

ASTRONOMY

# Saturn Now Prominent

Deneb, directly overhead, is one of four bright stars visible this month, and the planets Jupiter, Mars, Venus and Mercury will shine in the late night sky.

By JAMES STOKLEY

► THE PLANET SATURN is now shining brightly in the southern evening sky.

Its position, in the constellation of Aquarius, the water carrier, is shown on the accompanying maps. These picture the skies as they look about 11:00 p.m., your own kind of daylight saving time, on the first of September, an hour earlier in the middle of the month, and two hours earlier at the end.

Four bright stars, of the astronomer's first magnitude, are shown. Two other first magnitude stars are now so low that they are dimmed considerably by atmospheric absorption. The most prominent of all is Vega, high in the west in the constellation of Lyra, the lyre, part of which is shown on each of the maps. Vega itself is on the map of the northern sky.

Directly overhead, just to the east of Lyra, is Cygnus, the swan, with brilliant Deneb. This constellation is also divided on the maps, with Deneb shown in the northern sky. To the southwest of Cygnus stands Aquila, the eagle, with another first magnitude star, Altair.

Low in the south, under Aquarius where Saturn now stands, you will find Fomalhaut in Piscis Austrinus, the southern fish.

This is one of the first magnitude stars now visible that is dimmed because it is so low. It is now nearly as high as it ever climbs into our sky.

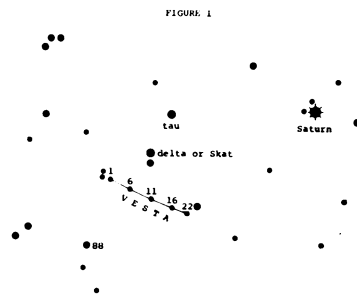
Near the western horizon, a little to the north, stands Arcturus, in Bootes, the herdsman, dimmed because it stands so close to the horizon. Visible in the low northeast is Capella in Auriga, the charioteer.

Later, during September nights, the other planets will come into view. By midnight Jupiter will be shining brightly toward the east, in Taurus, the bull. It is about 15 times as bright as Saturn, so you will have no difficulty locating it. A little later Mars rises, in Cancer, the crab.

Venus rises about an hour after Mars, or about three hours ahead of the sun. It is brightest of all—exceeding Jupiter more than four times. For about a week, around Sept. 18, Mercury will be visible low in the east, just before sunrise.

On Sept. 22, at 8:17 p.m., EDT, the sun will be at the autumnal equinox, the halfway point on its southward journey through the sky, begun on June 21. This equinox marks the beginning of autumn in the Northern Hemisphere, and of spring in countries south of the equator.

As indicated in the Celestial Time Table at the end of this article, the full moon



PATH OF VESTA THROUGH AQUARIUS, SEPTEMBER 1964

that occurs on the night of Sept. 21 will be the "harvest moon." The peculiar feature of the harvest moon is the small difference between its time of rising one night and the next. At 40 degrees north, for example, it rises on the 21st 29 minutes later than on the 20th. On the 22nd it rises only 27 minutes later than on the 21st.

In contrast, the rising time at 40 degrees north for the full moon that occurred last March 27 was one hour and four minutes later than on the 26th.

The reason for such differences is the changing angle with the horizon made by the ecliptic, the line through the sky along which the sun seems to move during the year. The moon and the planets also stay close to this line. Each day the moon moves about the same distance of some 13 degrees along this line toward the east.

In March during the early evening, the ecliptic extends almost vertically from the eastern horizon, but in September its angle is much smaller, more nearly parallel to the horizon. The moon's daily motion toward the east makes it rise later each night.

In September, however, this movement, at such a low angle, takes it only a little farther below the horizon than it was the night before. Thus there is a minimum delay in rising from one night to the next. In March it rises nearly vertically, with the greatest delay from night to night.

