

Effelsberg near Bonn. The Volkswagen Foundation is paying 75 per cent of the \$8.6 million cost of the dish. Recent reports (including *Nature*, 226, 680; 1970) are that construction is proceeding precisely on schedule and that preliminary observations will begin before the end of 1970. The dish is designed to work down to 5 cm and the central 60 metres is intended to be accurate enough for 3 cm observations. It is reported that the company responsible for the construction of the telescope is so confident that the dish will reach design specifications on time that it is offering to build copies of the telescope in a period of only 22 months.

This is just one of the factors which raises the question as to whether the Jodrell Bank 400-foot dish should go ahead. There has been hardly any public discussion of the Mark V telescope, so it is little wonder that the project is being questioned. Some astronomers are even saying privately that the advantage of the Mark V in size over the Bonn dish does not provide a scientific justification of the projected cost of £5 million (\$12 million), even if that is a realistic estimate. They argue that if a large steerable dish, accurate enough for work down to a few centimetres, is what is required, it would be cheaper to copy the Bonn telescope. This would have the additional advantage that radio astronomers could wait for the performance of the telescope to be tested before going ahead. There are precedents for this. The NASA telescopes at Goldstone and Tidbinbilla and the Canadian dish at Algonquin Park are all based on the highly successful Parkes 210-foot design.

A second factor introduced by the Bonn telescope is that a proportion of the time on it (40 per cent has been mentioned) will be made available to European astronomers at large. There is little doubt that the Germans would be glad to see experienced British astronomers using the telescope, particularly on problems where British facilities complement theirs. So far there has been little attempt by European (including British) radio astronomers to coordinate their activities in the way that the nuclear physicists and molecular biologists are doing. Yet now the time is ripe for such coordination. The Dutch have just completed their one-mile interferometer at Westerbork, near Groningen (see *Nature*, 226, 1189; 1970). This will use the aperture synthesis technique devised by Ryle and his colleagues at Cambridge and to begin with will be used for high resolution 21 cm studies. The 3-mile telescope under construction at Cambridge will enable the structure of radio sources to be determined with a resolution of about 1 second of arc at 3 cm. The recently completed Bologna Cross is being used to carry out surveys with a positional accuracy of about 10 seconds of arc for sources as weak as 1 flux unit at 408 MHz. With these new facilities and the existing 250-foot Mark I and the 120-foot Mark II telescopes at Jodrell Bank, plus the French instrument at Nançay, European radio astronomers have an impressive number and variety of instruments available to them. There is clearly a case for any new European instrument to be chosen in the context of the equipment already available and by joint discussion among European astronomers. Such a cooperative approach would be beneficial to the development of European astronomy as a whole. It would lead to a circulation of scientists around the various centres and to cooperation on complementary programmes. This would in turn help to

broaden the intellectual atmosphere, particularly for students, and avoid the narrow outlook on the subject which large telescopes devoted to specialized problems tend to produce.

In such circumstances it might well emerge that a large steerable dish is required, but not necessarily the proposed 400-foot telescope. Money saved by constructing a copy of the Bonn 100-metre dish could be used to build either an additional, smaller steerable dish or a different type of instrument to tackle new problems. One field in which Europe as a whole lags notably behind the United States is work at millimetre wavelengths. This field is expanding very rapidly since the discovery of the microwave lines due to the OH radical. Five compounds including formaldehyde have been detected in interstellar space since the end of 1968 by radio observations at centimetre and millimetre wavelengths. Most recently HCN has been added to the list from work with a radio telescope at Kitt Peak. Some astronomers believe there is a strong case for Europe moving into this new and challenging branch of radio astronomy.

CAMBODIA

Kouprey Imperilled

THE mediaeval temples of Angkor Wat are not the only part of Cambodia's heritage to be endangered by the present fighting. The last three herds of kouprey, a species of forest ox, are in danger of imminent extinction. The kouprey, known to the scientist as *Novibos sauveli*, was only discovered in 1937, when it was estimated that roughly 1,000 survived. Now, according to the International Union for the Conservation of Nature, only thirty to seventy koupreys are known to exist and all of these live in three reserves in Cambodia. Each reserve is in an area which has been involved in fighting and it is feared that the koupreys have either been shot or are now so widely scattered that they may be unable to find each other when the breeding season comes.

The danger to the kouprey has been recognized for some time—the *Red Data Book* classifies it as an animal in great danger of extinction. Its primitive anatomical features make it of great evolutionary interest and the Cambodian government and the National Academy of Sciences recently cooperated in an attempt to establish a captive herd. This attempt failed because the four animals captured proved allergic to the tranquillizing drug used and they all died after less than a day in captivity. Since then Dr Pierre Pfeffer of the Paris Museum has made an extensive study of the kouprey and, armed with this new knowledge, the IUCN felt the time had come to try again. The Fauna Preservation Society gave a grant to enable it to set up a captive herd and an expedition under Dr Pfeffer was planned. The outbreak of war has called a halt to the plans, but the expedition will go ahead as soon as the fighting has died down.

PHYSICS

New Shape for Shapeless Solids

ONCE again, a panel of the Science Research Council has stressed the urgent need for better neutron beam facilities, this time in a report on the physics of amorphous materials by a committee under the chairmanship