ASTRONOMY

Great Square Guide in Skies

Regular grouping will be in the east in the constellation of Pegasus, the winged horse. Meteor shower will occur Aug. 12.

By JAMES STOKLEY

➤ TO THE EAST on August evenings appears one of the most conspicuous of those regular groupings of stars that serves as a useful guidepost in finding one's way about the heavens. This is the "great square," most of which is in the constellation of Pegasus, the winged horse. Its position is indicated on the accompanying maps, in which is shown the appearance of the heavens at 11:00 p. m , daylight saving time, around the first of August, and an hour earlier in the middle of the month. The square is now resting on one corner and the star at the left, named Alpheratz, is in the neighboring constellation of Andromeda, the chained princess. Next to her, farther left, is the figure of her mother, Cassiopeia, shaped like a letter W on one side. Cepheus, her father according to the old myth, is just above.

Near Little Dipper

This constellation is close to the little dipper, directly north, and part of Ursa Minor, the lesser bear. Polaris, the pole star, is at the end of the handle of the little dipper and is indicated by the well-known "pointers," the two stars in the bowl of the big dipper, seen in the northwest. This, in turn, is part of Ursa Major, the great bear. Winding around between the big and little dippers is the sinuous line of stars marking Draco, the dragon.

Directly above the square of Pegasus, we find Cygnus, the swan, sometimes called the northern cross. First magnitude Deneb is at the top of the cross, toward the north. Below the southernmost star, at the bottom of the cross, we see Altair, in Aquila, the eagle. And above—directly overhead, as shown on the maps—is Vega, in Lyra, the lyre, which is the brightest star now visible at night.

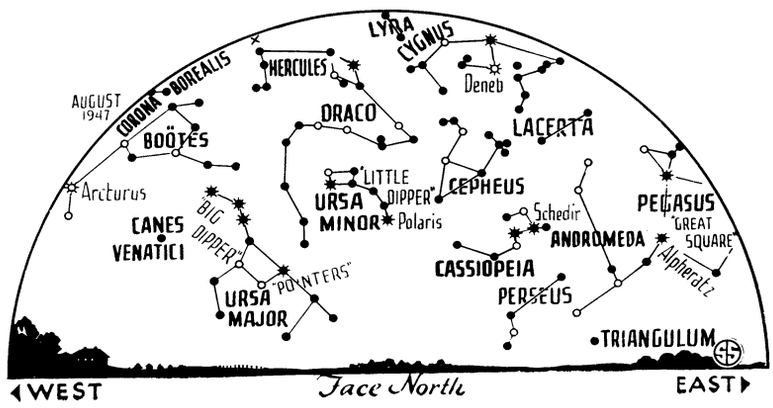
Still more brilliant, however, is the planet Jupiter, which is low in the southwest in the constellation of Libra, the scales. Next to this group, toward the left, one finds Scorpius, the scorpion, of which the ruddy first magnitude star Antares is part. Directly above this figure appears the large constellation of Ophiuchus, the serpent bearer, and the two parts of Serpens, the serpent he is carrying, one to the right, which is the head end, and the terminal end toward the left. Continuing upwards from Ophiuchus we reach Hercules, the strong man of mythology. He is represented, rather inappropriately, by a group of six stars in the shape of a butterfly! The butterfly is facing the west, with one wing to the north and the other to the south. In the western edge of the northern wing, represented by a small cross on the map, one can see a faint spot of light on a dark night, which is really a great globular cluster of stars.

In addition to Jupiter, two other planets can be seen at other times on August nights. About four hours before sunrise Mars appears in the east, in the constellation of Gemini, the twins. Still later, in the early part of the month, the rarely-seen planet Mercury may be glimpsed. On Aug. 3 it is farthest west of the sun and one may see it low in the east, just under the stars Castor and Pollux, of Gemini, the twins. Saturn and Venus, the other two planets that are bright enough to be seen without a telescope, are both too near the sun at present to be viewed.

On any clear night one occasionally sees a flashing point of light commonly termed a "shooting star." Actually, these are not stars at all, but meteors—small bits of cosmic dust that enter the earth's atmosphere and then are quickly burned by the friction they encounter. Many millions of these come into the atmosphere daily, but the vast majority are vaporized and never reach the ground. Occasionally one is large enough to survive until it lands and then it is called a meteorite. According to a Canadian authority on meteors, Dr. Peter M. Millman, of the University of Toronto, on the basis of an overall average for the year a single observer would be able to see ten meteors an hour on a clear night with an unobstructed view of the sky. These conditions are not often realized for most of us, so that generally not more than one or two an hour can be observed. However, at certain times of year there are meteor "showers," and one of these occurs during August, with the maximum on Aug. 12. Then one might be able to see a meteor every couple of minutes, especially after midnight, for then they are most numerous. In the early morning hours, the earth meets them head-on, while those we see in the evening have to catch up to us.

