

ASTRONOMY

Orion Decorates January Skies

Five Eclipses, Nearest Planet, and Many Returning Comets are Among Attractions for Astronomers in 1931

By JAMES STOKLEY

SIX brilliant stars, arranged in a ring around a seventh, and with a planet, brighter than any, right in their midst; this group is the chief attraction that the month of January holds for the star gazer. Two other bright stars bring to nine the total number of first magnitude stars seen this month in the evening sky. Perhaps most conspicuous of all the constellations is Orion. In the mind's eye these stars become the heavenly warrior with a lion skin thrown over his left arm, and his right hand upraised, holding a club with which he is about to strike the charging bull, Taurus.

Look to the south this evening, if it is clear. High above the horizon are three bright stars in a row, not horizontal, but slanting down to the southeast. Above these three is a still brighter star, rather reddish in hue, and below them another, white in color. These are the most conspicuous stars of Orion. The row of three is the belt, and their names, reading from left to right, are Alnitak, Anilam and Mintaka. Like so many of the star names, these come from the Arabic. The first was originally Al Nitak, the Al being the article, and the phrase meaning, "the girdle." The third was Al Mintakah, and meant "the belt," while the middle was Al Nitham, "the string of pearls," perhaps referring to some imagined jewel in the warrior's belt.

The upper reddish star is the famous Betelgeuse, much brighter than the stars of the belt. It marks Orion's right shoulder, as indicated by its name, which has degenerated from the Arabic Ibt al Jauzah, "the armpit of the central one." Rigel, below the belt, marks Orion's left foot, which is raised as if he were climbing. Its name is also from the Arabic description, for it was originally Rijl Jauzah al Yusra, "the left leg of the central one." Almost directly above the belt is still another star, Bellatrix, which is not Arabic, but Latin, and means "the female warrior." Just why it should be thought of as feminine is uncertain, its Arabic title was Al

Najid, "the conqueror," and some writer translated it into Latin as Bellatrix. Perhaps he was some early advocate of the equality of the sexes.

From Orion as a guidepost, you can locate the other bright stars to be seen this month. Betelgeuse marks the center of the ring of stars, which we can start with Rigel. Above and to the right of Orion is Taurus, the bull, with the ruddy Aldebaran marking the animal's eye. As indicated by the first syllable, this is also Arabic, and means "the follower." That which it follows is a cluster of faint stars to the west of Aldebaran, and a little higher—the Pleiades.

The Seven Sisters

These are sometimes called the seven sisters, though most people can only see six stars without some optical aid. With a small telescope, a pair of binoculars, or even a pair of opera glasses, many more come into view. The brightest of the group is Alcyone, only of the third magnitude. With its stars grouped together so closely, the Pleiades have attracted attention from the earliest times.

Aldebaran follows the Pleiades, and hence its name. Aldebaran itself is part of another sub-group of stars called the Hyades. These are not as close together as the Pleiades, but they form a rather conspicuous V-shaped figure, with the bright star near the apex.

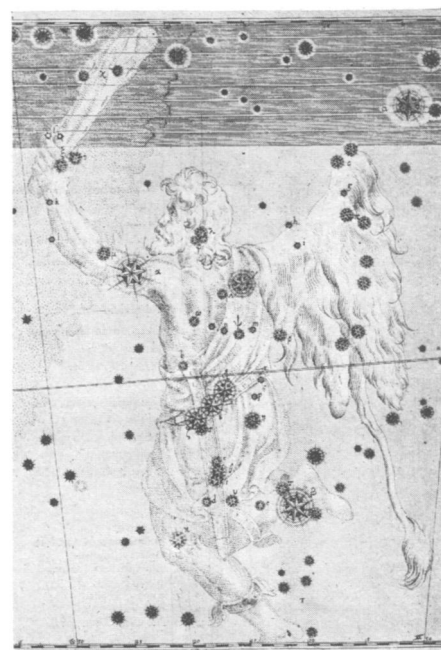
From Aldebaran go a little beyond the zenith. There, almost overhead, is Capella, in Auriga, the charioteer. The name is Latin, and means "a little goat." This is because the charioteer was supposed to be holding a young goat, which the star represented.

