

ASTRONOMY

Winter Stars Now at Best

February is the best month for viewing the brilliant winter constellations. The "seven sisters" of the Pleiades may be seen on a clear dark night, James Stokley reports.

► WITH THE COMING of February, the brilliant constellations of winter are at their best for evening viewing. These are shown on the accompanying maps, which depict the skies as they look about ten p.m., your own kind of standard time, at the first of February. By the middle of the month they will have the same appearance about nine o'clock. At the end of the month, eight is the correct time.

However, as in January, no planets are shown. All of the five that reach naked eye visibility are so nearly in line with the sun that they cannot now be seen.

The brightest star shown is Sirius, directly south. This is in the constellation of Canis Major, the great dog. Astronomers indicate the brightness of a star by the units called magnitude; the smaller it is, the brighter the star. Sirius is so much brighter (nearly 11 times) than a typical star of the first magnitude that its magnitude is less than zero—minus 1.43.

Canis Major is one of two dogs among the constellations. The other is higher in the sky: Canis Minor, the little dog. In it is Procyon, still a brilliant star though only about a tenth as bright as Sirius.

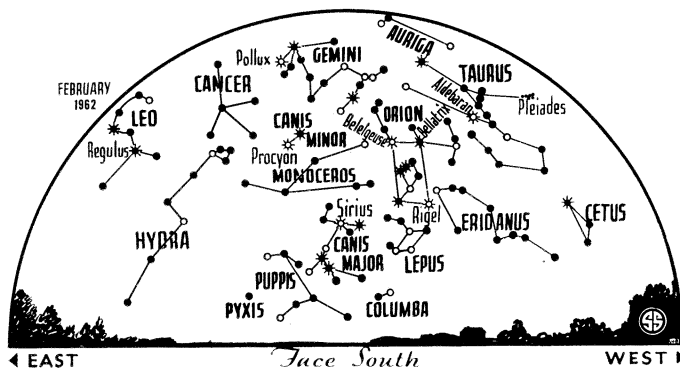
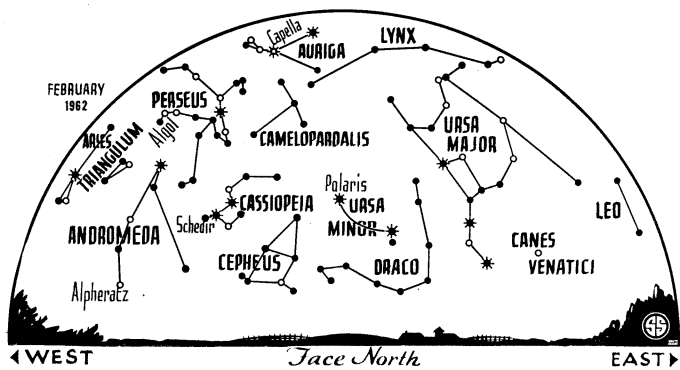
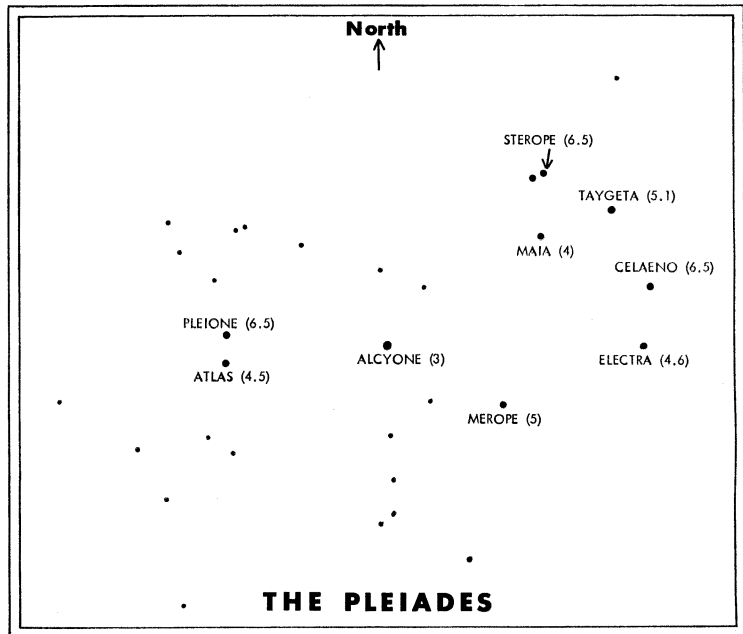
As pictured on the ancient star maps, which showed the figures around the stars, the dogs accompany Orion, the warrior. He is above and to the right of Canis Major.

