

ASTRONOMY

Vega Shines High Overhead

Most brilliant star of the summer sky can be seen close to the zenith. Perseid meteors flash as fast as one a minute around August 11.

By JAMES STOKLEY

► **HIGH OVERHEAD** on August evenings stands the most brilliant star of the summer sky, Vega, in Lyra, the lyre.

The accompanying maps show its place about ten p.m., your own kind of standard time, at the beginning of August, and an hour earlier at the middle. (Add one hour if you are on daylight time.)

Then it is close to the zenith—the point directly overhead. Two other stars of the first magnitude are close by.

Just to the east we find Cygnus, the swan, in which Deneb stands, marking the bird's tail. To the south is Aquila, the eagle, in which the star Altair can be identified.

Looking to the west one sees the figure of Bootes, the bear-driver, in which is Arcturus, the second brightest star now visible. One way of locating it is to look in the northwest for the familiar great dipper, which is part of Ursa Major, the great bear.

At the lower part of the dipper are the pointers, whose direction, followed upwards and to the right, leads to Polaris, the pole star. But if the curved handle of the dipper is continued toward the south it leads right to Arcturus.

Fifth, and last, of the first magnitude stars that are shown is Antares, in Scorpius, the scorpion, low in the south. The red color of this star accounts for its name, which means "rival of Mars," since that planet is also famous for its redness.

Few First Magnitude Stars

Although the August evening skies contain fewer first magnitude stars than those of any other month, the present skies contain various other features of interest. Just to the west of Vega is Hercules, the champion, of which six stars form a gigantic butterfly, flying toward the west.

Just south of Hercules we see the large constellation of Ophiuchus, the serpent-bearer, referring to the snake which he is supposed to be holding, and which is represented by the constellation of Serpens. The head of the reptile is the part toward the east, and the tail that which lies to the west of Ophiuchus.

High in the west, just below Hercules, is Corona Borealis, the northern crown, a pretty little semicircle of stars that can easily be identified. The head of Serpens is represented by an X-shaped group of stars just to the south of the crown.

Directly south, next to the curving tail of Scorpius, one sees Sagittarius, the archer,

while higher in the sky, just above Altair, is Sagitta, the arrow. Whether it was fired by Sagittarius is not readily apparent!

No planet is shown on our map for August, but Saturn is visible earlier in the evening toward the west, in Virgo, the Virgin. It is close to the star Spica, which sets before the times for which the maps are prepared. Venus and Jupiter are both morning stars, rising in the east several hours ahead of the sun. Jupiter is higher, though not as bright as Venus. In addition, around Aug. 13, Mercury will make a brief visit to the morning sky, shining quite low in the east as dawn begins to break.

Good Meteor Seeing

August is a good month for observing meteors, or "shooting stars." These are best seen about Aug. 10 to 12, particularly after midnight, and they seem to radiate out of the constellation of Perseus, the champion, which our maps show low in the northeast. Hence they are called the Perseid meteors. They can be seen as often as one a minute at this time, considerably more than at other times.

Actually, it is an effect of perspective that makes these meteors seem to radiate from Perseus. If you are standing on the tracks of a long straight railroad, with telegraph wires on poles alongside, you will notice that all these parallel lines, tracks, wires, etc., seem to converge in the distance. If things were moving along these lines toward you, they would all seem to be radiating from the far-away vanishing point.

The Perseid meteors are moving through space in parallel lines, too, and it happens that each August the earth's orbital motion brings our planet into their path.

Of course, we cannot see them out in space—they are much too small. But as they enter the atmosphere, perhaps as much as a hundred miles above the ground, they are traveling at speeds of many miles a second. Gradually, as they get into air that is more and more dense, they are slowed by the friction and their energy of motion is released.

How Light Produced

It used to be thought that the glow of such a meteor, or shooting star, was merely due to the fact that the meteoric particle itself was heated to incandescence before it completely burned. However, it has been shown theoretically that not more than one percent of the light can originate in this way.

