

ASTRONOMY

Saturn Shines Through Night

Saturn, the ringed planet, appearing in the southeast in the constellation of Capricornus, and Jupiter 13 times brighter in the constellation of Pisces, brighten the August sky.

By JAMES STOKLEY

➤ **THREE** and possibly four planets will be visible on August evenings, although only one is shown on the accompanying maps.

These show the skies as they look about 11:00 p.m., your own kind of daylight saving time (or 10:00 p.m., standard time) at the first of August, and an hour earlier in the middle.

Saturn, which shines with a brilliance equal to a bright first magnitude star, appears in the southeast, in the constellation of Capricornus, the sea-goat. It is considerably brighter than any star in that part of the sky, so you should find it easy to identify. It rises about sunset and sets about sunrise.

Jupiter Appears

By about midnight, daylight time, at the first of August, Jupiter will appear above the eastern horizon. It is about 13 times as bright as Saturn, and in the constellation of Pisces, the fishes. One star in this group is shown on our map, but this is not the part of the constellation in which Jupiter stands.

Mars, which is far away and dim—like a second magnitude star—is now in Virgo, the virgin. Part of this group also is shown on the map, but Mars is in the part below the horizon. At the beginning of August it sets a little more than two hours after the sun, so it is rather hard to locate. As it draws nearer the sun in the following weeks, it will disappear from view completely for a time.

And on August 24 Mercury will be at greatest eastern elongation, which means that it remains above the western horizon for a little while after sunset. However, this will not be a very favorable time to see it.

The brightest star visible on August evenings is Vega, in Lyra, the lyre, directly overhead at the times for which the maps are drawn. Directly east of Lyra is Cygnus the swan, shown partly on the southern sky map, partly on the northern. In it is the bright star called Deneb.

South of Cygnus is the interesting little constellation of Sagitta, the arrow, and then the large one of Aquila, the eagle. Altair is the bright star in this group. Together with Vega and Deneb, Altair makes a large triangle that is characteristic of the summer evening skies.

Two other constellations that are typical of summer are visible low in the south—Sagittarius, the archer, and Scorpius, the scorpion. In the latter you see the brilliant red star Antares.

Toward the northwest is the familiar Great Dipper, which is actually part of

Ursa Major, the great bear. At the bottom of the dipper are the two stars known as the pointers. A line extended through them upwards and to the right comes to Polaris, the pole star, which is always in the north. By following the curve made by the dipper's handle to the left, another star of the first magnitude, Arcturus, in Bootes, the herdsman, can be located.

During the night of Aug. 12, Saturn will be in "opposition." This means that it is directly opposite the sun—and nearest the earth. For Saturn moves in an orbit that is well outside our orbit. Its mean distance from the sun is 887 million miles. This is about 9.5 times the earth's mean distance of 92.9 million miles from the sun. Thus, when we are in the same direction from the sun as Saturn—as we are this month—the two planets are closest. But even then it is a long distance away, about 823.6 million miles on Aug. 13.

The unique feature of Saturn is its system of rings, about 170,000 miles in diameter. These are not solid, however, but consist of a swarm of small particles, probably of ice. From our distance, even viewed through a big telescope, they merge into the continuous rings.

That the rings are distinct is shown by the spectroscope, which proves that the

inner parts travel around Saturn more rapidly than the outer parts. A solid ring would move like a wheel, with the rim traveling at highest speed.

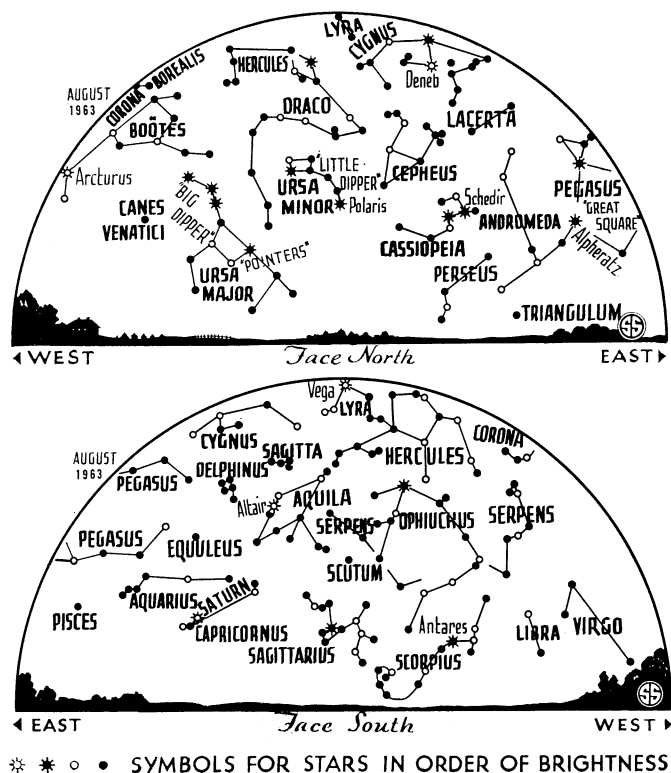
Until this year, astronomers supposed that the ring system was thin, since they disappear on the occasions, every 15 years, when the rings are on edge as seen from earth. They had estimated them to be about ten miles in thickness, but now it seems that they are far thinner than that. According to Drs. Allan Cook and Fred Franklin of the Smithsonian Astrophysical Observatory in Cambridge, Mass., they are not more than eight inches thick!

