ASTRONOMY

Ringed Planet Back

Saturn, first seen imperfectly by Galileo in 1610, will be visible in the constellation of Taurus, the bull, in the October evening skies.

By JAMES STOKLEY

➤ AFTER SEVERAL months with no planets easily visible in the evenings, Saturn, the one with the rings, is in view again for the first time since April. Then it passed behind the sun, and out of sight. By June it had become a morning star, seen in the east before sunrise. After that it gradually moved east until now it rises about two hours after sunset, and is on view for the rest of the night.

The accompanying maps show its position. These depict the heavens as of 11:00 p.m., war time, at the beginning of October, about 10:00 p.m. on the 15th and 9:00 p.m. on the 31st. Saturn is in the constellation of Taurus, the bull, close to the star Aldebaran. On the astronomer's brightness scale, its magnitude is zero, nearly two and a half times as bright as Aldebaran, a 1.1 magnitude star.

Nearly as bright as Saturn is the most brilliant star to be seen these evenings. This is Vega, in Lyra, the lyre, high in the west. And only slightly fainter than Vega is Capella, in Auriga, the charioteer, which is in the northeast just to the left of Taurus. Altair, in Aquila, the eagle, comes third. It is found in the southwest. Aldebaran is fourth in order of magnitude, while the fifth is Fomalhaut. Part of the constellation of Piscis Austrinus, the southern fish, it is low in the south. Because it is so near the horizon, for northern hemisphere observers, the earth's atmosphere absorbs much of its light. Hence it does not appear any more brilliant than some second magnitude stars higher in the heavens. This circumstance is indicated by the symbol used to designate Fomalhaut on our map.

Deneb Bright

The last of our October evening first magnitude stars is Deneb, in Cygnus, the swan. High in the west, part of this constellation is shown on the southern map, and part on the northern. The principal part of Cygnus is often called the "northern cross." It does make a very good cross in nearly a vertical position, one even more perfect than its more famous southern counterpart. Deneb is at the top of the northern cross.

About midnight another planet rises in the east. This is Jupiter, which is about 5.25 times as bright as Saturn. It is in the constellation of Gemini, the twins, near the stars Castor and Pollux. Venus may be glimpsed low in the east just before dawn at the beginning of the month, but it is drawing into line with the sun, when it will not be seen. Mars is likewise now invisible, and so is Mercury for most of the month. However, it will reach its greatest distance west of the sun on October 26, when it will appear low in the east before sunrise for a few days.

Beautiful though it is to the naked eye, Saturn is even more interesting through a telescope, even one of only moderate size, for then its famous rings may be seen. This ring system is exceedingly thin for, while 170,000 miles in outside diameter, it is something like ten miles in thickness.

Rings on Edge

Twice in each of the 29½-year periods in which Saturn makes a trip around the sun the rings are exactly on edge to the earth—then they vanish, even through the largest telescopes. But now we are nearly between two such times, and the rings are spread out nearly to their maximum. This accounts for the great brightness of Saturn. In their present position they reflect back to earth nearly twice as much light from the sun as does the ball of the planet.

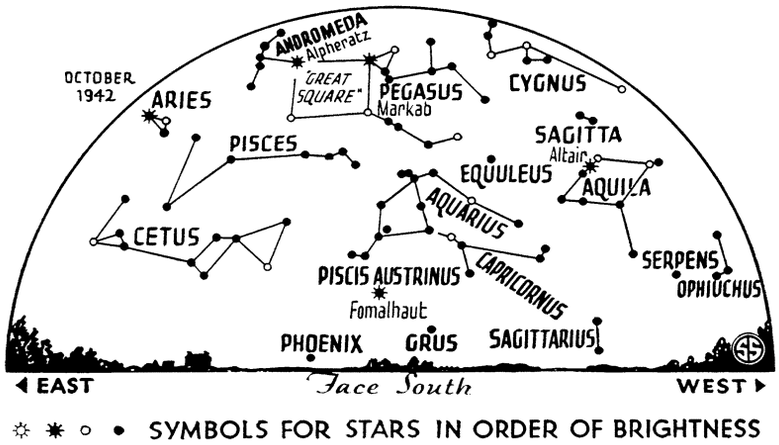
First seen very imperfectly in 1610 by Galileo in Italy through his little telescope, the fact that they were rings was not discovered until 1655, when the Dutch astronomer Huygens found out what they were. He, however, did not appreciate their structure. During the past century it has been established that they are made of a swarm of myriads of tiny moons, revolving around the planet so close together that they present an appearance of solidity.

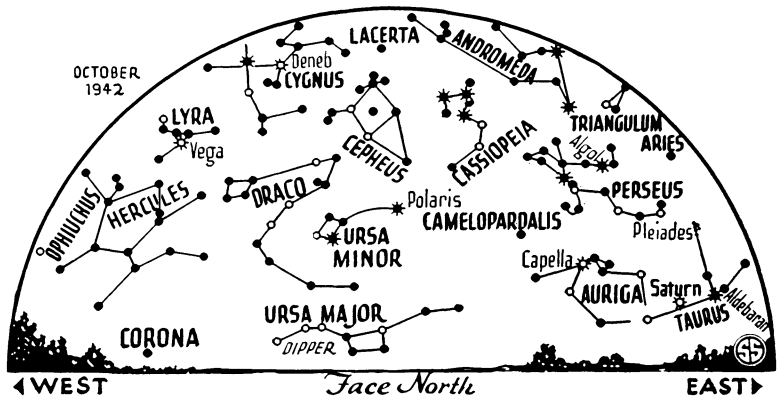
Nature of Rings

The modern conception of the size of these particles is expressed by Dr. Fred L. Whipple, of the Harvard College Observatory, in his recent excellent book, "Earth, Moon and Planets," as follows:

"The particles of Saturn's ring are probably small, like ordinary dust, but not so small that light pressure might force them away. We can visualize the rings as consisting of broken rocks, pebbles and dust (not as fine as white flour), summing to a total of perhaps one millionth Saturn's mass, or less than a hundredth that of the moon."

