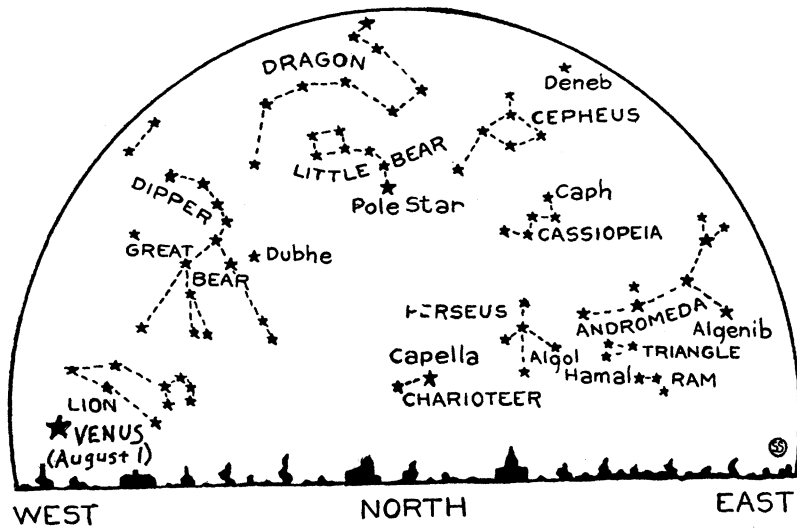


Three Planets Decorate August Evening Skies



For the first time in many months, three bright planets now appear in the evening sky. Venus has been with us for some time, shining brilliantly in the west, and this month it reaches its maximum brightness. Saturn first appeared in the evening sky last month and now it is easily observed all evening, while Jupiter, largest of all our fellow planets in the Solar System, rises about 9:00 p. m. and is visible the rest of the night.

Venus Brightest

Brighter than any star or planet, or, in fact, than any object in the sky except the sun and moon, is the planet Venus. On the second of July it reached the farthest distance east of the sun, and then was highest in the western evening sky. Since that date it has been approaching the sun again, and setting a little earlier each evening, but as it has still been approaching closer to the earth, its brightness has been increasing. Finally on August 5 it reached its maximum brightness, when it was of the -4.2 magnitude, as astronomers indicate it, or about 15 times as bright as the brightest star, Sirius. At that date, it appeared through the telescope like the crescent moon, four days after new moon.

Then, after August 5, the planet began to diminish in brightness, at the same time continuing to approach the sun. By the end of the month it is so close to the sun that it sets less than an hour after it. Then it will appear through the telescope as a very narrow crescent, and because the crescent is so narrow it will send much less light to the earth than it does in these days of early August. On

September 10, it will be in line with the earth and the sun, and therefore, invisible, and then, after a few weeks, will appear as a morning star.

Nowadays, of course, we realize just how the orbit of Venus around the sun is within that of the earth, and how we see it sometimes to the east of the sun, and sometimes to the west. When to the east, it sets later than the sun, and so is in the evening sky, and when it is to the west, it rises before it, and becomes a morning star, visible just before sunrise.

Ancients Thought it Two Planets

To the ancient Greeks, however, this was not clear, and they supposed that there were two planets. When seen in the evening sky, they called it Hesperus, and when seen in the morning, it was Phosphorus. Mercury, the other of the two planets nearer the sun than the earth, was

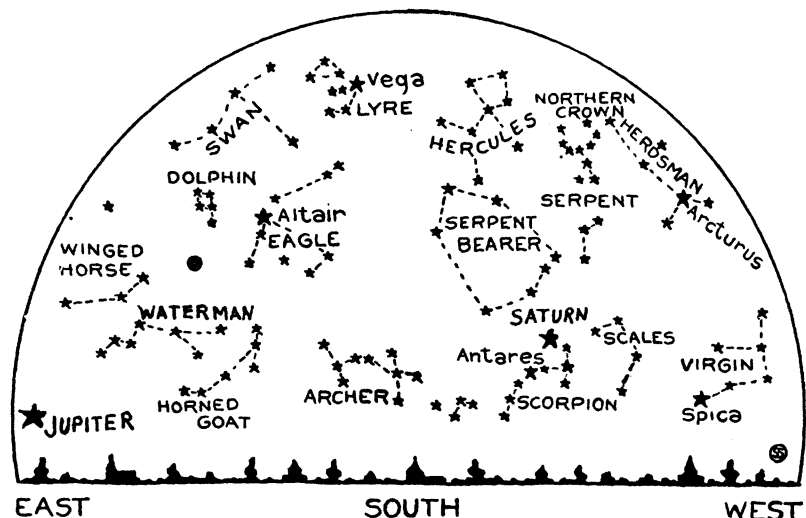
likewise supposed to be two bodies. They called it Mercury when it was an evening star, and Apollo when seen in the early morning.

Galileo, who first used the telescope on the stars, discovered the fact that Venus underwent a complete series of phases from crescent to full and back to crescent again, like the moon. But one of the earliest astronomers to study Venus in detail was another Italian, Francesco Bianchini. In a magnificent folio volume, first published at Rome in 1728, he describes his observations.

