

ASTRONOMY

Orion Shines at His Best

Most brilliant constellations are seen February evenings, with stars in and around Orion, the warrior, high in the south.

By JAMES STOKLEY

► WITH February arriving, the brilliant group of stars in and around the constellation of Orion, the warrior, are in their best position, high in the south. To identify these it is a good idea to start with the three stars in a row that form Orion's belt. Above them is Betelgeuse, which marks one of his shoulders, while below is Rigel, in one of his legs.

Following the direction of the belt stars downward and to the left brings us to Sirius, the dog-star. Part of the figure of Canis Major, the great dog, Sirius is the most brilliant star in the sky, except for the sun. By tracing the line from the belt the other way, upwards and to the right, Aldebaran is located. Characteristically red in color, it is the eye of Taurus, the bull, which is charging on Orion.

Canis Minor

The lesser dog, Canis Minor, is above the big one and contains another bright star, Procyon. Still higher is the constellation of Gemini, the twins, in which Pollux appears. Next to Gemini, toward the east, is Cancer, the crab. Though this group contains no bright stars, it is now made brilliant by the presence of a first magnitude planet, Saturn. Continuing on to the left of Cancer we find Leo, the lion. Part of this aggregation of stars has the shape of a sickle, and at the end of the handle of that implement is the star Regulus.

Still another first magnitude star is shown on the accompanying maps, on which we see the appearance of the heavens at about 10 o'clock on Feb. 1 and an hour earlier in the middle of the month. This first magnitude star is Capella, in Auriga, the charioteer. It is shown at the top of the map for the northern half of the sky, as it is nearly overhead at the times indicated.

After midnight another planet, even more brilliant than Saturn, comes into view. It is Jupiter, which is now in the constellation of Libra, the scales. As it is brighter than any other star or planet

then above the horizon, it will not be hard to identify. The moon passes close to Jupiter on the night of February 12. Just before sunrise Venus, which is brighter still, can also be seen, low in the southeast.

The planet Mars is too nearly in the direction of the sun to be seen at all, but Mercury, closest of all to the sun in miles, reaches its farthest east of the sun on February 20. For a few days about then it may be possible to get a glimpse of it in the evening twilight, low in the southwest, just after the sun has gone down.

If you watch toward the east after Jupiter appears late at night, you will soon see a bright reddish star, which is Antares, in Scorpio, the scorpion. Now it rises in the early morning hours, but in the summer-time we see it in the evening. If, when Antares has risen, you look for Orion, which was so conspicuous earlier, you will not find it for the warrior has set.

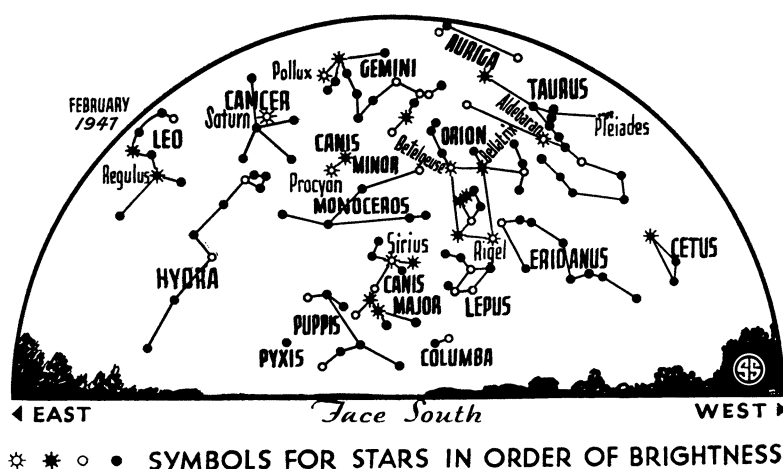
One of the old myths of the stars has an explanation for this. It seems that Orion, a great hunter, once boasted that there was no animal on earth he could not conquer. As punishment for his vanity a scorpion came out of the ground and stung him fatally on the foot. However, his friend Diana, the moon-god-

dess, interceded with Jupiter to have him placed in the sky. The scorpion was placed there too, but in the opposite direction, so that the two could never be above the horizon together. So now we see Orion on winter evenings, while the scorpion takes his place in the summer-time.

However, it is a curious fact that this will not always be so. There is a slow movement of the heavens called the precession (not procession) of the equinoxes. At present the north pole of the earth points toward the constellation of the lesser bear, Ursa Minor, close to the star we call Polaris, the pole star. But the pole does not remain in this direction. In the course of about 26,000 years it will have described a large circle in the sky, and will have pointed to a number of other stars. About 12,000 years from now Vega, the bright star in Lyra, the lyre, which we see overhead on summer evenings, will be the pole star. Going backwards we would find that several thousand years ago, when the Great Pyramid of Cheops was built in Egypt, a star we call Thuban, in Draco, the dragon, marked the pole.

Determining Season

It is the tilt of the pole toward or away from the sun that determines when we have winter or summer. At this time of year the north pole tilts away from it, the sun is low in the northern hemisphere and we have winter. Six months from now, as it tilts in the direction of the sun, that body climbs higher in our



sky and we have summer. It so happens that when we have winter, the sun itself is in the direction of the scorpion, and that is why we cannot see it, though we can see Orion, which is in the opposite part of the sky. In June, when the sun is toward the part of the sky in which Orion stands, we cannot see him, but the scorpion is visible all night.

