

ASTRONOMY

Birth of Planets Theory

A NEW THEORY on how the sun's family of planets were born by being torn from the sun's substance when another star passed close by has been proposed.

Dr. M. M. Woolfson, physics department, College of Science and Technology, Manchester, England, suggests a new variation on the old theme that the planets were formed when the sun and another star passed close to each other. This theory was once generally accepted but now is supported by only a few astronomers because the chances of close passage of two stars are extremely small, among other reasons.

A current view of planet formation is that the planets resulted from gravitational attraction in eddies and turbulent areas remaining in the gas and dust surrounding the sun after it was formed.

One new variation in Dr. Woolfson's theory is his suggestion that the material for the formation of the planets was removed from the sun in 12 hours.

Dr. Woolfson's theory is as follows:

At some time in the remote past a star 100 times as massive as the sun passed within a distance of ten times the solar radius. (The solar radius is about 433,000 miles.) As it approached the sun, the passing star raised a tide on the solar surface that increased in height as the star drew closer. Eventually a portion at the tip of this tidal bulge was more attracted by the star than by the sun, and broke off. Pluto, the outermost planet, was the first thus formed.

This loss of material at the solar surface set up waves that traveled around the sun until they reached the region facing the oncoming star. This wave crest was then

torn off to form Neptune, the second outermost planet.

A new wave was then set up, which gave the planet Uranus, and then Saturn and Jupiter were formed in a similar way. At this stage, the star was approaching its closest to the sun and was able to draw material out quite regularly.

That part of this material not captured by the passing star formed the belt of asteroids, or minor planets, that lie for the most part between the orbits of Jupiter and Mars.

Finally, as the stars receded, the four inner planets, Mars, earth, Venus and Mercury, were formed, Dr. Woolfson reports in the British scientific journal *Nature*, 187:47, 1960.

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RADIO ASTRONOMY

Invisible Comets Plentiful

SOLAR SYSTEM SPACE may be filled with a large number of very small, invisible comets, two Stanford University scientists report.

Drs. P. B. Gallagher and V. R. Eshelman of Stanford's Radioscience Laboratory say their daily measurements of the trails left by meteors showed many more than could be accounted for from known meteors. Meteors are believed associated with past or present comets and are seen as "shooting stars" when they crash and burn in the earth's atmosphere.

At certain times of the year, the earth encounters meteor streams, the debris of

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Telescope to Be Built In Southern Hemisphere

A NEW TELESCOPE will give, for the first time, exact positions of stars in the southern one-third of the sky. It will be built in the Southern Hemisphere with a \$750,000 grant from the Ford Foundation in New York.

The stellar camera will be operated jointly by Yale and Columbia Universities. It will be an astrograph, for measuring the speed and position of stars with great precision.

The only such existing astrograph, located at Lick Observatory, Mt. Hamilton, Calif., covers only two-thirds of the sky. The two instruments will permit accurate measurements of stellar motion throughout the Milky Way galaxy in which the sun and its family of planets are located.

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comets, and then the display of "shooting stars" is often spectacular. The Stanford radar studies showed that the high rate of meteors could not be reconciled with the accepted theory of meteor streams.

Instead of a few meteor showers during the year plus a large background of independently traveling particles, the scientists suggest that meteor showers occur frequently but unpredictably, with occasional predictable showers of large particles (the known meteor streams).

The earth crosses the paths of millions of showers as it travels around the sun, they suggest in the *Journal of Geophysical Research*, 65:1846, 1960, published by the American Geophysical Union. The particles producing the trails they studied by radar have a mass a ten-thousandth that producing the faintest visible trail.

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Spartan King Provides Name for Asteroid

AN ASTEROID first spotted in 1957 has now been officially named Menelaus, for the legendary Greek hero who was King of Sparta and husband of the beautiful Helen of Troy.

The asteroid, or minor planet, previously known as 1957 MK, was discovered by Dr. S. B. Nicholson of Mt. Wilson and Palomar Observatories, Pasadena, Calif. By long-accepted custom, persons who discover asteroids name them. Dr. Nicholson said the name was selected to enable another famous Greek to join his compatriots in the swarm of asteroids to the east of Jupiter.

News of the naming of the asteroid for Menelaus is being sent to astronomers by way of a Minor Planet Circular, issued by the Cincinnati Observatory.

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GREAT EAST GATE OF SHECHEM—Once surrounded by a 35-foot wall, this ancient city of Biblical Palestine is being excavated by Drew University, McCormick Theological Seminary and Harvard University. The pairs of huge stone blocks once had sliding wooden beams between them. On the left are the former guard rooms.