From Capella we pass eastward to two bright stars, close together, with the lower star the brighter of the pair. These are the twins, Gemini, and their names are Castor, the upper star, and Pollux, the lower and brighter one. Only Pollux, rather orange in color, is of the first magnitude; his brother is a bright second magnitude star. The Gemini were favorite Roman deities, and two of the most famous and often pictured

of Roman ruins are the temples to Castor and Pollux at Rome and at Girgenti. The twins were the sons of Jupiter, their mother being Leda, the wife of Tyndarus, king of Sparta.

Passing southeastward from Pollux, we come to a bright yellow-white star which marks Canis Minor, the little dog. The star is Procyon, and the constellation is closely related to the last of our circle of bright stars, Canis Major, the great dog, right below Betelgeuse. In this group is the brightest of all the stars in the sky, Sirius, the dog star. The two dogs accompanied Orion, and the name of Procyon referred to the fact that he arose just before Sirius, thus "before the dog."

Every year at this time, the circle of six first magnitude stars, with Betelgeuse at the center, appears in the southern sky. But this month there is an added attraction. Between Betelgeuse and Pollux, nearer the latter, is another brilliant object. Its steady glow, brighter than any of the stars, shows that it is not a star, but a planet—Jupiter, the largest member of our own system of bodies that revolve around the sun. And if you had a powerful telescope, and were to look a little below Jupiter, and



The heavenly warrior, Orion, as represented in Johann Bayer's "Uranometria" (1603), the first star maps to use the modern system of designating stars by a Greek letter and the genitive case of the Latin name of the constellation.

TEACHERS COLLEGE



The College of Liberal Arts and Sciences

The Degree of Bachelor of Arts

Standard Curriculum based on best academic experience. Embraces the six great fields of learning, Pure Science, English Language and Literature, Mathematics, Foreign Languages, History and Social Science, and Philosophy.

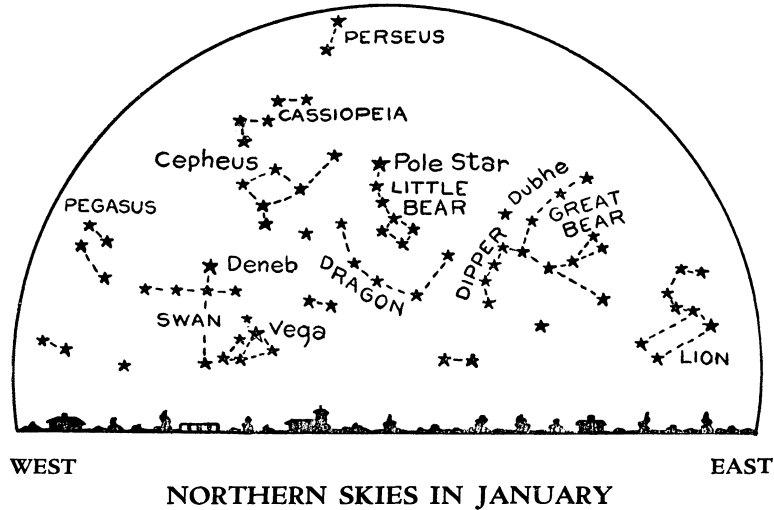
EVENING COURSES OFFERED

- | | |
|-------------------------------------|-------------------------|
| 1. Chemistry | 4. Construction |
| 2. Social Studies | 5. Mechanical Design |
| 3. Heat Treatment and Metallography | 6. Architectural Design |
| | 7. Aviation |

For further information send for Bulletin on courses in which you are interested

III
**TEMPLE
UNIVERSITY**

Broad Street at Montgomery Ave., Phila., Pa.



still closer to Pollux, you could see Pluto, newest member of the solar system, the planet beyond Neptune. Only a year ago this month it was discovered by astronomers at the Lowell Observatory in Arizona, the third such discovery in modern astronomical history, and the first since Neptune was found in 1846. But it is of the fourteenth magnitude—much too faint to be seen except with a great telescope, and even then it appears only as a faint star. Only its rapid motion among the stars reveals that it is not one of them.

