

ASTRONOMY

# Stellar Preview

## Heavenly Stars Also Give Their Midnight Show As Foretaste of Next Month's Evening Attractions

By JAMES STOKLEY

**S**TARGAZERS during October will turn their eyes to the low north-eastern sky. There two first magnitude stars are to be seen. One is Aldebaran, in Taurus, the bull; the other Capella, in Auriga, the charioteer. Aldebaran is distinctly red in color, while Capella is usually described as having a creamy-white hue.

In looking at Capella and Aldebaran, we are reminded that winter is but a few months off, for these are two of the brilliant assemblage of stars that we expect to see in the south when the ground is covered with snow. If we wait until later in the evening we shall see even more of them. By midnight they will have climbed considerably higher. Below Taurus, at that hour, a little south of the east point, will be seen the glorious constellation of Orion, recognized by three stars, in a vertical row, forming the belt of this warrior. Below Capella, then, a little farther north than Orion, will shine Pollux, in Gemini, the twins.

In November these constellations will be visible in the same position, not at midnight, but at nine or ten o'clock, so that by staying up a few hours later we can get a preview of the evening skies of November. It will be a correct preview as far as the stars are concerned. The planets, which are moving, will be differently arranged. Saturn, however, moves so slowly, that its motion against the starry background will not be appreciable.

### Seeing The Future

If you want to look still farther into the future, and see the stars as they will appear on the evenings of December, it is only necessary to examine the October skies at 2:00 a. m. At 4:00 a. m. this month, you can see them for next January. In other words, each month the stars appear just two hours earlier than they did on the same date the preceding month.

This comes from the way the earth moves. The sun does not rise, move across the sky each day from east to west, and set! It is the earth that moves,

from west to east. As we are carried around on its surface, not conscious of its motion, the sky seems to turn in the opposite direction.

The western horizon is constantly climbing, the eastern descending, so it would be more correct to speak of "earth-rise" and "earth-set" than of sunset and sunrise. This also makes the stars come into view, apparently move across the sky, and disappear in the west. Thus, during the course of the 24 hours every star that we ever see is above our horizon, though the ones that are in the sky at the same time as the sun are invisible by reason of its glare.

In addition to turning on its axis, the earth also makes a circuit of the sun every year. Once again we are unaware of the earth's motion, and it seems as if the sun is moving. One might set up a post in a field, and walk around it in a large circle. It would be found that the background was constantly changing. With the observer to the south of the post, it would be seen against the background of objects to the north. When he was north himself, it would have a background of the things to the south. So, as the earth goes around the sun we see it against an ever-changing background of distant stars.

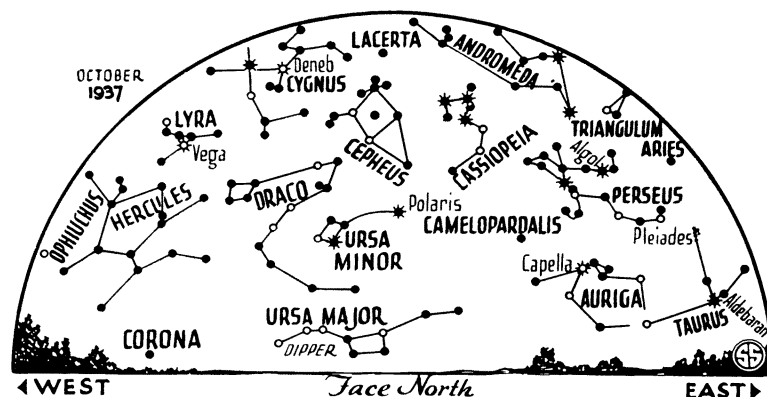
With the sun's background at present

the stars of Virgo, the virgin, this constellation is not visible. Next month the sun will, apparently, have moved a twelfth of its way around the sky, to the east, and its background will then be Libra, the scales. By the same token, the stars of Virgo that were in line with the sun in early October will then be a twelfth of the sky's circumference to the west. As it takes 24 hours for the sky to make its complete daily apparent rotation, these stars will then be about two hours ahead of the sun, and possibly they can be glimpsed in the early morning twilight.

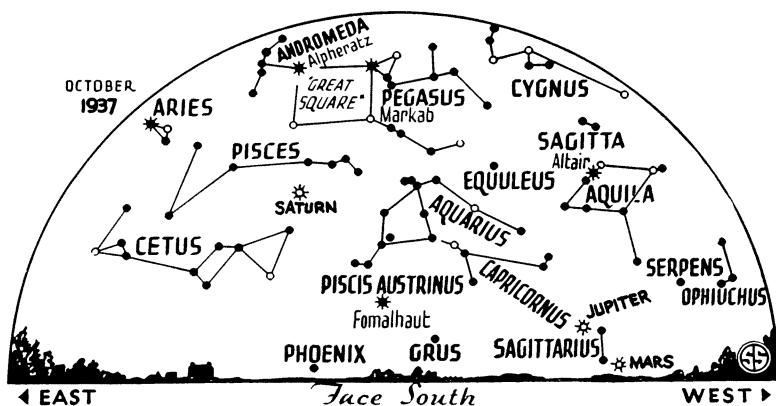
By December first the sun will be still farther east, another twelfth of its way. It is then almost in the same direction as Antares, the bright red star in the constellation of the scorpion that was so prominent in the evening skies of summer. The stars of Virgo will then be a sixth of a circumference, or four hours, west of the sun, and they will rise that long before him. On January first they will be six hours ahead, on February first, eight hours, on March first, 10 hours. By the latter time they will be so far ahead of the sun that they will begin to appear in the evening. But finally they will be so far ahead that they will catch up to the sun—that is, the sun will have made its annual circuit, and again will be in line with them so that they will disappear from view once more.

