ASTRONOMY

Nunki Meets the Moon

May, Which Brings to View First Part of Summer Constellation, Scorpius, Also Provides Occultation

By JAMES STOKLEY

NEXT TO THE daily rising and setting of the sun, the most conspicuous of all astronomical motions are probably the continually changing phases of the moon. We have all watched Luna on successive nights, have seen her appear first in the western twilight as a narrow crescent, setting soon after the sun, as she will about the 15th of this month.

Then the crescent has grown larger, until it has reached first quarter (during May on the 21st); and then, about a week later, it is full, rising in the east as the sun sets in the west, and remaining visible all night. Next it goes to last quarter, when one has to be about in the small hours to see it, and finally, 29 days after we first saw the crescent in the west, it is back there again.

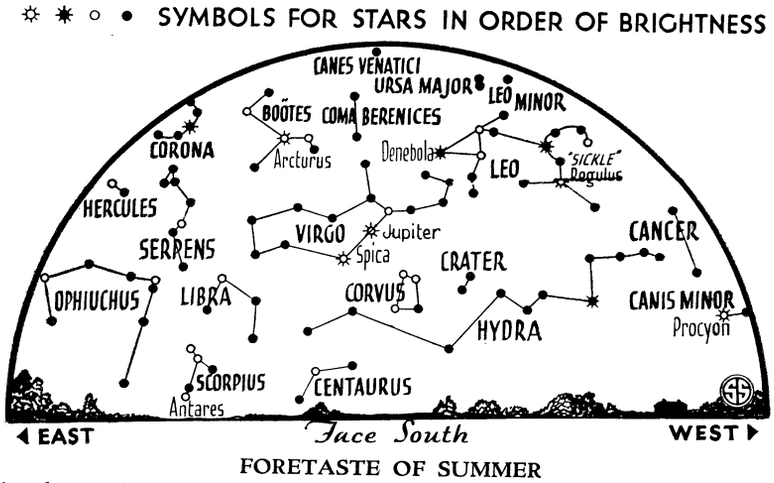
Of course, these changes are due to the fact that the moon has no light of its own, but is illuminated solely by the sun. When it is in the same direction from the earth as the sun, all of the bright half is turned away from us, it is "new moon" and then it is invisible, even if it were possible to see it in the glare of the sun. When it comes directly between the sun and earth, an eclipse is the result, but generally the three bodies are not quite in line, so eclipses are rather rare phenomena. All the time, the moon is travelling in its orbit around the earth. A couple of days after the true new moon, the illuminated hemisphere has turned slightly around towards the earth. At the same time the moon has passed a little to the east of the sun, so we can see the edge of the bright half in the west just after sunset. This is the narrow crescent. At first quarter we see half of the lighted part, or a quarter of the entire surface. When it is full, the moon and the sun are in opposite directions from the earth, and all of the sunlit portion comes into view. Then the cycle reverses until the moon is new again.

Because of the conspicuous nature of these changes, they were perhaps the first natural events noted by primitive man to mark a unit of time longer than the day, and this is the origin of the month. The earliest calendars were probably based on the moon, as is the Mohammedan calendar, which is still in use by the millions of adherents to that religion. Unfortunately, there is not an even number of lunar months in the year, which is the time required for the earth to make a complete journey around the sun. In the Mohammedan calendar, there are twelve months per year. However, the number of days required for the moon to return to the same phase is also uneven; it is about 29½. The Moslems take care of this by having months alternately of 29 and 30 days in length, but this makes a year of 354 days, 11 days shorter than ours. Hence in about three of our years, it is a month behind, so that any Mohammedan month may come at any season of the year. Also, when a Mohammedan says that he is 68 years of age, he has seen only 66 summers. The year 1 of the Mohammedan cycle began with the Hegira, when Mohammed made his flight from Mecca. This was on July 16, 622 A.D. The current year is 1353 in the Mohammedan era, and it began on April 15.

The Gregorian calendar, which we use, and its predecessor, the Julian, differ diametrically from the Mohammedan, because they are based exclusively on the sun and its apparent movements through the sky, ignoring the moon completely. Such a calendar has the advantage that it keeps step with the seasons, and we always know, for example, that this month of May will be in the spring. Other calendars, such as that in use by the Jews, are combinations of the two.

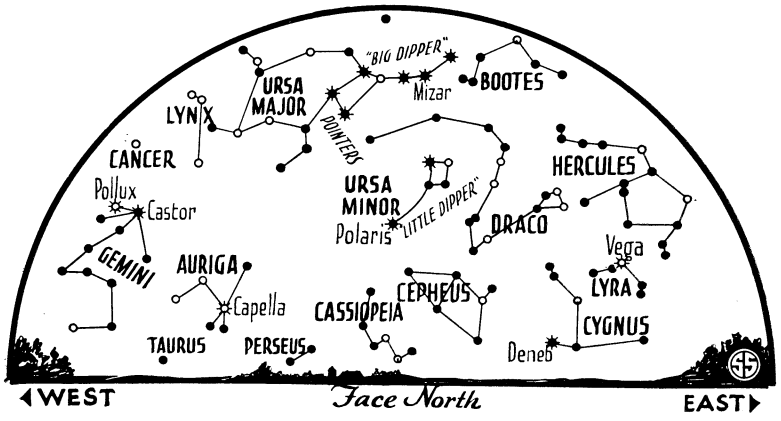
Even though, to us, the moon no longer has the chronological importance that it had in earlier times, many people are concerned with it in another way, because it is the motion of the moon that principally regulates the tides. But the rest of us, lacking even this connection, still find the moon a fascinating thing to watch as it goes through its regular cycle of changes. To the astronomer, its motion is of immense importance, and because the sun and all the planets have their effect in pulling it first one way and then the other, the exact motion of the moon is one of the most complicated of astronomical problems.