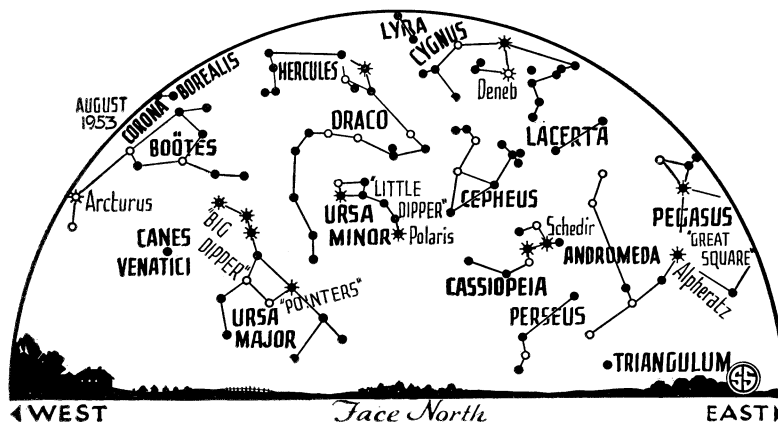
Studies of the light of a meteor with the spectroscope show that its spectrum is made up of bright lines against a darker background, and not of the continuous band of light from a glowing solid. Only glowing gases give a bright-line spectrum.

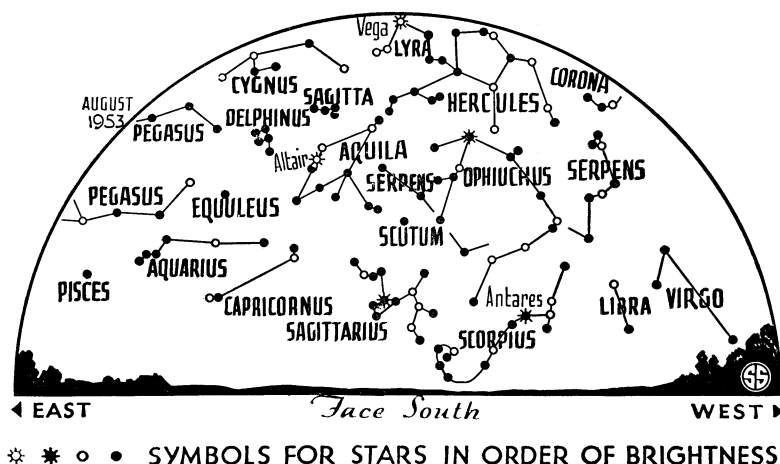
Apparently the meteor is accompanied by a tiny cloud of gas, and when this enters the atmosphere, its molecules hit molecules of air and the atoms are ionized or broken. As these atoms recombine, light is produced. Sometimes they may not come together immediately. Then a glowing trail may appear and persist, sometimes for seconds, or even for minutes.

Thus it is that the actual meteoric particle, which may be smaller than a pinhead, can produce enough light to be visible over a radius of many miles.

The paths in which the Perseid meteors are moving is shaped like a great elliptical ring, approaching the sun at one point and receding far in the distance in another. Their orbit happens to cross the orbit of earth at the position we occupy in August, and that is why we encounter them at this time.

Such an orbit is very much like a comet





orbit. Actually, it is a comet orbit—that of Swift's comet, which was seen in 1862. Other meteor showers move in paths of other comets, so it seems that they are cometary debris, left over after the comet itself has been depleted.

When we have a meteor shower, it is best seen after midnight. In the evening hours, we are on the "hind" side of the earth, and any meteors that reach us must be moving fast enough to catch up with us. But after midnight, when we are on the forward side, we meet them head on. So if you want to see the Perseids at their best, stay up late on nights around the 11th and 12th, and watch the northeastern sky.

Sometimes the moon is so bright that its glare interferes with the meteors, but this year it will be new on the ninth, just about the time the shower is reaching its height, and even a few days later, the moon will be setting during the early part of the evening.

