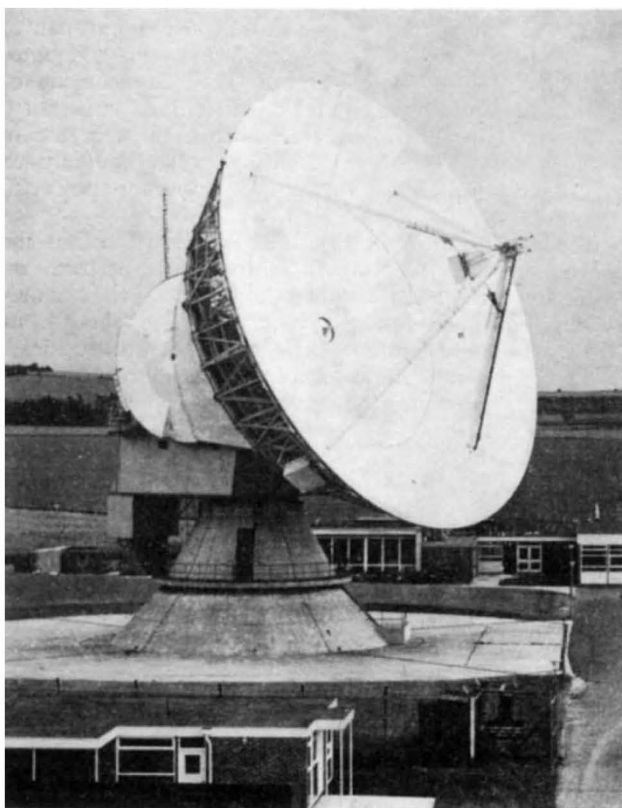


of the atmosphere becomes important. Radio links operating at slightly less than one centimetre wavelength are already coming into use in Britain, and the Radio and Space Research Station is intending to keep one jump ahead by investigating the effect of rain on transmissions at 3 millimetres and less. At 3 millimetres, for example, each millimetre of rain per hour attenuates the signal by between 0.5 and 1 dB per kilometre, but the station says that useful reliabilities can still be achieved over path lengths of a few



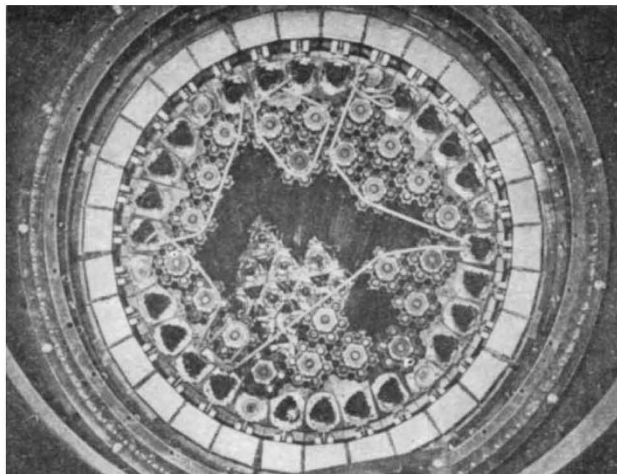
The Radio and Space Research Station operates a 25 m dish aerial at Chilbolton, Hampshire, which is used to investigate tropospheric and ionospheric effects on the transmission of radio waves. The aerial can be used down to 3 cm.

kilometres. But it looks as if radio links at millimetre wavelengths are going to be limited to short paths or dry climates. The Radio and Space Research Station is also looking at the applications of short wavelengths to satellite communications by observing how centimetre waves from the Sun are affected by the atmosphere. Conversely, the station has been trying to interest the Meteorological Office in the use of short radio waves as an aid to meteorology, and there is a programme of laser sounding of the atmosphere.

#### NUCLEAR REACTORS

### Higher Temperatures Pay

THE partiality of Sir Stanley Brown, chairman of the Central Electricity Generating Board, for high temperature gas cooled reactors has been a source of some controversy over the past year or so, both at the CEGB itself and among various factions of the nuclear



Partly loaded core of the Dragon reactor.

power industry. It was therefore no surprise that in a speech at the recent UNIPED conference in Zurich he had seized the opportunity of drawing attention to the advantages there would be if the Central Electricity Generating Board were to build high temperature reactors in the next few years.

Sir Stanley also had some kind words for the AEA's steam generating heavy water reactor. It is an attractive system, he said, with particular advantages in the lower megawatt ranges. The detailed engineering of the SGHWR is also better defined than that of the HTR. Nevertheless, for the CEGB, Sir Stanley said, high temperature reactors are likely to be economically superior, especially in large sizes. There was also the prospect of further saving from the use of still higher temperatures and even from the introduction of direct cycle gas turbines.

The widespread interest in the development of high temperature reactors in Europe seems to have created something of a bottleneck for testing facilities on the Dragon reactor. A meeting in London last week to plan the technical aspects of the future programme for the Dragon project was apparently overloaded with requests for irradiation space in the reactor for the testing of fuels up to full burn-up. The Dragon HTR reactor, with prismatic cores rather than sphere (or pebble) beds, is the only facility available for these tests. The 15 MW reactor built by Brown Boveri at Jülich in Germany is currently operational, but it is impossible to put test facilities into the pebble bed.

#### BIOENGINEERING

### Silicone Rubber for Membrane Lung

THE development of safer and more compact heart-lung machines is in sight as a result of the first production on a large scale of silicone rubber membranes. These "Silastofilm" membranes, said to be thinner and stronger than other types, were developed by Professor Denis Melrose and Dr Nora Burns at the Royal Post-graduate Medical School at Hammersmith with the help of a grant from the National Research and Development Corporation.

Membranes offer the ideal solution to the problem of oxygenating blood in heart-lung machines without