Though Bianchini had a telescope a hundred or more feet long, it was far inferior to modern instruments and most of his observations have never been confirmed. For instance, he thought that he saw all manner of markings, which he supposed to be continents, on the planet. The most conspicuous of these he named after the king of Lusitania, now Portugal, who seems to have been a particular friend of his. He prepared an elaborate map of the surface of Venus, showing these continents as well as other smaller ones, which he named after other nobles of the time and after astronomers.

Observing these "markings" he then tried to observe the rotation of Venus, as the same markings were carried around again, and came to the conclusion that the planet turned on its axis once in 24 1/3 days. However, with the most modern instruments, astronomers have not been able to find out just what the rotation period of Venus is, though it is almost certainly longer than that of

(Just turn the page)



HOLD THESE MAPS IN FRONT OF YOU and face North or South. You then see the stars as they appear on a clear August evening

August Evening Skies

(Continued from page 85)

any other planet except Mercury, and is probably nearer to Bianchini's estimate than to a later one of a little less than 24 hours.

Jupiter the Giant Planet

In the southeastern sky, late these August evenings, is another bright planet, brighter than anything in the sky except Venus, the moon and Sun. This is Jupiter, giant of the solar system, which unlike Venus, can at times, as now, be seen all night. It is one of the so-called major planets, for these attendant bodies of the solar system are divided into two classes. The earth, together with Venus, Mercury and Mars, are the minor planets, which are pretty small fry among the planets. We at least have the honor of living on the largest of this quartet, for the earth is 7917.8 miles in average diameter, compared to 7575 miles for Venus, 4216 for Mars, and 3009 for Mercury.

Jupiter, Saturn, Uranus and Neptune, however, belong to the family of major planets. Jupiter is the largest of the lot, with a diameter of 86,728 miles, Saturn is 72,430, Neptune 32,932 and Uranus 30,878. Jupi-

ter is the nearest to us of these planets. It is now about 400,000,000 miles away.

But though Jupiter is larger than all the other planets of the Solar System put together, it rotates faster than any of them, for it turns on its axis once in about 9 hours and 55 minutes. This rapid rotation causes one effect which is quite noticeable when Jupiter is viewed through the telescope. Instead of appearing round, like a tennis ball, it is oblate, or shaped like a door knob. This is due to the centrifugal force. The rapid turning tends to hurl the material at the Jovian equator away from the center, with the result that there is a very appreciable "equatorial bulge."

Belts Most Conspicuous

But the shape is not what first strikes the eye of the telescopic observer of Jupiter. The most conspicuous feature is the system of belts. With a small telescope magnifying only 60 diameters the planet appears as large as the moon does to the naked eye. And with a powerful telescope, magnifying several hundred diameters, a wealth of detail is apparent, with reds, browns and greens to give variety of color. The belts themselves are like the zones marked on a map of the earth, and other details can often be seen in them.

However, since the finer details are constantly changing, it seems certain that the surface of Jupiter that we see is not solid, but probably gaseous. Clouds of different colors make up the belts and the markings within them. But whether there is any solid surface underneath has never been definitely ascertained. Prof. Harold Jeffreys, a famous English astronomer, has suggested that the planet may have a core of solid rock, surrounded by a layer of ice, and that by the atmosphere. But other astronomers have supposed that the planet is still very hot, and so just what it does consist of is still a problem for science to discover.

Besides being the biggest planet, Jupiter is also one of the best equipped as far as moons go. It has nine satellites, more than any other except Saturn, which is provided with ten. Four of them are large enough to be seen with a good pair of binoculars, if the instrument is steadily held. These were found also by Galileo, on January 7 and 8, 1610. This was really the first astronomical "discovery"—that is, the first time that celestial objects had been seen

that had previously been invisible because of the lack of proper instruments. The largest of these moons is 3,350 miles in diameter, so that it would make a respectable minor planet itself, but its proximity to Jupiter dwarfs it, like its brothers, into relative insignificance.

The other satellites were later discoveries, the last one having been found as recently as July, 1914, by Dr. S. B. Nicholson, now at the Mt. Wilson Observatory in California, but then at the Lick Observatory in the same state. Like so many discoveries, he found it by accident. He was taking a photograph of one of the other satellites, and when he developed and examined the plate, he found a moon that had never been noticed. This put the young American astronomer into the exclusive group of moon discoverers, which was founded by Galileo.

The August Stars

The stars in August are indicated on the maps. Almost overhead is the bright Vega, in the constellation of Lyra, the lyre. Northeast of Lyra is Deneb, in Cygnus, the swan. This group is also called the Northern Cross, and forms a more perfect cross than the more noted Southern Cross. The northern one, however, is made of fainter stars. Deneb marks the swan's tail, the bottom of the cross his neck and head, and the cross pieces his wings. And then, to the southeast of Vega is the bright Altair, in Aquila, the eagle. These three stars—Vega, Altair and Deneb—form a huge right triangle which is a conspicuous feature of the late summer sky, and a figure that the star gazer who wants to know the inhabitants of the night heavens would do well to learn.

Science News-Letter, August 6, 1927

Diving machines are to be introduced into the Tahiti Society Islands for pearl gathering.

Dead leaves of birch, maple and other hardwood trees absorb water up to 220 times their weight.

The great barrier of ice around the South Pole is receding at the rate of about 40 miles a century.

In a recent race between an Australian race horse and a kangaroo, the latter far outdistanced the horse.

Marco Polo, who traveled to China in the thirteenth century, reported that paper money was in use there.

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