Thus in the morning hours you will have

a completely dark sky in which to watch these fascinating "shooting stars."

Celestial Time Table for August

Aug.	EST	
1	10:16 p.m.	Moon in last quarter.
4	9:40 p.m.	Moon passes Jupiter.
5	9:10 p.m.	Moon passes Venus.
8	3:39 p.m.	Moon passes Mars.
9	11:10 a.m.	New moon.
		Partial eclipse of sun, visible in South Pacific and Antarctica.
12	early a.m.	Perseid meteors.
13	2:00 a.m.	Moon farthest, distance 252,200 miles.
	4:00 a.m.	Mercury farthest west of sun, visible for a few days around this date before sunrise.
15	6:13 a.m.	Moon passes Saturn.
17	3:08 p.m.	Moon in first quarter.
24	3:21 p.m.	Full moon.
25	1:00 p.m.	Moon nearest, distance 222,700 miles.
31	5:46 a.m.	Moon in last quarter.

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

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PSYCHOLOGY

Cleft Palate Parents

➤ PARENTS of a child born with cleft lip, hairlip or cleft palate often need treatment more than the child, Dr. Herbert K. Cooper of Lancaster, Pa., reported to the American Dental Association.

This is because the parents may suffer more than the child in their unhappiness. If they feel guilty or to blame, though the condition is not their fault, they cannot give the child the kind of care he needs for developing a healthy personality.

"The over-protection which the average mother gives the patient is as great a hazard for the individual's future life as the deformity itself," he said.

Dr. Cooper, who has been widely honored for his activities as director of the Lancaster Cleft Palate Clinic, reported that one in every 700 infants is born with cleft lip or cleft palate or both defects.

He said the most effective treatment for the condition calls for specialists in various fields, working together.

Dr. Cooper said that while many states have recognized the problem of the cleft lip-cleft palate child by providing surgical care and hospitalization, it is now recognized that surgery alone is not adequate and, in some cases, is actually detrimental.

He described the longtime treatment of each case at the Lancaster Clinic and emphasized that decisions concerning treatment are made only at group consultations of all specialists concerned in the case.

Included are a child specialist or pediatrician, a surgeon, an orthodontist or dentist specializing in mouth irregularities, a psychologist and a speech specialist, all working as a team.

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PUBLIC HEALTH

Rules to Avoid Infection in Blisters

➤ BLISTERS MAY come from both ill-fitting shoes and ill-fitting stockings. But even with a good fit on shoes and stockings, the first long vacation hike or a new pair of shoes may produce a blister.

To avoid this, try using a liberal amount of talcum powder inside both shoes and stockings. Another way to guard against blisters is to strap adhesive plaster firmly over the part of the skin where you suspect rubbing will cause a blister.

A blister may seem like a trifling, if painful ailment, but blisters have been known to have a fatal result. The danger is that when the skin is rubbed off, germs may enter the body and cause blood poisoning. The unbroken skin over the blister gives protection against infection. Ideally, therefore, the blister should be covered with a sterile dressing and the affected part of the body put at rest so the skin will not be rubbed off.

Since this is usually not practical, medical authorities advise opening the blister under aseptic, that is germ-free, conditions. This requires sterilizing the skin by gently swabbing with an antiseptic solution, sterilizing the hands (or at least giving them a good soap and water scrubbing), and the needle.

The needle should be inserted in the skin just beyond the edge of the blister and the fluid pushed through the opening by gently pressing the edges of the blister. A sterile dressing then should be firmly bandaged in place.

If the blister has already been rubbed open, cleansing with a saturated solution of boric acid followed by the sterile dressing is advised by one authority. The solution is made by dissolving two teaspoonfuls of boric acid in a glass of water and is applied with sterile cotton swabs.

If this seems too complicated as a home remedy, see a doctor. Be sure to see a doctor if the blister seems inflamed or infected.

Science News Letter, July 25, 1953



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