The feature to look for here is a row of three stars with one much brighter above and below. The upper is called Betelgeuse and the lower Rigel. Both of them are of the first magnitude. The three stars in a row between Rigel and Betelgeuse form Orion's belt. These are second magnitude and possess individual names—Alnitak, Alnilam and Mintaka, going from left to right—but these are seldom used.

Still higher than Orion, and farther right, you will find a brilliant and reddish star called Aldebaran, which is in Taurus, the bull. The star marks the bull's eye; a little to the right is the famous loose star cluster called the Pleiades. And above Taurus is Auriga, the charioteer. Its brightest star is Capella, shown on the map of the northern sky.

High in the south, above Canis Minor, are Gemini, the twins. Here the brightest star is Pollux. His brother, Castor, is just above, but since he is a little fainter (second magnitude) they evidently are not identical twins!

Over in the east, in Leo, the lion, is the star called Regulus. This is also of the first magnitude, although on our map it is represented by the symbol for a fainter body. This is because it is now low enough in the sky that its brilliance is somewhat dimmed by atmospheric absorption. It is one of the features of these maps that such absorption



◊ * ○ • SYMBOLS FOR STARS IN ORDER OF BRIGHTNESS

is taken into consideration; thus they give a more realistic idea of the way the stars look in the sky.

To the north, we see the familiar figure of Ursa Major, the great bear, in the north-east; Cassiopeia, the queen, in the north-west; and Andromeda, the princess, farther west. Above is Perseus, the champion, with Algal, a famous variable star.

The Pleiades, in Taurus, are a group of stars that will repay some further conderation. Much has been written about them. In the Bible Job asks, "Canst thou bind the sweet influences of the Pleiades?" According to the Graeco-Roman mythology, they were the seven daughters of Atlas and Pleione, so they are often called the seven sisters. But if you look at the cluster with the naked eye, you will probably only be able to see six stars. This has led to the myth of the "lost Pleiad" and a great amount of folklore to explain why one is missing. Perhaps one of the stars did shine more brilliantly in the past than it does now and that is why the ancient writers referred to seven sisters.

Look for the Pleiades

If your eyesight is unusually keen, and you have a dark, clear night, you may be able to see two or three more of the Pleiades. With even a small telescope you can see over a hundred, while astronomical photographs reveal thousands.

Try looking at them with binoculars or even opera glasses. Some of the stars you will see are shown on the special map. Find the Pleiades in the southwestern sky in Taurus. Face south and hold the map of the Pleiades up as if reading a book held at arm's length. Now move your right arm to the southwest, rotating the map to the right so that the upper left hand corner points directly upward. The map then matches the actual positions of the Pleiades in the sky.

The six that are usually seen with the naked eye are Atlas (magnitude 4.5), Alcyone (3), Merope (5), Maia (4), Taygeta (5.1) and Electra (4.6). Pleione, Sterope and Celaeno are each about 6.5 magnitude, and it is generally considered that the fifth magnitude is about the faintest that can be seen without optical aid.

In plotting the motions of the stars, astronomers have found that those in the Pleiades are traveling together like a flock of birds. They are moving along lines that are really parallel but which seem to converge, on account of perspective. They are converging toward a point in Orion, a little to the east of Betelgeuse. Quite a number of faint stars near the Pleiades are moving in the same way, thus demonstrating their membership in the cluster.

At present the Pleiades are at a distance that their light, traveling 186,000 miles every second, takes nearly 500 years to reach us. Long-exposure photographs, through large observatory telescopes, show that the stars are enveloped in a cloud of dust, which shows up by the starlight that it reflects.

February brings the year's first eclipse, but not much of it will be seen in the United States and Canada. Along the west coast the sun, just as it is setting on Feb. 4,

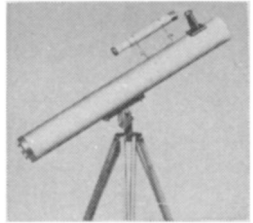
(Continued on page 62)

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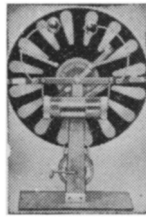
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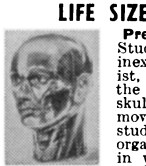
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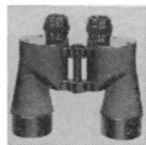
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Winter Stars at Best

(Continued from page 59)

will be partly covered by the dark disc of the moon.

