

ASTRONOMY

Betula to Approach Earth

The astronomical unit for the solar system will be unraveled by tiny planet Betula when it comes within 14,600,000 miles of earth this May, Ann Ewing reports.

► A PYGMY PLANET of the solar system, named Betula, will make a close brush with earth next May 21. It will unravel one of the most important puzzles in astronomy—the exact value of the distance from earth to the sun, the astronomical unit for the solar system.

The minor planet will come within 14,600,000 miles of earth. That is close for astronomers. It is not, however, the closest approach of any asteroid. The Reinmuth object, called Hermes, passed unexpectedly within about 400,000 miles of earth in late 1937.

Hermes' claim to fame is that it gave earth its narrowest escape from a disastrous cosmic collision. Hermes was a very small and speedy object, so its path around the sun was not accurately determined. It has not been seen since 1937.

Eros is the minor planet that previously held the record for closest predicted approach—16,200,000 miles in 1931. The path of Eros through the sky is well known and good observations of this little dot in the

sky have been obtained since its discovery in 1898.

The astronomical unit, to be sharpened by observing Betula, has been computed from radar waves bounced off the planets Mars and Venus and from Venus probe, Mariner II, as well as by two astronomical methods, one involving Eros. Now Betula can be added to tiny Eros as an object for determining the astronomical unit.

Although the size of Betula is not definitely known, most asteroids are less than 50 miles in diameter. Ceres, the largest known, is 480 miles, whereas Eros is only 15 miles.

Some comets approach closer to earth than either Betula or Eros. However, comets cannot be used to determine the astronomical unit because they give a fuzzy image on photographic plates and their positions therefore cannot be accurately measured.

Minor planet Betula was discovered on May 22, 1950, and is named after the wife of Dr. Samuel Herrick, astronomer, University of California, Los Angeles.

Its magnitude at closest approach on May 21 will be 12.5, too faint for all except astronomical telescopes.

The reasons for differing values obtained for the astronomical unit are not understood. The figures for the distance of the sun from astronomical determinations do not agree within 100,000 miles. Although the results from various methods agree when done the same way, the differences are more than the errors within each of the methods.

When the astronomical unit is translated into miles, the earth's mass enters into the computations. Some astronomers believe the earth's mass is not well enough known to allow the required calculations.

• Science News Letter, 83:37 January 19, 1963

TECHNOLOGY

"Instant" Foam Houses For Outer Space

► "INSTANT" HOUSES for use in outer space will be made by mixing foam-producing chemicals in tiny capsules if trials underway by National Cash Register Company work out under an Air Force contract. Two plastic sheets preshaped would be expanded by the chemicals on signal when desired. Then furniture, platforms, bridges and ladders could similarly be foam-made.

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AERONAUTICS

"Quonset City" Houses Latest Operational Jet

See Front Cover

► THE AIR FORCE'S most advanced operational jet, the F-105 D fighter is being further modernized at "Quonset City," Farmingdale, L. I., N. Y.

In the some 330,000 square feet of air field space, the Republic Aviation Corporation, producer of the Mach 2 aircraft, is completing the last of a group of hangars, seen on this week's front cover, designed to accelerate a modification program that will add to the F-105's weapons carrying capability. The plane already can carry nuclear and conventional weapons, as well as sidewinder and bullpup missiles. It is now in service with the U.S. Air Force in Europe and in the Pacific and with Tactical Air Command in this country.

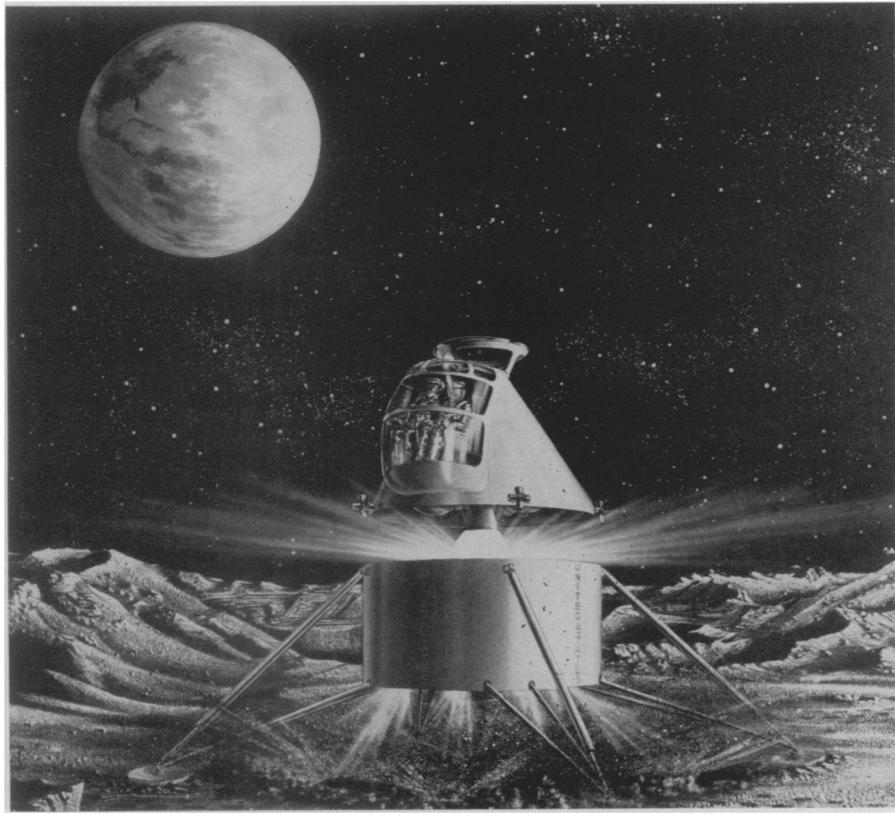
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SPACE

New Device Plots Space Orbits

► A NEW "Copernican Planetarium" brings the moving universe indoors. The combined astronomical calculator and orbital computer, provides information as to where the planets are in space, in the present, past or future. The control console permits plotting of planet and satellite orbits and "reading out" the paths of the Russian Mars probe and U.S. Venus probe, Mariner II. It was installed at the Rome Air Development Center, Rome, N. Y.

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United Technology Corporation

LANDING ON THE MOON—Not in 1963, but as a result of planning and developments, a moon-landing craft may, by the end of the decade, look like this artist's imaginative visualization of one using a liquid rocket engine.