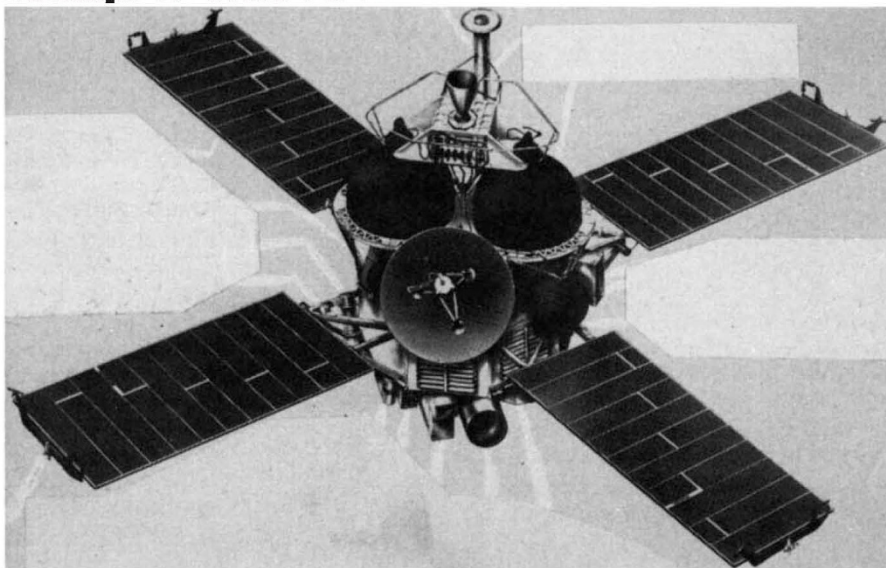


been the subject of any public warning. Nevertheless buildings nearby fared surprisingly well. Notable exceptions were two hospitals. The Veterans Administration Hospital contained three buildings, two of which were designed after the introduction of an earthquake resistant code, and these two were the buildings that were relatively unscathed whereas the third collapsed completely. The Olive View Hospital, however, close to the Veterans' Hospital and built very recently suffered substantial damage although it avoided complete collapse. It was noted that the problems still facing earthquake engineers are particularly serious in the following fields: (1) Old buildings, which include large numbers of public schools. (2) Freeway structures; a bridge whose span suddenly reduces by 1 m can hardly be expected to stay up, but bridges near the fault zone should be able to withstand the shaking. (3) Utilities; gas and water pipes. (4) The contents of buildings; the structure of many buildings remained sound in this earthquake but there was extensive damage within. Notably, an important constituent of Los Angeles' power supply from the north has been put out of action for a year by the collapse of transformers inside a substation.

SPACE

Attempt to Orbit Mars

1971 Mariner spacecraft, top view.

AFTER Mars makes one of its regular close approaches to the Earth in August, two Mariner spacecraft will be injected into orbit around the planet, if all goes well with NASA's plans. To judge by the remarkable record of the earlier close flyby experimental space-

craft, Mariners 6 and 7, the latest venture has every hope of success. These earlier craft are still operating and being used for investigations of the interplanetary medium and tests of general relativity, two years after the completion of their primary mission.

Once again, duplication will provide a partial fail-safe capability. Mariner H and Mariner I, due to be launched on May 7 and May 14 respectively, are designed to carry out different programmes of investigation, but if one satellite fails the other can provide a less detailed coverage of both programmes. The interval between the closest approaches of Mars to Earth is roughly 16 years, so that this opportunity has come at just the right moment in the development of space technology, which is building up the reliable systems which will be needed for the even rarer grand tour missions to the outer planets later this century, if they go ahead.

In order to obtain a broad picture of the Martian environment and the changes seen on the surface and in the atmosphere, one satellite will map a large part of the planet (roughly 70 per cent) while the other repeatedly studies selected areas of particular interest. The spacecraft will carry instruments for four principal experiments. The topography of the planet will be reported by both wide angle and telephoto lens TV cameras, the surface temperature will be measured with an infrared radiometer, the structure of the atmosphere and its composition will be indicated by ultraviolet spectroscopy and the composition will be determined by an infrared spectrometer. Two other experiments, the determination of atmospheric pressure and structure by

X-ray Supernova Remnant Defended

NEXT Monday's *Nature Physical Science* includes a report of further radio measurements on the supernova remnant Milne 56 made with the 64 m Parkes radio telescope by Milne and Dickel. They find that their measurements support the identification of the X-ray source GX5-1 with the supernova remnant and claim that other workers have underestimated the angular extent of the remnant in coming to the conclusion that the two are unrelated.

The new measurements have been made at 2,700 MHz and 5,000 MHz and reveal a number of interesting facts. First, the total power isotherms of Milne 56 fall away much more sharply on one side than the other and the overall shape of the contours, especially at 5,000 MHz, is the characteristic crescent expected for supernova remnants. Second, and more important, there is a considerable extension of the region of radio emission to the south at 5,000 MHz: this region includes the best known location of GX5-1 and leads Milne and Dickel to make their statement about the relationship between the two. To emphasize their argument they point out that at least six other supernova remnants are also sources of X-ray emission.

They also describe polarization

measurements in the vicinity of Milne 56. At 2,700 MHz they found that the background polarization was high but that they were unable unambiguously to attribute it to the remnant. The situation was different at 5,000 MHz, however, and a smaller background polarization revealed a significant polarization increase in the immediate vicinity of the source which follows the crescent shape and reaches a maximum just to the north of the source peak. One reason for the differences in polarization at the two frequencies could be the relative flatness of the remnant spectrum compared with the background—using both their own data and previous data, Milne and Dickel deduce that the spectrum of the remnant has an index of -0.2 . The polarization data also lead them to the conclusion that there is a background magnetic field which is approximately perpendicular to the galactic plane but which is distorted near the supernova remnant.

One consequence of the newly discovered increase in the angular diameter is that Milne's own distance and diameter estimates have to be revised. Milne and Dickel assume a new angular diameter of $30'$ which reduces the estimated distance from 3.4 kpc to 2.4 kpc and suggests a diameter of 20 pc.