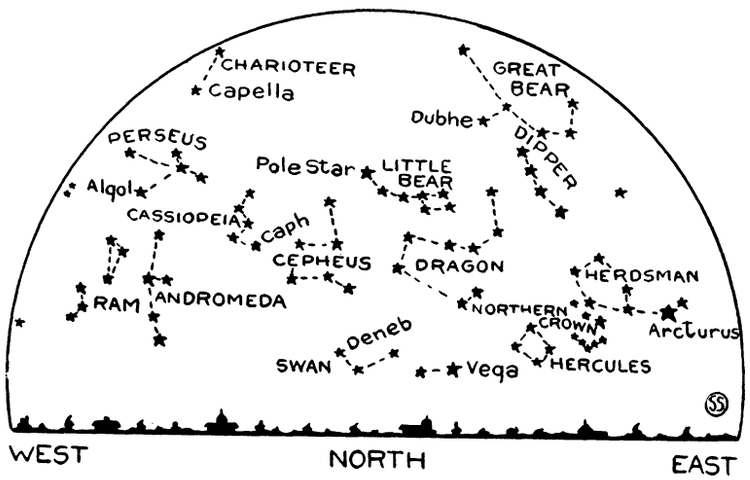


These maps show you the sky as it appears these March evenings. Hold them in front of you, and face north or south, and you can identify the stars in the heavens.

March Brings Us the Springtime

Astronomy

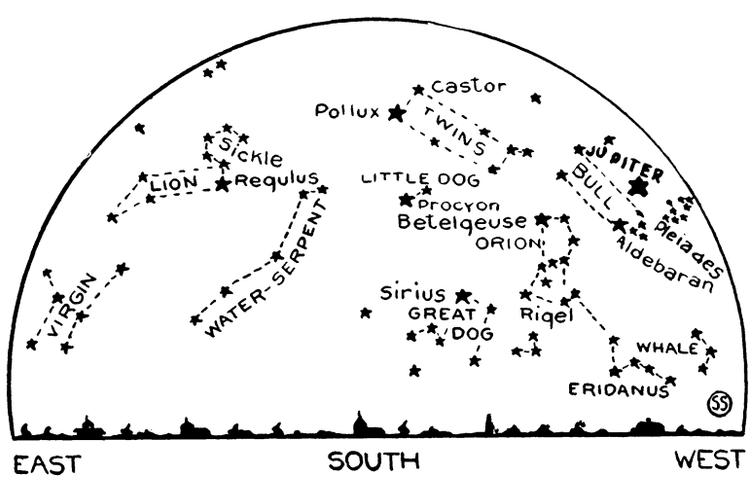
By James Stokley

TEN first magnitude stars, the largest of the planets, and, in the early evening at the end of the month, one of the earth's next door neighbors; these make up the most important features of the March evening sky. Another important astronomical event of the month takes place on the twenty-first at 3:30 a. m. Eastern Standard Time, when the sun enters the sign of Aries. This is the vernal equinox, and, by convention, represents the beginning of spring. At that moment the sun will be directly overhead at noon to a person on the Equator and in both northern and southern latitudes the days and nights will be of equal length. Though storms may occur around this time, as they may at any time, the equinox will not be the cause. The idea of "equinoctial" storms is a myth that has no scientific foundation.

The bright stars this month are the same as those described for February, with the addition of two others that have now risen high into the evening sky. Six of them are arranged in a circle around Betelgeuse. These are in the western sky. To the southwest are the familiar three stars that make up the belt of Orion. Above the belt is Betelgeuse and below it is Rigel. Both of these are also in the constellation of Orion. About the same height above the horizon as Rigel, but farther to the south, is the very brilliant star, Sirius, the dog star, in the constellation of Canis Major, the Great Dog. This is the brightest of all the stars in the sky. Above Sirius is a star of only slightly less brilliancy, Procyon, the most brilliant star in the constellation of the Little Dog, Canis Minor. Still higher is Pollux, the brighter of the two twins, Gemini. To the northwest is Capella, in Auriga, the charioteer. Lower yet, and almost directly west, is Aldebaran, representing the eye of the bull, Taurus. Near it is a still brighter object, the planet Jupiter. You will have no trouble in distinguishing between Aldebaran and Jupiter, however, because the planet is distinctly brighter and shines with a steadier light than the reddish star.

To the southeast, high above the horizon, is a familiar group of stars in the shape of a reversed question mark, or sickle, with the handle downward. The bottom star is the brightest. This is Regulus, in the constellation of Leo, the lion, the blade of the sickle forming the lion's head. Below Leo is Virgo, the virgin, containing the bright star Spica, now near the horizon. North of Virgo, and a little farther above the horizon, is Bootes, the brightest star of which is Arcturus. These make up the ten first magnitude stars of the March sky.

Of all the thousand or so known members of the solar system, including the earth, Jupiter is the largest. Next to occasional times when Venus is at its brightest, and the rather rare occasions when Mars is close, Jupiter is the brightest of the planets. Unlike Venus, which can only be seen in the west shortly after sunset or the east before sunrise, Jupiter may be seen in any part of the night sky and is frequently a conspicuous object. This month Jupiter is about 490,000,000 miles away from the earth. This means that its light takes nearly three quarters of an hour, speeding along at 186,000 miles every second, to reach the earth. The speed of light



The Stars in March—*Continued*

is of particular interest in connection with Jupiter because this planet, with its moons, presented the first proof that light takes time to travel.

