

ASTRONOMY

New Planet Discovered

A new planet outside our solar system, orbiting around another star and half again as massive as Jupiter, has been discovered by Dr. Peter van de Kamp—By Ann Ewing

► THERE ARE OTHER PLANETS in the universe besides the earth and the eight others in our solar system.

Discovery of a planet, named Barnard's Star B—a dark, lifeless giant half again as heavy as Jupiter—was reported to astronomers at Tucson, Ariz., by Dr. Peter van de Kamp, director of Swarthmore College's Sproul Observatory, Swarthmore, Pa. (See SNL 81:249, April 21, 1962.)

It is 36 million million miles (six light years) from earth in the constellation of Ophiuchus, the serpent holder.

Discovery of this planet outside the sun's family means that the universe abounds with billions of other planets. They circle other star-suns. Astronomers estimate that a hundred million of them have some form of life. Some may even have life as advanced or more advanced than human beings.

However, this particular planet does not have any life, Dr. van de Kamp told SCIENCE SERVICE, because the temperature there is more than 300 degrees below zero Fahrenheit.

He determined the unseen object was a planet from measurements of the amount of wobble it produced in the motion of the main star, Barnard. The measurements were made on 2,413 plates taken on 619 nights, some taken as long ago as 1916 but most from 1938 through 1962. They were made mainly by Dr. Sarah Lee Lippincott, also of Sproul Observatory.

The amount of the wobble corresponds to 0.0245 seconds of an arc, or only a twenty-thousandths of an inch on the photographic plate taken with a 24-inch telescope. The star takes 24 years to complete a full orbital wobble.

The new planet's orbit around its "sun" is similar in size to that of Jupiter around our sun, Dr. van de Kamp calculates. Its mass is only a hundredth that of the star, and only a seven-hundredth that of the sun, he told the American Astronomical Society meeting in Tucson.

One astrophysical theory requires that to call a celestial object a star, its mass must be more than seven percent that of the sun. Anything smaller than this cannot shine by nuclear processes, burning its hydrogen to make helium, but only by reflected light.

The faintest stars visible to the naked eye are of sixth magnitude under good seeing conditions. The world's largest telescope, the 200-inch atop Mt. Palomar, can photograph stars as faint as the 23rd magnitude.

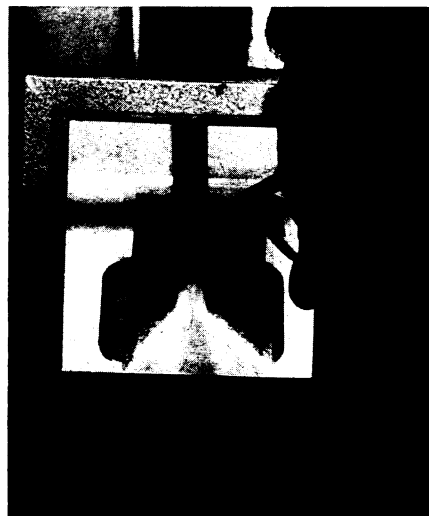
Dr. van de Kamp estimates that the new planet is about 30th magnitude, much too faint to be seen from earth or from a satellite by any instruments or techniques now known.

Two other unseen objects, possibly planets, have also been spotted by astronomers at

Sproul Observatory using the same method of measuring changes in the main star's motion.

The unseen companion in the 61 Cygni system was measured by Dr. Kaj A. G. Strand in 1943 and that of Lalande 21185 by Dr. Lippincott in 1960. Both have masses about a hundredth that of the sun as best as can be determined, putting them either in a category of an extremely large planet or an extremely small star.

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Cargill

SAND TEST—Falling sand used to determine the abrasion resistance of new safflower oil-based polyurethane coating is being observed by S. Guy Wilson of Cargill technical services laboratory. The amount of sand needed to wear a hole in the coating applied on glass mounted under the spout indicates the toughness of the film. The new resin is said to be far more abrasion-resistant than conventional floor coatings.

TECHNOLOGY

Instruments Can Be Tested for Space

► A SYSTEM duplicating the vacuum of interplanetary space is now available to test spacecraft materials and devices.

The laboratory facility of National Research Corporation, Cambridge, Mass., available on a service or contract basis, will be used to find what happens when materials are exposed to the extremely high vacuum of interplanetary space. The vacuum of space near the earth affects devices and characteristics of materials.

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ASTRONOMY

Anti-Matter May Explain Comet's Brightening

► A COMET that brightened amazingly could be the earth's closest experience with a strange kind of matter just the reverse of ordinary atoms.

Anti-matter could account for the comet's becoming a thousand times brighter in only a month, Dr. Robert S. Richardson of Griffith Observatory at Los Angeles speculated. The strangely behaving object is Comet Schwassmann-Wachmann (1), 1925 II, named after its discoverers at the Bergdorff Observatory in Germany.

Dr. Richardson's suggestion that this comet is made of anti-matter would also explain several sudden changes in its motion that have been noted. The reason is that the collision of matter with anti-matter would result not only in annihilation, cause of the brightness, but the nuclear blast would affect the comet's motion.

Most of the meteoroids with which the comet collides in space are so small they would not produce an observable effect. However, occasionally a large one would hit, producing an explosion of such monstrous proportions that it would be observable.

Comet Schwassmann-Wachmann has a nearly circular orbit that is farther from the sun than Jupiter, or never closer than about 514 million miles.

Astronomers have also suggested that particles and radiation thrown out by solar flares could somehow cause the comet to brighten, Dr. Richardson reported in the Griffith Observer.

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GENERAL SCIENCE

Science Service Trustees Named to Serve on Board

► THE ELECTION of Gordon B. Fister, associate editor of the Allentown (Pa.) Call-Chronicle as a trustee of SCIENCE SERVICE representing the journalistic profession was announced at Washington, D. C. He succeeds Michael Ogden, executive editor, Providence (R. I.) Journal-Bulletin, whose term expired.

Mr. Fister is chairman of the National Science Fair Advisory Council, composed of science fair directors from all parts of the nation who cooperate with SCIENCE SERVICE in the national Science Youth Program. He directs the Allentown, Pa., science fair sponsored by the Call-Chronicle newspapers.

Members reelected to new terms as SCIENCE SERVICE trustees are Dr. Wallace R. Brode, chemist of Washington, D. C., representing the American Association for the Advancement of Science; Dr. Harlow Shapley, Paine professor of astronomy emeritus, Harvard University, representing the National Academy of Sciences; Dr. Leonard Carmichael, secretary of the Smithsonian Institution, representing the National Research Council; and Ludwell Denny, Scripps-Howard Newspaper Alliance foreign editor emeritus, representing the E. W. Scripps Estate.

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