Saturn Rings Measured

These scientists studied about a thousand photographs of Saturn taken from South Africa. By photoelectric means, they measured the brightness of the planet and the rings.

When opposition occurs, as it does this August, the light from the sun that illuminates the rings comes from over our shoulder. Suddenly, at such a time, they get brighter. At other times, we can see the shadows of the nearer particles falling on others more distant, and they look dimmer.

From their measurements of such brightening, Drs. Cook and Franklin concluded that the ice particles are about a thousandth of an inch in diameter and that they occupy about five percent of the total volume of the ring system. And unless they are arranged in a sheet less than eight inches



thick, they could not cause the observed brightening at opposition.

Celestial Time Table for August

AUG.	EDT	
5	5:31 a.m.	Full moon
	7:00 p.m.	Moon passes south of Saturn
9	10:00 p.m.	Moon passes south of Jupiter
10	8:00 p.m.	Moon nearest, distance 229,500 miles
12	early a.m.	Meteors visible apparently radiating from constellation Perseus
	2:22 a.m.	Moon in last quarter
13	2:00 a.m.	Saturn in opposition with sun and nearest earth, distance from earth 823,600,000 miles
19	3:35 a.m.	New moon
21	5:00 a.m.	Moon passes north of Mercury
23	1:00 a.m.	Moon passes north of Mars
24	6:00 a.m.	Mercury farthest east of sun
25	2:00 p.m.	Moon farthest, distance 251,300 miles
27	2:54 a.m.	Moon in first quarter
29	9:00 p.m.	Venus behind sun

Subtract one hour for CDT, two hours for MDT, and three hours for PDT.

• Science News Letter, 84:58 July 27, 1963

ASTRONOMY

Second Study of Galaxies Ready for Observatories

► THE CALIFORNIA Institute of Technology has issued the second volume of a catalogue concerning the 40,000 galaxies in the known universe.

It is a part of a catalogue on galaxies and galactic clusters being issued in a series of six volumes. The catalogue is based on a survey that took more than seven years to complete and covers the entire sky.

The reference work is being compiled by Drs. Fritz Zwicky and Emil R. Herzog of Mt. Wilson and Palomar Observatories at Pasadena, Calif. The six volumes will contain the positions, magnitudes and configurations of the individual galaxies and of galactic clusters.

• Science News Letter, 84:59 July 27, 1963

Do You Know?

A six-inch subsonic arc tunnel has been developed to evaluate the performance of ablation materials under simulated conditions of reentry from space.

A 500-year *chronology* for the famous Casas Grandes archaeological site at Chihuahua, Mexico, has been established using the tree-ring method.

The world's largest *elevator* with a platform 48 feet long and a capacity of 75,000 pounds has been installed in Boston's War Memorial Auditorium.

Rubber makes *asphalt* flexible, tough and tenacious.

• Science News Letter, 84:59 July 27, 1963

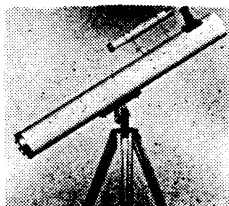
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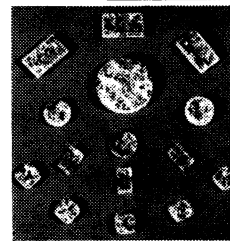


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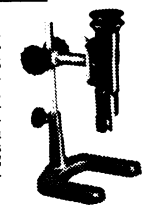


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