Last month there was a partial eclipse of the sun, not, however, visible from settled parts of the world. Then the moon came partly in front of the sun. This month there is another sort of "eclipse," properly called an "occultation," when the moon passes in front of the bright star Aldebaran. Of all the stars in front of which the moon can go, this is the brightest. There have been several such occultations of Aldebaran during recent





months, but many have occurred during daylight hours, at least for part of the United States. However, the one that comes this month, during the night of October 26, will be seen throughout the United States. The moon will then be 17 days old—in a gibbous phase between full and last quarter.

Star Vanishes

As seen from Washington, at 2:11 a.m. E.W.T. on Oct. 27, the dark edge of the moon will hide the star. A curious feature of such an event is that the star vanishes instantly—even more rapidly than an electric lamp goes out when you turn off the switch. This is a good demonstration that the moon has no appreciable atmosphere. If it did, the star would gradually dim before it disappeared, just as the sun gets fainter before it sets behind the horizon. About an hour and a half later, at 3:37 a.m. E.W.T., as seen from Washington, the star reappears, again instantaneously, from behind the edge of the moon on which the sun is shining.

At other parts of the country, the times are different. The astronomer's bible, the "American Ephemeris," published annually at the U. S. Naval Observatory in Washington, gives the times of occultations not only for that city, but for three other locations. One is in western Massachusetts, where the star will disappear at 2:23 a.m. E.W.T. and return at 3:51 a.m. For a point in southern Illinois disappearance comes at 12:46 a.m. C.W.T. and reappearance at 2:11 a.m. The last location for which data are given, in southern California, will see the star hidden at 10:17 p.m. P.W.T. on the 26th, with it emerging at 11:21 p.m.

If you want to see this occultation to best advantage, a pair of binoculars will be a great help. It will be visible to the naked eye, but the optical aid will make it even clearer — particularly the reappearance, for the part of the moon from which the star will emerge will be quite brilliant. Astronomers will be watching this occultation mainly for the purpose of checking accurately its timing. Exact prediction of the moon's wandering is one of the most difficult problems of celestial mechanics, and occultations provide a valuable check on these predictions.

Celestial Time Table for October

Oct.	EWT	
1	9:00 p.m.	Moon farthest, distance 251,-200 miles.
2	6:37 a.m.	Moon in last quarter.
3	12:13 p.m.	Moon passes Jupiter.
5	8:00 p.m.	Mars and sun in line.
9	4:44 a.m.	Moon passes Venus.
10	12:06 a.m.	New moon.
14	1:00 a.m.	Moon nearest, distance 228,-700 miles.
16	6:58 p.m.	Moon in first quarter.
24	12:05 a.m.	Full moon.
26	11:00 a.m.	Mercury farthest west of sun.
27	Early a.m.	Occultation of Aldebaran (see article for details).
	7:20 a.m.	Moon passes Saturn.
29	5:00 p.m.	Moon farthest, distance 251,-600 miles.
31	12:49 a.m.	Moon passes Jupiter.

Science News Letter, September 26, 1942

MEDICINE

New Use for Heparin

➤ A NEW use for heparin, anti-blood clot chemical, is suggested by experiments reported by Dr. Floyd Boys and Dr. Ivor David Harris, of Charlottesville, Va., at the meeting of the American Roentgen Ray Society in Chicago.

The inflammation resulting from X-ray damage to the lungs may be prevented, or at least reduced in severity, by means of heparin, preliminary results of studies with rabbits show.

The possibility of using heparin for this purpose was suggested by previous studies by Dr. Boys and associates which, they reported, showed that the adhesions sometimes following operations within the abdomen might be prevented by heparin.

Science News Letter, September 26, 1942

Relief from Asthma

➤ "BENEFICIAL RESULTS" and relief of asthmatic paroxysms in nearly three-fourths of a group of asthma patients were obtained by X-ray treatments, Dr. Ira I. Kaplan and Dr. Sidney Rubenfeld, of New York, reported.

The longer and more severe the illness, the more favorable was the response, the doctors stated. Often the symptoms got worse following treatment before they got better.

The patients were mostly men between 30 and 50 years who were allergic to various proteins but who were not helped by desensitization treatment. The X-ray treatment was given two to three times a week over the chest, occasionally over other parts of the body.

Science News Letter, September 26, 1942

ENTOMOLOGY

Roaches and Bedbugs Used To Test Insect Sprays

➤ USING hundreds of thousands of roaches and bedbugs during five years of research at Ohio State University, Dr. F. L. Campbell and associates have originated three procedures which would enable the consumer to buy insect sprays specially adapted and tested against the type of insect to be controlled.

Experiments show that former standard test methods using houseflies, often do not give an accurate picture of what the effectiveness of sprays will be against crawling insects, such as roaches or bedbugs. The research was sponsored by the National Association of Insecticide and Disinfectant Manufacturers.

Science News Letter, September 26, 1942

● RADIO

Saturday, October 3, 1:30 p.m., EWT

"Adventures in Science," with Watson Davis, director of Science Service, over Columbia Broadcasting System.

Dr. George E. Folk, special patent adviser to the National Association of Manufacturers, will talk about patents in industry.

Tuesday, September 29, 7:30 p.m., EWT

Science Clubs of America programs over WRUL, Boston, on 6.04, 9.70 and 11.73 megacycles.

One in a series of regular periods over this short wave station to serve science clubs, particularly in the high schools, throughout the Americas. Have your science group listen in at this time.