Precession Moves Pole

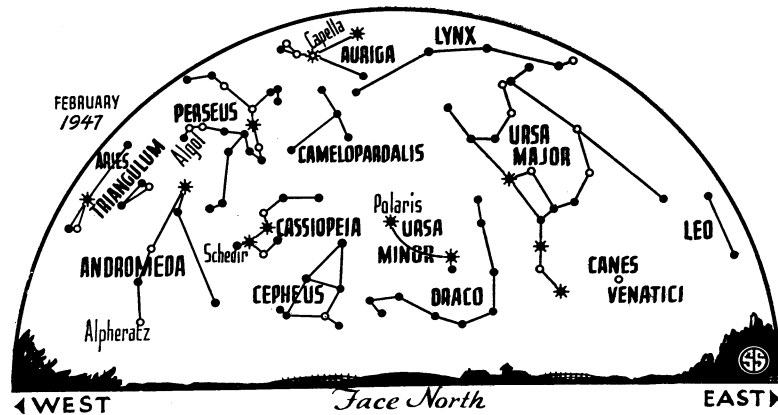
In about 12,000 years precession will have moved the pole through half of its circle. Then when the sun stands toward Orion, and the scorpion is visible at night, the north pole will tilt away from the sun, so that time of year will be winter. Summer will come, as now, when the north pole tilts sunward, but then Orion will be visible in the southern sky in the evening and the scorpion will be too nearly in the same direction to the sun to be seen.

Also, at that remote date, the winter scorpion will be as high in the evening sky as Orion is now, and that warrior, like Scorpio in 1947, will stand just above the horizon. That will permit people in the United States, or whatever nation occupies this part of the world, to appreciate the beauty of the scorpion. It is really a fine group that does not appear to us in its full glory because it is so low. If, in the summer, you travel

toward the equator, you can see it overhead in its full splendor.

or three decades preceding the war.

Science News Letter, January 25, 1947



Celestial Time Table for February

Feb.	EST	
3	6:00 p.m.	Moon nearest, 224,400 miles
4	3:07 p.m.	Moon passes Saturn
5	10:50 a.m.	Full moon
12	4:58 p.m.	Moon in last quarter
	10:44 p.m.	Moon passes Jupiter
15	4:00 p.m.	Moon farthest, distance 251,700 miles
16	5:58 p.m.	Moon passes Venus
17	4:37 a.m.	Algol (variable star in Perseus) at minimum
20	1:26 a.m.	Algol at minimum
	9:00 p.m.	New moon
	10:00 p.m.	Mercury farthest east of sun
22	10:16 p.m.	Algol at minimum
25	7:05 p.m.	Algol at minimum
28	4:12 a.m.	Moon in first quarter

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

Science News Letter, January 25, 1947

GEOGRAPHY

Strategic Spitzbergen

► THE IMPORTANCE of Spitzbergen in world strategy is emphasized again in the recent reported request of the Soviet Union to Norway for permission to use this northern island in the Arctic ocean for a military base. Hitler recognized its importance when he sent Nazi forces against it in 1943.

Spitzbergen is a group of bleak mountainous islands, possessions of Norway since 1925, that is located nearly half way from Norway itself to the North Pole, and some 300 miles east of Greenland. Military bases on one of them could play an important part in the control of shipping passing north of Norway to Finland and Russian ports, and perhaps offset military bases established by any other nation on Iceland. Spitzbergen also has value as location for a weather station, and it is on the Great Circle route by way of the North Pole from Europe to Alaska.

The Norwegians call the island group

Svalbard. Spitzbergen, or Svalbard, is applied usually to the main island of the archipelago. This island has some 25,000 square miles of area. It was once noted for the whale fishing in its vicinity, also for walrus fishing. In recent years its particular value has been its coal mines, from which about 700,000 tons have been taken each year.

Spitzbergen is too far north to produce foodstuffs. Its climate is not as severe as might be expected, however, as its western coast is warmed by the North Atlantic drift. It is less severe than the climate of corresponding Greenland. Vessels may approach the west coast during most of the year.

Amundsen and Byrd used a base on Spitzbergen in 1926 from which they took off to reach the North Pole. Wilkins used it in 1928 for his flight over the pole to Alaska. Scientific expeditions used the island for many exploratory trips in Arctic regions in the two

ENGINEERING

Mammoth Steam Turbine Generators in Making

► MAMMOTH STEAM turbine generators for electric power companies, two in the 125,000-kilowatt class and two in the 100,000-kilowatt class, are under construction by General Electric Company. They are expected to have very high efficiency.

The two larger machines, with cross-compound turbines, will utilize steam at 2,000-pound pressure and 1,050 degrees Fahrenheit temperature. The high-pressure unit will operate at 3,600 revolutions per minute, and the low-pressure unit at 1,800 revolutions.

In the 100,000-kilowatt generators, one will operate at 1,500-pound pressure and 1,050 degrees temperature; the other at 1,250-pound pressure and 1,000 degrees temperature. Recent advances in seals and gas-purification methods will permit smaller hydrogen-cooled units in all four turbine-generators. Practically all turbine-generators of 15,000 kilowatts and over are now hydrogen-cooled.

Science News Letter, January 25, 1947



SAVE TIME, use the SLIDE RULE.
Accurate and dependable. Anyone from a grade school student and up can learn to use this slide rule in a few minutes. Genuine 10" rule, white face, with unbreakable plastic indicator. Indispensable aid in solving multiplication, division, square, proportions, etc. Conversion tables on back. **EXTRA**—Slide rule case and 28 page instruction book with order. Orders filled day received. Satisfaction guaranteed. Sent postpaid \$1.00.

BISHOP CO.,
2833 N. Burling St., Dept 103,
Chicago 14, Ill.