An eclipse of the sun is caused when the moon comes between us and the sun, an event that does not happen this year under conditions that will enable it to be seen from the United States. But on May 30 there will be an eclipse of another kind—the astronomer calls it an "occultation"—when the moon will hide the second magnitude star sigma Sagittarii, sometimes called "Nunki." The constellation of Sagittarius rises late in the evening, after Scorpius. After that heavenly arthropod is above the southeastern horizon, you can see his long tail curving around to the east like a great fish-hook, with



FORETASTE OF SUMMER

Low in the southeast may now be seen the first part of the summer constellation, Scorpius, with its red star Antares. Directly south is the great planet Jupiter, more brilliant than any star and glowing with a steady light.



DIPPERS BIG AND LITTLE

The pointers of the big dipper help you to locate the North Star, Polaris, which is the end of the handle of the little dipper. If you follow the curve of the handle of the big dipper, you will come to the bright Arcturus.

the point upwards. Just to the east of the tail, appears a group of stars sometimes likened to a tea-pot, with the spout of the pot over the scorpion's tail. On the other side of the pot is the handle, consisting of four stars, and above it is the top of the lid, marked by a fifth star. These five also form the so-called "milk dipper," the four in the quadrilateral marking the bowl, and the fifth the end of the handle. The dipper is turned down, as if emptying. Nunki is in the bottom of the bowl, nearest the handle.

As seen from Washington, D. C., at 11:33 p. m., Eastern Standard Time, May 30, the moon will pass over Nunki, and a little over an hour later, at 12:45 a. m., May 31, the star will reappear from behind the opposite edge or limb of the moon. As the moon will be only two days after full, it will be quite bright, and the star will not be as easily seen as if it were in another part of the sky. With the aid of a small telescope, or even a pair of binoculars, the occultation can be observed. It will be an interesting spectacle. It will happen a little earlier to the west of Washington, and later to the east. In the Far West, the moon will not quite cover the star.

Disappears Abruptly

When an occultation occurs, the brightness of the star is undiminished until the instant that it disappears behind the edge of the moon; then it vanishes abruptly. Similarly, after the moon has moved on, the reappearance is sudden. This is a striking demonstration that the moon has no atmosphere, because if it had, the disappearance would be gradual, as the light of the star penetrated a greater thickness of air. The effect is especially pronounced when the moon is near the phase of first or last quarter at the time of an occultation. Then the disappearance, or the reappearance, may be from behind the dark part of the moon. This occultation of Nunki, unfortunately, occurs with the moon nearly full.

The Planets Pass

On May 25, the moon will pass by Jupiter, but the two will be quite far apart, about thirteen times the moon's diameter. Venus, which is now the morning star, shining brilliantly in the east before sunrise, will be passed on the ninth, but it will happen when both bodies are below the horizon. Saturn is also a morning star, but comes up several hours before Venus, about 1:00 a. m. in the middle of the month. The moon passes Saturn during the night of May 6, but here also the time of closest approach is before the two objects will have arisen in the United States.

The May evening skies bring a foretaste of summer, for low in the southeast can be seen the first part of the constellation of Scorpius, the scorpion. A little later in the night there may be seen the red star Antares in the center of Scorpius. Directly south, more brilliant than any star, is the planet Jupiter, the steady light of which shows that it is a member of the sun's family of which our own earth is part. Below it, and to the east, is the bright star Spica, in Virgo, the virgin. Almost overhead, in the north, the great dipper can be seen, with the handle pointing over to the southeast. If you follow around the curve of the handle, you will come to the brilliant Arcturus. Low in the northeast shines Vega, in Lyra, the lyre, and still nearer the horizon is Cygnus, the swan, with Deneb, the bird's tail, over to the north.

Leo, the lion, appears high in the southwest. In the front part of his body is the sickle, with the bright Regulus at the end of the handle, and the blade curving round to the west. The blade forms the lion's head. To the east of the sickle is a triangle of stars forming the hindquarters of the lion. The easternmost one, Denebola, is in the animal's tail. Hydra, the water-snake, is below Leo, with the star Alphard, which is about as bright as Denebola.

Some of the stars of the winter sky can still be seen in the northwest. Procyon is almost directly west, marking Canis Minor, the lesser of the two dogs that accompany Orion, the mighty hunter. At the times for which the accompanying maps show the skies, 10 p. m. on May 1, 9:00 p. m. on May 15 and 8:00 p .m. on May 31, the hunter himself, and Sirius, in the greater dog, have passed below the horizon, but they can be seen in the early evening. Capella, in Auriga, the charioteer, is visible farther north, and above, to the north of Procyon, are the twins, Castor and Pollux.

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FLORICULTURE

Copper Jars Found To Be Life Savers For Flowers

THE LIFE span of cut flowers can be lengthened by keeping them in copper containers.

This is the discovery reported in Ithaca, New York, by John Ratsek, floriculturist on the staff of the New York State College of Agriculture.

Mr. Ratsek used in his experiments containers which are copper-plated with a recently invented electro-plating finish. He found that the copper added from one to three days to the life of roses, snapdragons, stocks, delphiniums, primroses, carnations and other popular varieties of cut flowers. In one test, poinsettias in the copper container lasted 16 days, as compared to eight days for poinsettias in a tin container.

In accounting for the copper having this effect, Mr. Ratsek explained that tests showed some of the copper from the plated containers dissolved in the water. The copper thus kept the water purer by hindering growth of bacteria and other organisms which cause flowers to decay.

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