However, the moon will completely cover the sun, and a total eclipse will be visible, along a path 60 to 100 miles wide. This starts in Borneo as the sun is rising, then passes over the Celebes, Ceram, New Guinea, the Solomon Islands and, after a long stretch of open ocean, Palmyra Island, which is about 1,300 miles south of Honolulu. After that the path goes toward the northeast, ending as the sun is setting about a thousand miles west of lower California.

At Palmyra, the sun will be totally eclipsed for more than three minutes. At Salamaua, at the eastern end of New Guinea, the eclipse will last about $2\frac{3}{4}$ minutes. Farther east, the duration will be less, and the sun will be more poorly placed in the sky. However, many astronomers have taken up positions along the eclipse track, to observe features of the sun that can best be studied when the moon hides the brilliant solar disc.

Celestial Time Table for February

| Feb. | EST | |
|------|------------|---|
| 4 | 7:10 p.m. | New moon; total eclipse of sun visible in Pacific Ocean |
| 5 | 8:00 a.m. | Mercury between earth and sun |
| | 5:00 p.m. | Moon nearest, distance 222,700 miles |
| 8 | 1:00 p.m. | Jupiter on far side of sun |
| 9 | 1:46 a.m. | Algol (variable star in Perseus) at minimum |
| 11 | 10:43 a.m. | Moon in first quarter |
| | 10:36 p.m. | Algol at minimum |
| 14 | 7:25 p.m. | Algol at minimum |
| 19 | 8:18 a.m. | Full moon |
| 20 | 4:00 p.m. | Moon farthest, distance 252,500 miles |
| 27 | 10:50 a.m. | Moon in last quarter |
| | 5:00 p.m. | Pluto nearest earth, distance 3,006,000,000 miles |

Subtract one hour for CST, two hours for MST, and three hours for PST.

Know the Sky to Watch Satellites

These star maps showing the positions of stars and planets can help you locate satellites when they flash briefly across the sky. Familiarity with the constellations and their relative positions makes locating artificial moons much easier whenever they are visible from your area.

• Science News Letter, 81:58 January 27, 1962

SPACE

"Space Whiskers" Grow For New Space Materials

See Front Cover

➤ MICROSCOPICALLY SMALL "space whiskers" are being grown by scientists at Rocketdyne, a division of North American Aviation, Inc., Canoga Park, Calif., in search of methods of producing extremely strong new space materials.

The fine filament-like crystals are being grown from many materials—lead, tin, copper, graphite, sapphire and even table salt. The tensile strength of the crystals reaches

the level of millions of pounds because of the extraordinary perfection of their structure.

Manufacturing methods vary with the material. Some whiskers are grown from solutions, others by pressing thin films of whisker material between polished steel plates, and others by deposition from a vapor. Some grow from a base like human whiskers, others grow by piling up atoms on the tip.

Sapphire whiskers, seen on the front cover, are most desirable. They not only have great strength but they also have a high melting point and are resistant to oxygen.

• Science News Letter, 81:62 January 27, 1962

MEDICINE

Stillborn Revived With Heart Massage

➤ A STILLBORN British boy, now one year old, owes his life to open heart massage performed five minutes after his birth in Birmingham, England.

This is believed to be the first British case reported although previous successful cases in the United States have been described since 1957. The operation is rare, but the surviving babies all are normal.

In the case of the Birmingham baby, there was no heart beat when delivery took place after some 45 hours of labor by a 31-year-old mother. This was her first baby.

While oxygen was given through a tube in the mouth, the infant's chest wall was opened and the right index finger of the surgeon compressed the heart against the sternum (breastbone) about 120 times a minute.

Within two minutes regular rhythm at the rate of about 140 beats a minute had started.

Fifteen minutes after the heart started beating normally the child started to breathe spontaneously. After one month of hospitalization the child was allowed home, and periodic examinations since then have shown him to be entirely normal. At nine months he had an intelligence quotient equal to that of a baby two months older.

No definite reports have been given of attempts to use the new closed chest method of heart massage on stillborn infants. The open heart massage technique is advised for babies known to be alive shortly before or after delivery, who have stopped hearts because of circumstances of birth.

Drs. R. J. R. Reilly and H. A. H. Melville of Queen Elizabeth Hospital, Birmingham, report this case in the British Medical Journal, Jan. 13, 1962.

• Science News Letter, 81:62 January 27, 1962

Scientists have found that the anti-cancer effects of some *drugs* are multiplied when they are combined with X-rays.

There are 2,750,000 more *women* than men in the U. S.

Attempts are underway to establish a world-wide network of synchronized *atomic clocks*.