

ASTRONOMY

Venus to Eclipse Star

ASTRONOMERS are setting forth on an unusual eclipse expedition to observe the eclipse of a star by a planet, Venus, on Tuesday, July 7, in hope of discovering more about the atmosphere of the earth's sister planet.

Because bright Regulus is a hot star with an undistinguished spectrum, its light, seen as it disappears and reappears behind Venus, will pass through the planet's gaseous envelope and be modified so as to give clues to what the atmosphere contains and how much.

The eclipse occurs at 9:15 a.m. Eastern Standard Time, when Venus is low in the east in broad daylight. Farther west, of course, it will not have risen. Therefore, Harvard College Observatory is sending three parties to observe from Europe, two from Italy and one from southern France.

European observatories are expected to use their instruments for stay-at-home expeditions.

The eclipse can be viewed from a great area of the earth's surface, but haze and clouds are likely to interfere with observations from the eastern U.S. So expeditions are going to other continents where Venus will be higher in the sky and clear weather more probable.

The famous observatory at Pic du Midi in the Pyrenees that specializes in solar observations and has suitable telescopes and spectroscopes is expected to observe.

Venus is the bright evening "star," the brightest in the heavens. It is not a star like Regulus, but is one of the nine planets in the solar system, number two outward from the sun. It shines by reflected sunlight. Telescopes or even binoculars show it as a disc with phases comparable to the earth's moon. At the time of the eclipse, on July 7, it will be a half-moon in shape.

The star Regulus will disappear behind Venus as seen from the earth and remain

hidden for about 12 minutes. The five seconds before and after the total eclipse will be the critical time for the taking of spectrum photographs that will tell what is in Venus' atmosphere, its temperature and density.

The Venus atmosphere as previously determined is believed to be principally carbon dioxide.

Regulus is a first magnitude star so distant from the solar system that its light, traveling 186,000 miles a second, requires 67 years to reach earth.

An eclipse by Venus of a star that can give useful astronomical information is a relatively rare event.

The passing of Venus in front of the star Regulus, called an occultation by astronomers, is like an eclipse of the sun by the moon. In the three centuries that man has been looking at the heavens through telescopes, no one has ever seen an occultation of a first-magnitude star, like Regulus, by Venus.

As the eclipse progresses, the light from Regulus will be gradually weakened by the atmosphere of Venus. Sensitive photoelectric equipment will be used to record the changing amounts of light reaching earth from Regulus.

East Coast residents in the U.S. will need a telescope of three- or four-inch aperture to view the occultation.

Venus is almost a twin of the earth in size and mass. With the exception of the sun and moon, it is the brightest object in the sky, its brilliance being largely due to dense clouds that cover the planet's surface. Although the clouds reflect the sunlight well, they prevent astronomers from observing the solid surface and thereby establishing its rotation period. It takes 225 days to travel once around the sun.

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ASTRONAUTICS

Spacemen Picked by Cards

IT WAS in the cards when the seven astronauts were selected.

All the information that scientists and Government officials needed to know about the space-flight candidates is neatly and compactly "written" on a deck of about 80 IBM record cards.

Results of all the special stress, psychological and physical tests that the astronaut hopefuls received were coded so that final selection of the candidates, made by the National Aeronautics and Space Administration, was simplified.

It was early 1958 that the Lovelace Foundation for Medical Education and Research in Albuquerque, N. M., began developing a method for recording detailed medical information for the U. S. man-in-space program. The cards were ready when the 32

astronaut candidates came for their tests, Dr. A. H. Schwichtenberg, head of Lovelace's department of aviation and space medicine, told scientists meeting in Poughkeepsie, N. Y.

When the men in space return from their journeys, these cards will be available for important additions, he told SCIENCE SERVICE.

Calling upon their experience in aviation medicine, the researchers determined the kinds of medical history, tests and examinations needed to select the first candidates for space travel.

In addition to the routine information, the cards answered questions on smoking and drinking history, and included anthropological data and centrifuge acceleration test results. Moving pictures of the heart,

designed to show up coronary artery calcification, were also coded.

When the cards had all been checked, needed laboratory tests done, and a written summary prepared, each astronaut case was considered by a board of physicians who had had experience in aviation medicine.

This technique of recording medical histories on cards has general application, Dr. Schwichtenberg said.

The method which he described at a medical symposium sponsored by the International Business Machines Corporation should be compatible with future general clinical and hospital use in the Air Force as well as in civilian medicine, Dr. Schwichtenberg said. Now it is being used for various man-in-space programs and in other special projects.

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MEDICINE

Virus, Not Iodine Lack, May Cause Goiter

GOITER MAY be caused by a virus instead of a lack of iodine.

The incidence of goiter throughout the world rises and falls in some specific areas and acts like a virus-caused disease, Dr. Isidor Greenwald of New York University College of Medicine told the American Medical Association meeting in Atlantic City, N. J.

In Switzerland, for instance, the number of goiter cases has dropped the past 200 years, he said. However, there are a great many cases of cretinism in Switzerland. This disease is characterized by stunted growth and mental retardation. Cretinism is known to be caused by goiter, Dr. Greenwald said. Many Swiss babies have goiter when born, he pointed out.

In the United States, there are fewer goiter cases than in Switzerland. Yet Americans do have a relatively high rate of hyperthyroidism, overactive thyroid glands. This disease is also linked with goiter.

The Japanese supposedly eat many sea foods and thereby receive enough iodine in their diets, yet they have a high rate of goiter and hyperthyroidism. Contrary to the Swiss, who also have a high goiter rate, the Japanese do not have the problem of cretinism.

Because goiter can produce different diseases in two countries—cretinism in Switzerland and hyperthyroidism in Japan—it is possible that goiter is caused by a virus, he asserted.

Dr. Greenwald recalled a serious outbreak of goiter in livestock in the states of Washington and Montana in 1915. The animals were fed iodized salt and their goiters disappeared. Dr. Greenwald said the outbreak resembled a virus-caused communicable disease.

A lack of iodine should not produce such different effects in different countries, or in the same country at different times, as has been observed in Italy, he said. But a virus infection might act this way, he concluded.

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