILDING RESEARCH

**Living with Noise**

NOISE may be inseparable from the modern world, but it is at least possible to hope to live with it. This seems to be the inspiration of the work on noise which is being carried out at the Building Research Station at Garston in Hertfordshire, much of which was on exhibition at the open days last week. The station has been carrying out surveys of traffic noise in the neighbourhood of motorways and of the reactions of people living nearby. It has been found that a function of the noise levels exceeded for 10 per cent and 90 per cent of the time respectively correlates well with people's reactions to traffic noise, and that there is an empirical relation between noise levels on motor-

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Scanning electron microscope picture of glass reinforced cement. Individual glass fibres of about 10  $\mu$  in diameter can be seen protruding from the cement matrix. (Crown copyright, Building Research Station.)

ways (the "traffic noise index" as it is called) and the minimum acceptable distance between them and the nearest dwellings. The Building Research Station hopes by this means to have made an important contribution to the planning of motorways and of development alongside them.

In a spirit of cure when prevention fails, the station is also working on the development of a window operated by noise. This is designed to close automatically when the external noise level exceeds a pre-set value and to open again when peace returns. The window may be useful in situations where high noise levels are intermittent, as, for example, near airports and railways. A prototype of one design has been operating successfully in a school near Heathrow Airport for some time and the window is now commercially available.