

ASTRONOMY

Venus Now in View

Three other planets can be spotted in the heavens between sunset and midnight during August. Largest star yet measured directly is in Hercules.

By JAMES STOKLEY

▶ ALTHOUGH MARS is the only planet indicated on the accompanying maps, Venus, Saturn and Jupiter are also in the heavens sometime between sunset and midnight.

The maps show the appearance of the skies at about 10 p.m., your own kind of standard time, at the beginning of August and an hour earlier in the middle (add one hour if you are on daylight time).

Very low in the west, just after the sun goes down, one may get a glimpse of Venus if the sky is quite clear in this direction. At the beginning of July the planet sets about half an hour after the sun, while this is lengthened to about three-quarters at the end of August.

Ordinary stars or planets would be quite invisible under such conditions, but Venus is very bright, of magnitude minus 3.3, and so perhaps it can be detected. During the coming months it will come into better and better view, and during the winter will be a brilliant object in the western sky at night.

You can engage in an interesting contest to watch the western sky regularly from now on to see when you can first locate it.

Saturn More Easily Seen

Saturn, though less than a sixtieth as bright as Venus, is more easily seen. It is in the constellation Virgo, part of which appears on our maps, although the part that Saturn is in is too far to the west. At the beginning of August it sets about 2¾ hours after the sun, while at the end of the month this is shortened to about an hour and a half.

Still later to set is Mars, more than twice as bright as Saturn. It is shown on the map of the southern sky in the constellation of Libra, the scales.

Finally, brighter than any planet except Venus, Jupiter appears about midnight, standard time, at the beginning of August, and around ten o'clock at the end.

Mercury, the last of the planets that can be seen with the naked eye, is not visible at all in August evenings, but will be seen low in the east before sunrise about the 29th.

Brightest of the August evening stars is Vega in Lyra, the lyre, which stands directly overhead at the times for which the maps are prepared. Just to the east of this group we find Cygnus, the swan, with the bright star Deneb, and to the south of Cygnus flies Aquila, the eagle, with Altair.

Low in the south, to the left of Mars, is Scorpius, the scorpion, with the star Antares. This name means "rival of Mars," applied

because of the red color, and with that planet nearby they may be easily compared.

The fifth star of the first magnitude to be seen is Arcturus, in the western sky. It is part of the constellation of Bootes. One way to locate it is to look for the familiar great dipper, which is now in the north-west, with the handle upwards and toward the left. If its curve is followed to the west, it brings you right to Arcturus.

Largest Measured Star

High in the west on August evenings there appears the constellation of Hercules which, though it contains no star as bright as the first or even the second magnitude, has several claims to interest. One is that it contains the largest star yet measured directly.

Hercules is just above the little semi-circle of stars which form Corona Borealis, the northern crown, and six of its stars form the outline of a butterfly.

The body of the insect is formed by the two stars on a line between Corona and Vega, in Lyra. One wing is toward the south and the other to the north, so the figure is divided between our northern and southern maps.

As the great mythological strong man, the butterfly forms the body, while his head is the third magnitude star, Ras Algethi, which is marked by name, so he is in the rather undignified position of standing on his head.

Ras Algethi is one of about a dozen stars big enough, and also sufficiently near, that their diameters have been measured with a device called the interferometer at the Mt. Wilson Observatory. This instrument gives their angular diameter, that is, the angle between two straight lines from the

observer to opposite edges of the star's disk. However, if the distance is known, this can be converted into miles. It turns out that Ras Algethi is some 800 times the sun's diameter, or nearly 700,000,000 miles.

On the western edge of the northern wing of the butterfly, about two-thirds of the way from the body to the tip, there is a hazy spot of light that can be detected with the naked eye only with difficulty and then only with a very clear dark sky.

This is the great cluster of Hercules, a globular mass of something like 100,000 stars that are revealed by the telescope. This object, one of the best known of a swarm of such clusters which surround our main galactic system of stars, is about 35,000 light years away from us.

At such a distance our sun would not be visible even with the most powerful telescope, so each one of the stars we see there must be far bigger than the sun.

Much more prominent than Ras Algethi is another star visible these evenings, likewise one of those whose diameter has been measured. This is Antares, the prominent red star in Scorpius, in the south.

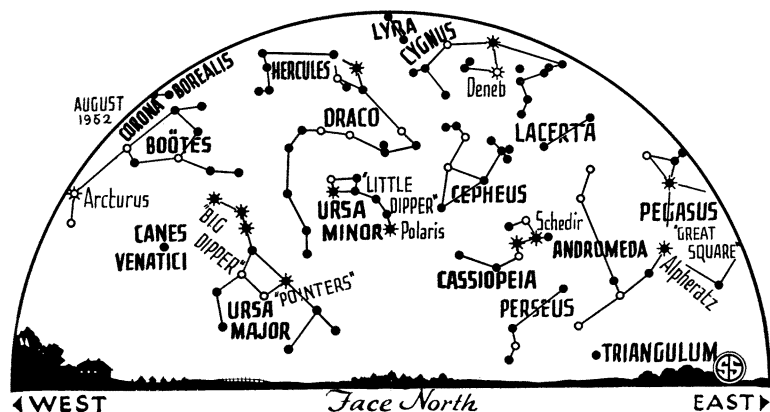
Its diameter is 285 times that of the sun, which makes it about 245,000,000 miles. Its distance is about 220 light years, compared with some 815 light years for Ras Algethi.