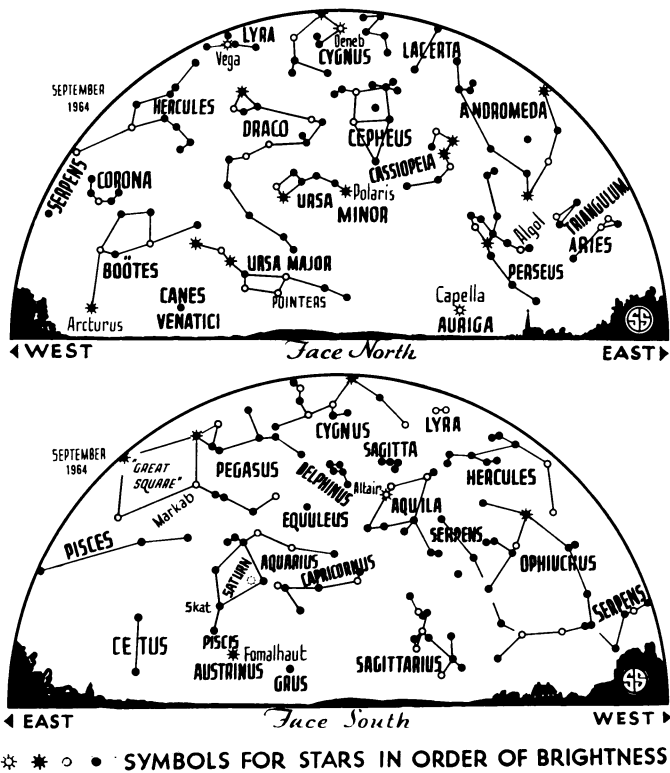
Since September is the time when farmers are harvesting their crops and may have to work at night to get them in, this series of moonlit nights makes it easier for them, and gives the "harvest moon" its name.

### Brightest Asteroids Visible

Another feature of this year's September evening skies is that they offer the chance of seeing the brightest of the so-called "minor planets," or asteroids. These are members of a swarm of many thousands of small objects, the largest only a few hundred miles in diameter, moving in orbits between those of Mars and Jupiter.

Most of them are visible only with large telescopes, although a few can be seen with small telescopes, or even with binoculars. But one of them, named Vesta, has now reached sixth magnitude.

On Sept. 2, Vesta, which is 241 miles in



diameter, will be directly opposite the sun as seen from earth. It will then be nearest to us, about 124 million miles away.

To find its position, look at Aquarius, where Saturn is now standing. Four of the stars around Saturn form a distorted diamond-shaped figure, with the star called delta Aquarii or Skat at the bottom. Still lower, almost in Piscis Austrinus, is another star, that astronomers designate as 88 Aquarii. During early September Vesta is moving between 88 and Skat.

Figure 1 shows this part of the sky in more detail, with the position of Vesta marked for various days of the month. Perhaps you can pick it up with the naked eye, especially if you get away from the glare of city lights. But it will be much easier if you use binoculars.

First pick up Saturn, and then go toward the east, which brings you to the fourth magnitude star tau Aquarii. Then down, and a little to the left, and you come to delta Aquarii, or Skat. Still farther and more to the left—a distance more than twice that from tau to delta, and you come to 88, also of the fourth magnitude.

Vesta will be between these, and about a tenth as bright as delta. By watching for several nights, you can see its motion.

### Celestial Timetable for September

SEPT.	EDT	
1	9:00 p.m.	Minor planet Vesta at opposition, distance 124 million miles
	10:00 p.m.	Moon nearest, distance 228,700 miles
2	3:00 a.m.	Mercury between earth and sun
	9:00 a.m.	Moon passes Mars
	noon	Moon passes Venus
6	12:35 a.m.	New moon
13	5:24 p.m.	Moon in first quarter
14	3:00 a.m.	Moon farthest from earth; distance 251,100 miles
18	8:00 a.m.	Mercury farthest west of sun, visible for a few days low in east at dawn
19	7:00 a.m.	Moon passes Saturn
21	1:31 p.m.	Full moon (harvest moon)
22	8:17 p.m.	Sun over equator, beginning of autumn in Northern Hemisphere
25	3:00 p.m.	Moon passes Jupiter
27	1:00 a.m.	Moon nearest, distance 229,700 miles
28	11:02 a.m.	Moon in last quarter
30	8:00 p.m.	Moon passes Mars

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

• Science News Letter, 86:122 Aug. 22, 1964

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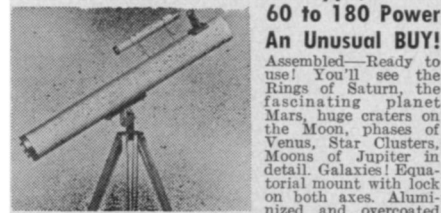
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