It used to be thought, centuries ago, that the transmission of light was instantaneous. Galileo, the famous Italian astronomer, is said to have made one of the first experiments to test its speed. He used two distant towers, sending a friend to one and ascending the other himself. Both had lanterns and Galileo uncovered his. As soon as the friend saw the flash of light he was to uncover his and Galileo thought he might be able to measure the difference in time. However, light travels so rapidly that this method is far too crude to give any results of value.

Galileo was also the first to use the telescope to observe an astronomical object, and with it, in January, 1610, he discovered the four satellites, or moons, of Jupiter. By the year 1675 they had been well enough observed that movements could be predicted with some accuracy. Frequently the satellites pass into the shadow of Jupiter, when they are eclipsed and become invisible to earthly observers. Predictions were made of the times that these eclipses should occur. A Danish astronomer by the name of Olaus Römer found that the eclipses did not always occur at the time they were supposed to. Sometimes they were a few minutes too early, and at other times a few minutes too late.

Römer was a very ingenious man and is famed as the inventor of the transit circle, an instrument that is still used to determine time from the stars. He noticed that the eclipses came too early when Jupiter and the earth were both on the same side of the sun, and too late when the planets were on opposite sides of the sun, and farthest apart.

Light takes time to travel, he said to himself. Therefore, we see an object in the sky not as it is, but as it was when the light started on its way. The more distant the object is from the earth, the longer the light takes to reach us and the later we see it. The greatest difference in time between the predicted and observed eclipses is about eight minutes, too early or too late. This suggested to Römer that the light took about 16 minutes to cross the orbit of the earth, 186,000,000 miles. It was in 1675 that Römer made this suggestion, but not for years later was it generally accepted, and now we know it to be the true explanation.

By very delicate modern methods, chiefly due to Prof. A. A. Michelson, of the University of Chicago, a very precise determination can be made of the time that light takes to travel between two earthly points. So accurately has the speed been obtained in this manner that from the differences in times of the eclipses of the satellites, we can determine the distance of the sun. This is reversing Römer's method, for he knew roughly the distance of the sun and from it determined the speed of light.

Another planet, visible in the March evening skies just after sunset at the end of the month, is Venus, which during the fall and early winter was a morning star, but is now getting over to the eastern side of the sun. Early in March it cannot be seen, but on the 16th it sets about 15 minutes after the sun. On the 31st it sets at 7:26 p. m. Then, if you look carefully at the western sky shortly after sunset, you may be able to see its brilliant point of light in the gathering dusk. Next month it will be still higher in the sky and will become more and more conspicuous until September when it will be highest in the evening sky. Even after that it will continue to brighten for a little longer reaching its greatest brilliance on October 18. On March 31 the young crescent moon passes close by Venus and then the planet may be more easily located. But even the moon, a little over a day old, will be rather hard to locate and you must look for it right after sunset. On March 7 the moon, then in first quarter, passes close to Jupiter, thus adding to the splendors of this part of the sky.

Beauty in a Ditch

Photography

Among the photographs that attracted much attention at an exhibition of the London Salon of Photography not long ago was one that stood out as a gleaming example of the beauty to be found in common things—even in ugly things—by a sufficiently discerning eye. S. Uyeda saw a lot of big round oil spots floating on the top of a wayside ditch, the interspaces pebbled with smaller spots. He set his camera down close to the ground, to flatten the circles into ellipses, and to increase the illusion of an arrangement of the big spots into rows. Result: a prize photograph.

Nature Ramblings

By Frank Thone

Dead Leaves

There is a sentimental German novel of the last century, in which the jilted hero wanders mournfully through the wet woods during a late-winter thaw. He looks at the dead leaves, likening them to himself, and the quickening thought catches him, "All things move to an end, and in the end a new beginning is eternally seeded."

Therein he showed himself a shrewd naturalist, no matter how dismally he felt. It is hard to say which is the more valuable thing about a forest: the standing and marketable timber, or the generations of accumulated dead leaves under foot. The trees cannot grow except by the mulch about their roots which they themselves prepare and use as food-factories during the summer.

"Duff," the forester calls this organic complex of the forest floor; and if a fire is so bad that it has eaten the duff, he just moves on to another forest. Without duff, he knows that the stripped ground will not build another forest in time that he can reckon.

A sharp lesson in the value of dead leaves has been learned in certain Scandinavian forest regions. When the farmers took to raising sugar beets instead of general crops, they also took to hauling off the leaves from their woodlots to use as roughage and bedding for their cattle. They had to have something, and beet fields do not yield straw.

That was all very well for a time. But after a few years the puzzled farmers noticed that their trees had stopped growing. Their precious timber, which is measured almost by the cubic inch, was not doing its bit for national prosperity. Only when the crown foresters came and told them how they were robbing their forests to enrich their fields did they understand. Now they give the trees a chance to feed, and the woodlots have resumed their normal rate of growth.