ASTRONOMY

Spot Larger Than Earth Breaks Out On Saturn

Check of Rotation and Other Knowledge of Huge Planet May be Obtained by Study of 20,000-Mile-Long Blemish

A LARGE white spot, so immense that it could engulf an object over twice the diameter of the earth, has appeared suddenly on the equator of Saturn, the ringed planet and second largest of the solar system.

It was discovered by John E. Willis, U. S. Naval Observatory astronomer at 12:18 a. m. Saturday (Aug. 5) while he was observing a transit of Saturn as a routine operation, using the fixed six-inch telescope. Although he observed the planet for only about a minute before it left the field of view, Mr. Willis recognized the spot and called upon other astronomers at Uncle Sam's observatory to check his discovery. Principal Astronomer H. E. Burton turned the observatory's famous 26-inch telescope and a smaller 12-inch telescope upon the planet and confirmed the discovery. B. P. Sharpless also made confirming observations.

The spot was also noticed by a London music hall comedian and amateur astronomer, Will Hay, nearly 27 hours before it was found independently at the U. S. Naval Observatory. Mr. Hay, looking at the planet Thursday night (Aug. 5) through a six-inch refracting telescope at Norbury, saw the spot and notified Dr. W. H. Steavenson who confirmed the discovery.

German Reported First

A Berlin amateur astronomer, Dr. Weber, who is a professional physicist at the German Bureau of Standards, is reported as having seen Saturn's white spot about an hour before it was discovered by Will Hay in England.

Just what causes the white spot is unknown. Saturn is made of the lightest stuff of any planet, with a density one-eighth that of the earth or seven-tenths that of water. The planet must be very cold, perhaps as low as 290 degrees below zero, astronomers state. Most gases known to scientists on this earth would be very nearly condensed into liquids. The equator of Saturn, which is in line with the plane of its rings, is known to move faster in rotation than the other parts of the planet. Perhaps the white spot is a gigantic whirl in Saturn's equatorial belt.

On Saturday morning it was estimated that the spot was about a tenth the diameter of the planet, but on Saturday night Principal Astronomer Burton with the 26-inch telescope found that the spot was much larger. While difficult to measure because not well defined, the spot seemed to be about 20,000 miles long and 12,000 miles wide, being formed by a sort of extension in the brighter equatorial belt of the planet.

To Last Several Weeks

It is expected that the spot will continue to be observable for several weeks. Astronomical records show that only twice before have such spots been observed on Saturn. The first was seen through the same 26-inch Naval Observatory lens in 1876 by the late Prof. Asaph Hall, Sr., just three years after the telescope was built. By using the spot as a mark of reference, Prof. Hall was able to make the determination of the period of rotation of Saturn that is now quoted in astronomical tables, 10 hours, 14 minutes, 24 seconds. The 1876 Hall spot was not so large as the Willis spot now visible. Mr. Willis used the Hall determination of Saturn's period of rotation in predicting when the spot would return to visibility, and Saturday night's observations showed that the Willis spot is revolving around on the planet in about the expected time. The second spot on Saturn was discovered by the late Prof. E. E. Barnard of Yerkes Observatory in 1903. Unlike the Hall and Willis spots the Barnard spot was considerably north of Saturn's equator.

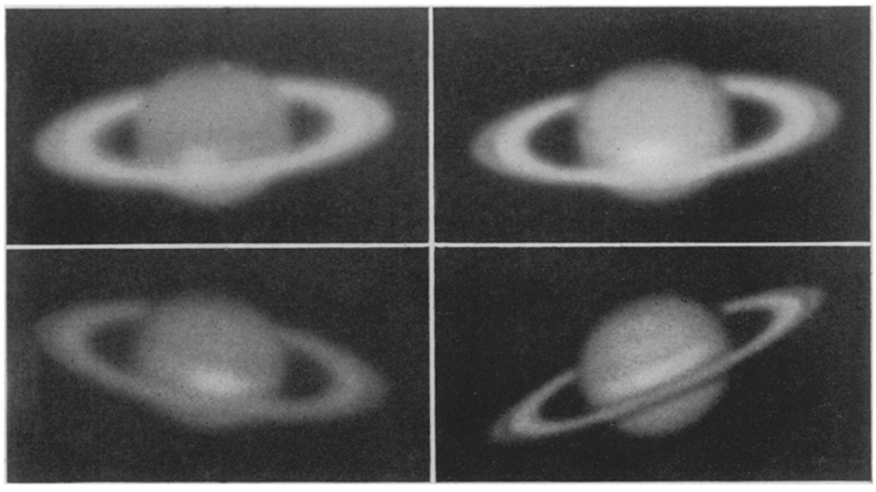
Spots Tell Rotation

The spots are useful in making measurements of Saturn's rotation, but Sir William Herschel made a close determination of the planet's period of rotation in 1794, without the aid of a spot. He came within 2 minutes of the value later determined by Prof. Hall.

Mr. Willis is hopeful that through observations of the spot with radiometers, spectroscopes, cameras and other instruments, it will be possible for astronomers to obtain added information about Saturn. Observatories located in the southern hemisphere are particularly well situated to study the spot.

Saturn is now a conspicuous object in the southern evening sky being outshone only by the moon and the star Sirius. (*SNL, p.* 70, *July* 29, '33)

Science News Letter, August 19, 1933



A STUDY IN SPOTS

Here are pictures of Saturn, taken under different conditions by two observatories. The two lower pictures are from the Lowell Observatory at Flagstaff, Ariz., while the upper photographs were made at the Lick Observatory of the University of California at Mt. Hamilton, Calif. The lower right picture, made by the late Dr. Lowell, Nov. 4, 1909, represents the equatorial belt of Saturn as it usually appears. In contrast is the lower left view showing the great white spot, taken by Dr. E. C. Slipher on Aug. 9. The upper left was photographed by violet light and the upper right by yellow light. Both were made by Dr. W. H. Wright on Aug. 6.