

ASTRONOMY

'Great Square' in South

Four of the five naked-eye planets will be visible in October evening skies and the Great Square, a handy reference figure, will appear high in the south.

By JAMES STOKLEY

► OF ALL FIVE NAKED-EYE planets, only Mercury will not be visible in October evening skies.

Soon after sunset, while the sky is still quite bright, you will be able to see Venus, which is by far the most brilliant of the quartet. Near it is Mars, more than a hundred times fainter. Thus, Mars will not appear until the sky is much darker when both planets are considerably closer to the horizon.

Because they set so early in the evening, neither Venus nor Mars is shown on the accompanying sky maps. These maps show the heavens as they appear about 11:00 p.m., your own kind of daylight saving time (or 10:00 p.m., standard time) on Oct. 11, an hour earlier at the middle of the month and two hours earlier at the end.

Saturn shines in the south, in Aquarius, the water carrier. It is visible from dusk until about two hours before sunrise. Very low in the northeast, just barely getting on our map, is Jupiter, in Gemini, the twins. A little later in the evening it will be very prominent, and will remain visible for the rest of the night. Jupiter is a little less than a fifth as bright as Venus, but it far outshines the surrounding stars.

Venus and Mars are now moving eastward across the sky. Venus, the more rapid, overtakes Mars during daylight hours on Oct. 19, so that in the evening they will be close together. Mars, distinctly red, will be a little to the right of Venus.

A star in the constellation of Scorpius, Antares, whose name means "rival of Mars," will be just below them. It also is distinctly red, and is somewhat brighter than Mars. The grouping of planets will be even more interesting on the evening of Oct. 27, when the young crescent moon will be close to Mars.

Great Square in Pegasus

High in the south stands the Great Square in Pegasus, which is a helpful reference figure from which to locate a number of constellations. Actually Alpheratz, the star in the upper left-hand corner of the Square, is in the neighboring constellation of Andromeda. This group extends northward towards Perseus, the great champion who rescued Andromeda when she was chained to the rocks, according to the old myth.

Below Andromeda, in the northern sky, stands her mother, the queen, Cassiopeia. Cepheus, the king, is just to Cassiopeia's left. In the south, just below the Square, is the constellation, Pisces, the fishes. This, like nearby Aquarius, is one of the 12 con-

stellations of the zodiac, through which the sun, moon and planets seem to move.

The so-called "summer-triangle" is still visible in the west. It consists of three bright stars: Vega, Deneb and Altair. Vega, in Lyra, the lyre (shown on the northern sky map), is the brightest star now visible. Deneb is above it, in Cygnus, the swan. In the southwest is Aquila, the eagle, of which Altair is the brightest star.

Low in the northeast, below Perseus, is Auriga, the charioteer, with bright Capella; and Taurus, the bull, with reddish Aldebaran.

In the south, below Saturn, stands the constellation Piscis Austrinus, the southern fish. Here shines the bright star Fomalhaut, which is now about as high as it ever gets. At this low altitude, atmospheric absorption dims its light considerably. In more southerly countries, where the star stands high in the sky, it is more prominent.

At this time of year the dipper is at its poorest evening position. It is low in the north. In Canada, and in the United States, north of 40 degrees latitude, it remains above the horizon. Farther south some of its stars actually set for a time. South of 33 degrees, about the latitude of Dallas, Texas, one or both of the pointers will pass below the horizon.

The two "pointers" are Dubhe and Merak. These are the stars that show the direction to Polaris, the pole star. In some books these pointer stars are called Alpha and Beta.

Actually there are many ways of designating stars. In ancient times designations usually referred to positions in the imaginary constellation figures.

