

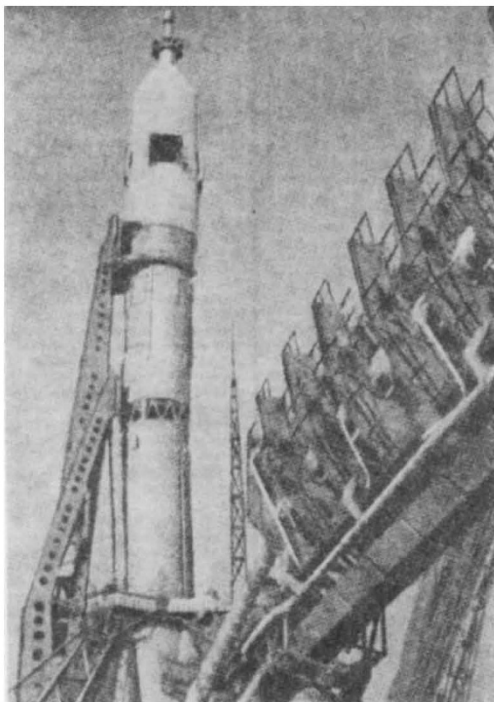
Paper; others, on the disappearance of hedgerows and the upkeep of nature reserves, are not covered by any of the official party proclamations. One question deplores the fact that "more money is spent on Antarctic research than on Nature Conservancy research into matters affecting our home environment". This may come as a surprise to those who follow the accounts of the Natural Environment Research Council, for in 1968-69 the expenditure on the British Antarctic Survey was £1,356,412, while that on the Nature Conservancy was £1,383,514. The Council for Nature is unable to provide figures to support its contention that the Nature Conservancy is the harder done by, but adds that, since the Nature Conservancy has to pay for acquiring and managing nature reserves, the amount left for research is correspondingly reduced.

SPACE

Gossipy Flight of Soyuz-9

from our Soviet Correspondent

AFTER the launch last October of Soyuz 6, 7 and 8, the latest spacecraft in the Soyuz series, which carries a mere two cosmonauts in a single spacecraft, has attracted relatively little attention outside the Soviet Union. It is interesting to note that although Thomas O. Paine, director of NASA, speaking at an ESRO meeting in Paris, spoke of the Soyuz 9 experiments as holding "great promise for future benefits back on Earth", the Soviet press releases seem to be finding some difficulty in conveying their importance to the comrade-in-the-street. Meteorological benefits and optimal exploitation of natural resources have been cited too often now to rouse the pride and delight which they once may have done. Accordingly, the press coverage of the flights has included an almost American-style note of gossip, including details of the cosmonauts' family life and background, and their



Soyuz-9 and its rocket-launcher on the launch pad.

eagerness to hear the football results relayed up to them. A promising and beneficial flight indeed, but one which, even in the Soviet Union itself, has little headline appeal.

The whole tenor of the flight is one of routine. Emphasis has been placed upon the photographing of geographical, geological and meteorological phenomena on the Earth, the study of the light effects produced by the running of the motors, and the effect of the action of the motors on the external systems of the spacecraft. Special attention has been given to the study of manual, rather than automatic, control in carrying out different "dynamic operations" of the spacecraft. The collection of biological and medical data on the effect of orbital flight on the human organism, taken together with the recent statement at COSPAR that the flights of Soyuz 6, 7 and 8 were intended as a preliminary practice of the manoeuvres needed to build a permanent space station, indicate once again the commitment of the Soviet space programme to Tsiolkovskii's ideals. The special emphasis placed in the Tass reports on the manually controlled manoeuvres of the Soyuz 9 so that its solar batteries were correctly orientated seems to indicate the same slant of priorities, which postulate an orbital station as a *sine qua non* of any manned exploration deeper into space. On the other hand, the long time-lag suggested by Tsiolkovskii between the building of the space-station and the first voyage beyond the Earth's gravitation seems to be shortening, since the programme of experiments for the third day of flight included "observations of heavenly bodies and experiments on astro-navigation".

RADIO TELESCOPES

Facelift for a Veteran Bowl

by our Astronomy Correspondent

THE symbol of British radio astronomy—the 250 foot radio telescope at Jodrell Bank—will from July be out of action to all intents and purposes for almost a year. This is the final and most inconveniencing stage of the programme to upgrade the Mark 1 telescope, as it is now called, to the Mark 1a that it will become next year. As far as the radio astronomer is concerned, the alterations will make the whole of the dish fully effective at a wavelength of 21 cm—the characteristic wavelength of neutral hydrogen the distribution of which reveals the structure of the galaxy—and the central part of the dish effective at shorter wavelengths.

In engineering terms this means a new reflecting surface within the dish, fixed so as to depart from a true paraboloid by no more than a tenth of an inch. The present continuously welded plates inside the bowl are a serious source of distortion which affects observations at short wavelengths; these will be replaced by new steel plates, each mounted and adjusted separately.

At the same time maintenance work is being carried out which should ensure another decade of trouble-free operation for the thirteen year old telescope, for it is no secret that the Mark 1 has recently been showing signs of its age. Cracks have appeared in the piles which carry the telescope, so that a general stiffening of the foundations has had to be carried out and the railway track on which the telescope revolves has had to be relaid. Fatigue cracks have also developed in