Meteors from Perseus

The meteors that appear in August, called the Perseids, seem mostly to come from the direction of the constellation of Perseus, the champion, which appears on the map low in the northeast, but rises higher later in the night. Actually they are moving around the sun in parallel paths and on account of perspective these seem to converge in the direction of Perseus, from which they are coming. The swarm goes completely around the sun and follows the orbit of a faint comet seen in 1862, so they are apparently some cometary debris. The



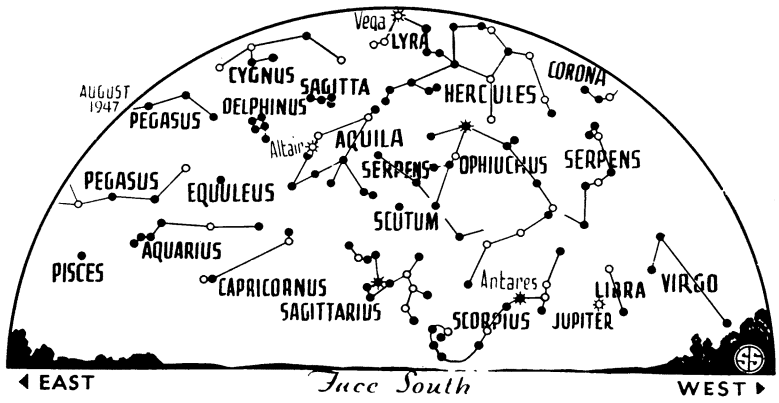
earth's orbit intersects that of the meteors at the place we occupy in August, and that is why the meteors are seen at this time. Of course, the sky must be dark to observe them best. Since the moon is at last quarter this month on Aug. 9, it will rise late on the 12th during the early morning hours, and will hardly be bright enough to interfere seriously, though its light will cut out some of the fainter meteors.

Astronomers appreciate the help of amateurs in observing meteors. A simple but useful task is to count the total number that you see during half hourly intervals, as from midnight to 12:30, 12:30 to 1:00, etc. Such counts may be sent to Dr. Charles P. Olivier, at the Flower Observatory, Upper Darby, Pa., or in Canada to Dr. Millman, at the Dominion Observatory, Ottawa.

As noted in the first part of this article, it is possible to see a faint patch of light in the constellation of Hercules (indicated by a cross on the map), which is a great globular cluster of stars, at least 100,000 in number. This object is at a distance so great that its light (at the speed of 186,000 miles per second) takes 35,000 years to reach us. At such a distance our sun would be invisible with even the most powerful telescope.

About a hundred of these globular clusters are known, and the work of Dr. Harlow Shapley, of the Harvard College Observatory, has shown that they form the skeleton of the huge system of stars called the galaxy of which the sun is a member. Most of the stars are in a flat, grindstone shaped disk. However, the hundred globular clusters form a system that is spherical in form, but sharing the same center as the main galaxy itself.

Centuries ago men thought that the earth was in the center of the universe, but then it was shown that the earth is but one of the planets revolving around the sun. Later, as the idea of the galactic system was formed, it was thought that the sun, and our solar system with it, was near the center of the grindstone, but the work on the globular clusters demonstrated that this was wrong. It was observed that most of these clusters are in one half of the sky, but if we were at the center they would be more uniformly distributed in all directions. Actually, we are tens of thousands of light years away from the center of the galaxy, which lies toward the constellation of Sagittarius, the archer, now visible in the southern sky.



Celestial Time Table for August

August	EST	
1	8:50 p. m.	Full moon
3	3:00 p. m.	Mercury farthest west of sun
5	1:00 p. m.	Saturn and sun in line
9	3:22 p. m.	Moon in last quarter
12	early morning	Perseid meteors
	4:47 p.m.	Moon passes Mars
15	3:00 a. m.	Moon nearest, distance 223,-300 miles
	5:09 a. m.	Moon passes Mercury
16	6:12 a. m.	New moon
22	12:47 p. m.	Moon passes Jupiter
23	7:40 a. m.	Moon in first quarter
27	11:00 a. m.	Moon farthest, distance 251,-900 miles
31	11:34 a. m.	Full moon

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

Add one hour for the corresponding Daylight Saving Time.

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GEOGRAPHY

Importance of Greece

➤ TROUBLED GREECE, now bolstered by American dollars and threatened by alleged Red sympathizers on the north, is a tiny nation as nations go but it happens to occupy a strategically important spot far out of proportion to its size.

In area it is smaller than Alabama, and in population a million or so less than New York City. But it and its thousands of islands are so situated that Greece is in a position to dominate the eastern Mediterranean, the Adriatic with its ports that serve much of Central Europe, and the Aegean sea which in turn controls the shipping lanes to the Dardanelles and the Black sea.

In shape, it is somewhat like a broad-bladed sickle with its narrow handle separating Bulgaria and Yugoslavia from the Aegean. The end of the handle is against Turkey-in-Europe. Albania is at the butt of the blade, and the blade itself projects into the Mediterranean between the Adriatic and the Aegean. A broken-off point of the blade is the Greek island of Crete that limits entrance to the Aegean to relatively narrow shipping lanes on its west and east.

Another factor in Greece's position is that it is the only non-satellite nation in Europe east of the Soviet line of control which now extends from the Russian-occupied area of Germany on the Baltic sea south to the Adriatic. Control of Greece would give the Soviet Union control of shipping ports to the Mediterranean, and make it easier for it to gain control of the waterway from the Black sea through the Bosporus, Sea of Marmara, and the Dardanelles.

Albania, Yugoslavia and Bulgaria, all to the north of Greece, have reasons of their own for wanting to control all or parts of Greece. Bulgaria and Yugoslavia want to extend to the Aegean. Albania wants to extend its border. Yugoslavia has ports on its west coast but for many reasons wants ports to the east. Bulgaria's only present ports are on the Black Sea.

Another factor in the situation is the desire of the Macedonians to be an independent nation again. The territorial claims of these people of very ancient stock is the part of Greece on the north shores of the Aegean, and parts of what are now Bulgaria and Yugoslavia. A committee of Macedonians, made up of citizens of the United States and Canada, are urging an "autonomous Macedonia."

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