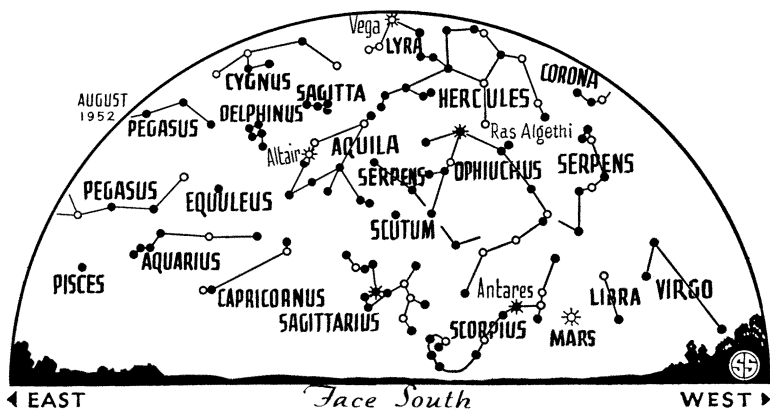
Shooting Star Month

August is generally one of the best months of the year for a display of meteors, commonly called shooting stars. During the night of the eleventh the earth crosses the Perseid stream of these cosmic dust particles, so we then encounter far more of them than normally.

As they are heated by friction with the earth's atmosphere, they burn up in a flash of light that we can see. Although the particles move in parallel paths, these converge in the distance, in the direction from which they came, with the result that they seem to radiate from Perseus.

Since the moon on the twelfth is at last





☼ * ○ ● SYMBOLS FOR STARS IN ORDER OF BRIGHTNESS

quarter, rising at midnight and interfering with the meteors which are most numerous in the early morning hours, the display this year will not be especially good.

August also brings two eclipses, though neither will be visible in this part of the world. On Aug. 5, the moon is partially eclipsed, as seen from Europe, Asia, Africa and Australia.

Aug. 20 brings an annular eclipse of the sun. Such an eclipse is one where the moon does not completely cover the sun, but even at maximum leaves a ring of that orb visible around it.

This effect will be seen along a path crossing South America from Peru, to the southeast through Bolivia, Paraguay, Brazil and Argentina. All of South America, Central America and a little of Antarctica will see the moon partially eclipse the sun.

Celestial Timetable for August

Aug.	EST	
5	2:40 p.m.	Full moon; partial lunar eclipse visible in eastern hemisphere.
	3:00 p.m.	Moon nearest, distance 221,900 miles.
12	early a.m.	Perseid meteors.
	8:27 a.m.	Moon in last quarter.
	11:44 a.m.	Moon passes Jupiter.
	1:00 p.m.	Mercury in direction of sun.
19	6:00 a.m.	Moon farthest, distance 252,500 miles.
20	10:20 a.m.	New moon, annular eclipse of sun, visible in South America.
22	12:58 a.m.	Moon passes Venus.
24	9:38 a.m.	Moon passes Saturn.
27	11:35 p.m.	Moon passes Mars.
28	7:03 a.m.	Moon in first quarter.

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

Science News Letter, July 26, 1952

AGRICULTURE

Buried Block Reveals Moisture Content of Soil

➤ FARMERS AND fruit growers who must depend upon irrigation for successful crop yields soon may have a new tool at their disposal.

It is a block, either plaster of Paris or nylon, through which electricity is made to flow. Buried in the ground, it tells whether the land needs more water.

In describing the new device to the colloidal symposium of the American Chemical Society in Los Angeles, Dr. George J. Bouyoucos, research professor of soil science at Michigan State College, East Lansing, said that irrigation water is scarce and expensive in many places.

"This method," he added, "has revealed that the same yield of crops can be obtained with considerably less irrigation water, bringing about large savings."

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HOME ECONOMICS

Scientific Jelly Making

➤ IF YOU are one of those ambitious housewives who likes to make her own jelly, you can do it with less trouble and disappointment than your grandmother had. You can buy the pectin needed to make jelly jell, instead of depending on the uncertain amount in the fruit itself.

Sugar, acid and pectin are three musts for jelly making. All three are present in fruits, but to varying degree. The riper fruit becomes, the less pectin it contains. That is why grandmother used fruits when they were a little underripe for her jelly making. This custom, however, sacrificed some flavor. As fruits ripen some of their natural acids are changed into what are technically termed esters. These compounds give scent and flavor to the fruits.

If you look over grandmother's recipes for jellies, you may find that she added two or three lemons. This was because the citrus fruits are high in pectin content and also in acid, needed to make the pectin set. You may find also that she frequently combined fruits in one jelly, for example, apple and plum, or quince and plum. This was

to take advantage of the larger amount of pectin furnished by the apple and quince.

The acid, sugar and pectin must be used in the right proportions to make the jelly set. One tested recipe from home economists calls for three cups of blackberry juice, four cups of sugar and 1 box of powdered fruit pectin. The rest of this recipe for spiced ripe blackberry jelly follows:

To prepare the juice: Crush thoroughly about 2 quarts fully ripe blackberries (not black caps). Place in jelly cloth or bag and squeeze out juice. Measure 3 cups into large saucepan. Add ½ to 1 teaspoon each cinnamon, cloves, and all-spice or any desired combination of spices.

To make the jelly: Measure sugar and set aside. Place saucepan holding juice over high heat. Add powdered fruit pectin and stir until mixture comes to a hard boil. At once stir in sugar. Bring to a full rolling boil and boil hard ½ minute, stirring constantly. Remove from heat, skim, pour quickly into glasses. Paraffin at once. Makes about eight six-ounce glasses.

Science News Letter, July 26, 1952

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