Red Light Reveals Mars

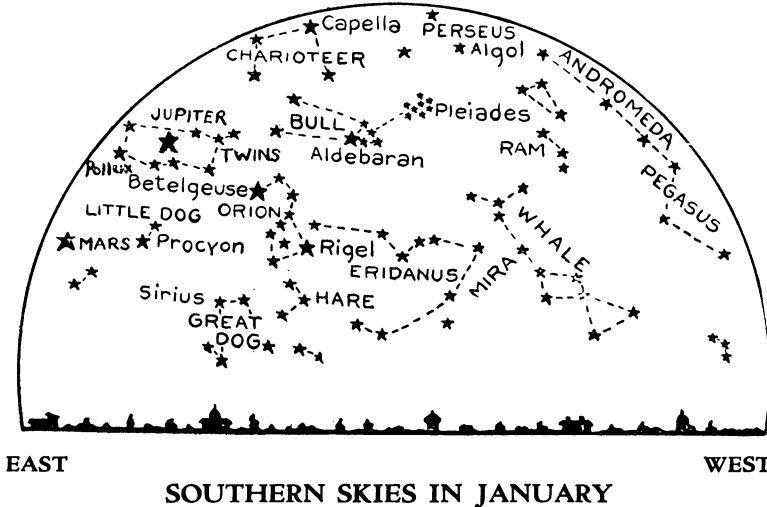
Below Jupiter is another planet, red in color and not nearly so bright. This is Mars, brighter than any star except Sirius. Again, its steady light, so different from the scintillating brilliance of the stars, permits its easy identification. Still below Mars, close to the horizon, is another first magnitude star, Regulus, at the end of the handle of the Sickle, in Leo, the Lion. Close to Regulus is the planet Neptune, but like Pluto, it is only visible with a telescope. The ninth first magnitude star to be seen in the evening sky this month is over in the northwest. This is Deneb, at the top of the northern cross, more properly known as Cygnus, the swan. Deneb is close to the horizon, and most of the rest of the constellation is below, where Deneb follows a little later in the evening. This month astronomers are especially interested in still another object which is now in the constellation of Leo, and at the end of January will pass to the south into the neighboring group of Sextans, the sextant. This is the tiny planet Eros, and though it is only about 15 miles in diameter, and too faint to be seen without a telescope, it is now being observed more steadily than

Jupiter, with all of its brightness and diameter of 85,000 miles.

Eros is important because its distance can be determined with high precision, on account of its close approach, and from its distance can be derived all the other dimensions of the solar system. For several months Eros will continue to enjoy the scrutiny of terrestrial astronomers. It will pass from the northern skies in a couple of months, and then the great telescopes of the southern hemisphere will be focussed on it.

Some other interesting events are scheduled for the year. Though astronomers can predict with considerable accuracy the future positions of known objects, one never knows when something new and important will be discovered. For example, the discovery of Pluto was the outstanding astronomical event of 1930, but few astronomers, except those at the Lowell Observatory, perhaps, ever suspected it was coming so soon. A careful survey of the ecliptic, the path of the planets, with a camera especially designed for catching a faint and possibly unknown planet, brought Pluto to light. This survey continues, and it is entirely likely that a new and trans-Plutonian planet may be found as a result. Then also, there is always the possibility that a bright comet may suddenly come into the sky, entirely unheralded. So far, the twentieth century has not maintained the average of bright comets set by the nineteenth. Perhaps this year may see one rivalling the famous comets of the past, some of which were conspicuous even in the daytime.