The planet Jupiter is the most brilliant of the objects seen in the October eve-

☆ \* ○ • SYMBOLS FOR STARS IN ORDER OF BRIGHTNESS



Cygnus, the Swan, flies near the top of the sky.



### LOW IN THE WEST

*Sagittarius stands between Jupiter and Mars*

ning skies. It is low in the southwest in the constellation of Sagittarius, the archer, where its brightness makes it easy to find. To the west, and lower, is another planet, Mars. The third planet now seen, Saturn, is in Pisces, the fishes, high in the southeast. It is the faintest of the three.

At about 10:00 p. m. on October 1, 9:00 p. m. on the 15th and 8:00 p. m. on the 31st, the skies appear as shown on the maps, and from these not only the planets, but the stars as well, may be located. A good place at which to start to learn these is with the figures of Pegasus, the winged horse, high in the south. In this constellation are shown four stars marked "great square." Actually, Alpheratz, in the upper left corner, is in the neighboring group of Andromeda, so here we have two already identified.

### Fishes and a Horse

Follow the line of the two stars forming the right hand side of the square to the south, and you come to Fomalhaut, in Piscis Austrinus, the southern fish. Wrapped around the square, below, and to the left, is another figure made up of fishes, this time a pair, the constellation of Pisces. Between Piscis Austrinus and some of the stars of Pegasus, is Aquarius, the water carrier, while below Pisces is Cetus, the whale, making rather a strange assemblage of aquatic creatures. Nor are they all, for Capricornus, nearby, is a monster with the head and shoulders of a goat, and the tail of a fish, if we are to believe the way he is pictured on the old star maps, dating back to ancient times.

Next to Pegasus to the west is Cygnus, the swan, which forms a cross in the sky, the brilliant Deneb at the top. High in the southwest is Aquila, the eagle,

with another first magnitude star called Altair. Near it, on either side, are two fainter stars, Alschain to the left and Tarazed to the right. A little higher than Aquila, and farther north, is Lyra, the lyre. This contains the brightest star now to be seen, Vega.

### Mars and Jupiter

Some interesting motions of the planets Mars and Jupiter may be seen this month. Until the end of the month Mars will be to the west of Jupiter, but if you watch them night after night, you will find that they are steadily approaching. On October 9, at noon, eastern standard time, when they are visible, Mars will pass Jupiter. After that the positions will be reversed. The moon, almost at first quarter, passes Mars on the 11th and Jupiter on the 12th, so at these dates the objects, close together, will form a striking trio.

In addition to the planets of the evening sky, two others can be seen in the morning hours. During the first few days of the month Mercury will be visible low in the southeast just before sunrise. Venus is also a "morning star," rising about two hours before the sun, and more brilliant than any other planet or star.

The phases of the moon are given below. From about the 10th to the 22nd there will be moonlight in the evenings. The full moon on the 19th is the "Hunter's Moon." At this time the delay of moonrise from one night to the next is less than usual during the year, though not as little as it was for the "Harvest Moon," the full moon of September. The moon will be closest the earth (at perigee) on October 21 at 11:00 a. m., and at its greatest distance (apogee) at 1:00 p. m. on the 9th. On the former date it will be 224,580 miles

from us, as compared with 251,680 miles on the latter.

### Phases of the Moon

		E. S. T.
New Moon	Oct. 4	6:58 a. m.
First Quarter	12	10:47 a. m.
Full Moon	19	4:48 p. m.
Last Quarter	26	8:26 a. m.

*Science News Letter, September 25, 1937*

### CONSERVATION

## Seashore National Park To Preserve Beauty of Dunes

**A** HUNDRED square miles of natural seashore land in the Cape Hatteras region of North Carolina will become the first Seashore National Park, if present plans are realized. As outlined in *Science*, (Sept. 10) these call for the acquisition of the land, its presentation to the U. S. National Park Service, and the preservation of the unique and still unspoiled natural plant and animal life of the region.

Approximately 7,540 acres are already in Government hands, including 1,400 acres comprising Cape Hatteras State Park, 44 acres surrounding Cape Hatteras Light, 96 acres at Kitty Hawk, and 6,000 acres controlled by the U. S. Biological Survey.

Besides its scenic and natural history value, the proposed park also has rich historical background, running all the way from Sir Walter Raleigh's unsuccessful colony of 350 years ago to the first successful airplane flight, made in 1903 at Kitty Hawk.

*Science News Letter, September 25, 1937*

Nature originally provided the cow with only enough milk to take care of a calf, says the Consumers' Guide; but today, as a result of selective breeding, many cows provide enough milk to take care of 10 calves.

## THERE IS FUN IN GEOMETRY

● By Louis Kasper

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