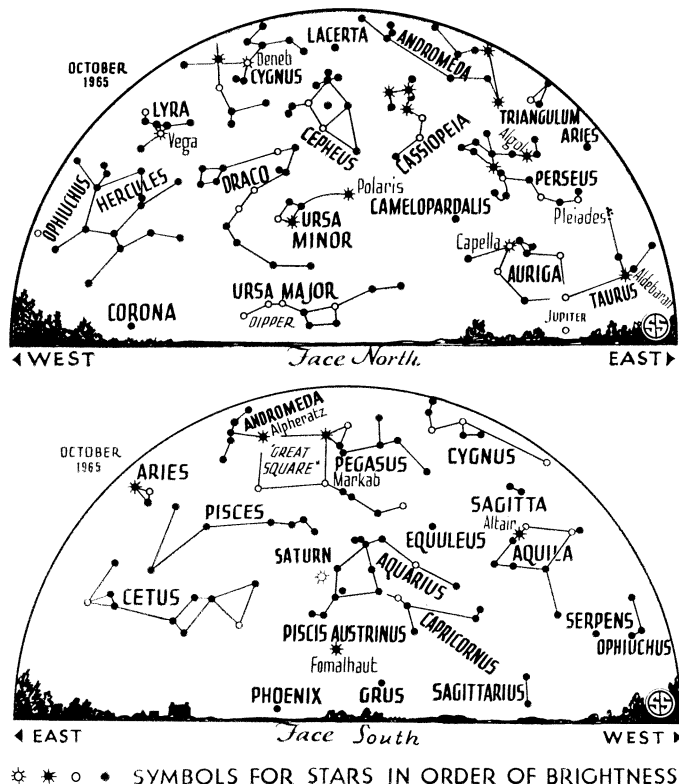
Deneb Marks Swan's Tail

Deneb in the constellation of Cygnus, high in the west, is an example. We call this group a swan, but in ancient times it was a hen, and this star marked the hen's tail, just as later it was to mark the swan's tail.

The Arabs, who passed on much of the ancient astronomical lore to modern times, called it "Al Dhanab al Dajajah," which means "the hen's tail." The second word of this name, the Arabic word for tail, has come to us as Deneb.

This same Arabic word occurs in the name of the second brightest star in Leo, the lion, a group that is not visible on October evenings. This is Denebola, from "Al Dhanab al Asad," which means "the lion's tail," for it was supposed to mark that part of his body. Many proper names of stars originated in a similar way.

But in 1603 a German astronomer, Johann Bayer, published a beautiful collection of star maps in which he introduced a new system of designated stars. He used a Greek letter, referring to the order of the brightnesses of the stars in each constellation, fol-



☆ * ○ ◆ SYMBOLS FOR STARS IN ORDER OF BRIGHTNESS

lowed by the genitive case of the Latin constellation name. Since Deneb is the brightest star in Cygnus, it is alpha Cygni. Denebola, second brightest in Leo, is beta Leonis. Vega, now seen in the west in Lyra, the lyre, is alpha Lyrae.

The big dipper, however, is such a familiar figure that to name these seven stars Bayer started with the pointers and went on to the end of the handle. This group is part of the constellation of Ursa Major, the great bear, so Dubhe, the pointer nearer the pole, is alpha Ursae Majoris, while Merak, the other pointer, is beta Ursae Majoris.

Thus, in the great bear, as in any constellation, there is an alpha and a beta, but when these are used as designations of particular stars, give the constellation names that must be used as well.

For astronomers, the most common way of indicating a star is not by constellations but by number in one of the several star catalogues. Thus a star might be designated as Groombridge 990, which refers to the star of that number in Groombridge's catalogue. This method is particularly useful for faint telescopic stars, which far outnumber those visible to the naked eye.

Celestial Timetable for October

OCT.	EDT	
2	8:38 a.m.	Moon in first quarter
4	4:00 p.m.	Moon farthest, distance 251,500 miles
7	noon	Moon passes south of Saturn
10	10:14 a.m.	Full moon, Hunter's moon
15	midnight	Moon passes north of Jupiter
17	3:00 p.m.	Moon in last quarter
19	11:00 a.m.	Venus passes south of Mars
20	7:00 a.m.	Moon nearest, 228,800 miles
24	10:12 a.m.	New moon
27	10:00 p.m.	Moon passes south of Mars
28	5:00 a.m.	Moon passes north of Venus

Subtract one hour for CDT, two hours for MDT, and three hours for PDT.

• Science News Letter, 88:202 September 25, 1965

GEOPHYSICS

Oxygen Layer Found 720 Miles Above Earth

► AN UNEXPECTED LAYER of oxygen atoms 720 miles above the earth's surface has been discovered from information obtained by the satellite called Ariel I.

R. L. F. Boyd, Susan Laffin and A. P. Willmore of University College, London, England, reported detection of the high ionized oxygen layer in Nature, 207:1185, 1965.

• Science News Letter, 88:203 September 25, 1965

Do You Know?

The *strawberry* is a member of the rose family.

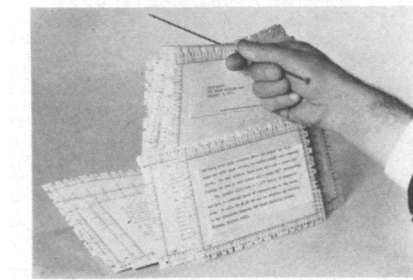
Aside from birds and mammals, only the female India rock *python* is able to generate heat to control its body temperature.

Some Egyptian *pyramids* contain cedar-wood timbers thought to have been imported from the Lebanon area into Egypt during early dynastic times.

• Science News Letter, 88:203 September 25, 1965

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