In addition, several periodic comets, that have been in the vicinity of the Earth before, will return. One of these is Encke's comet, which has a period of



SOUTHERN SKIES IN JANUARY

3.3 years, and was last observed in 1928. It will probably be picked up by early spring. The comet known as Tempel III-Swift, because it was the third comet discovered by Tempel, and was independently found by Swift, may also return. It was discovered in 1869, and observed on three successive returns, the last in 1908. It has a period of 5.7 years, but since several returns have been missed, it may not be found this time. Neujmin's comet, discovered in 1913, and with a period of nearly 18 years, is also expected to make another visit. So is Schorr's comet, which has not been seen since 1918. Wolf's second periodic comet, discovered at the end of 1924, may also return, though it was only observed for a month at that time, and it was very faint and difficult to observe. Some of these comets may be completely missed, and it is quite certain that none will be bright enough to be seen without a telescope.

The year may also go down into history as one of a fine meteor shower. The Leonid meteors, which come every November, were more numerous in 1930 than they had been since 1901, and this may herald a really great shower in the next few years. November, 1931, may bring another, and even better, foretaste of what we may expect a little later. Then, of course, there are other meteor showers that are regular standbys. Of these, the Perseids, which come in August, are the most dependable.

Though 1931 will be a good eclipse year, considered by quantity, the quality will not be good. Five eclipses are coming, three of the Sun and two of the Moon, but none will be visible from the United States. The first, of the

Moon, comes on April 2. A couple of weeks later, on April 18, is one of the Sun, but it is only partial. The Moon will not completely obscure the Sun at any part of the Earth's surface, and so astronomers will make no particular effort to observe it. September 12 brings another solar eclipse, but it also is partial, and even smaller than the one in April. It will be seen from Alaska.

The second eclipse of the Moon, at which time the Moon enters the shadow of the Earth, comes on September 26, but it will not be seen from any part of North America. The third solar eclipse will come on October 11, and while it will be more nearly total than its two predecessors, it will also be partial. The people of southern South America, and the penguins around the south pole, will be able to see it.

Science News Letter, January 3, 1931

PALEONTOLOGY

Antelope Fossils Found In Southwestern Cave

FOSSILS of two extinct species of antelope, and of one antelope species still living, were found in Shelter Cave, 38 miles north of El Paso, Texas, Prof. Chester Stock of the California Institute of Technology reported before the meeting of the Paleontological Society in Toronto.

The existing species, which may be of slightly later date in the cave deposits, is the familiar pronghorn, which used to swarm in countless herds on the western plains and is still found in diminished numbers from Yellowstone National Park westward and southwestward into Idaho, Oregon and Nevada.

Science News Letter, January 3, 1931

6 reasons why leading Schools choose
Kewaunee
Laboratory Furniture

Chemistry Table No. D-794

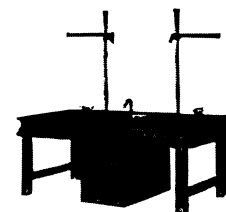
1. It is scientifically designed for the greatest possible pedagogic service.
2. It comfortably accommodates the maximum number of students.
3. It has greater utility.
4. It provides all modern conveniences.
5. It is extra-heavy in construction—lasts longer.
6. It is moderately priced.



Lincoln Science Desk No. D-503

WRITE FOR KEWAUNEE BOOK

The Kewaunee Book pictures and lists the complete Kewaunee Line—also shows installations, blueprints, etc. Write for it today on your institution's letterhead. It will be sent without obligation or charge. In addition to laboratory furniture, we also manufacture both standardized and special library furniture.



Combination Chemistry and Physics Table No. D-591

N. E. A. Exhibit
 It will be a pleasure to show you our exhibit at the N. E. A. Convention, Detroit, Mich., Feb. 21-26, 1931.

Kewaunee Mfg. Co.
 LABORATORY FURNITURE EXPERTS

C. G. CAMPBELL, Pres. and Gen. Mgr.
 206 Lincoln St., Kewaunee, Wis.
 Chicago Office: 14 E. Jackson Blvd. New York Office: 70 Fifth Avenue
 Offices In Principal Cities