

ASTRONOMY

Saturn Visible in South

Along with Venus and Jupiter, which will be visible in the early evening, and Saturn, the August sky offers the opportunity to see the famous aurora borealis.

By JAMES STOKLEY

▶ ALTHOUGH SATURN is the only planet visible in August well into the evening, two others can be seen soon after the sun goes down.

Brightest is Venus which, at the beginning of August, sets about an hour and a half after sunset. It is so brilliant that it will be easy to locate, low in the west, if the sky is clear.

Jupiter, a little higher and farther to the south, follows about half an hour later. About a seventh as bright as Venus, Jupiter is still more brilliant than any other star or planet. On Aug. 22 Venus passes Jupiter, and they will form a brilliant pair in the sky, separated by a distance about that of the diameter of the full moon.

Saturn, about a sixth as bright as Jupiter, is low in the south in the constellation of Ophiuchus, the serpent-bearer, right above the star Antares, which is in Scorpius, the scorpion. Both star and planet are shown on the accompanying maps, which depict the sky as it appears around 10:00 p.m. your own kind of standard time—add one hour for daylight-saving time—at the beginning of August. The appearance is similar at the middle of the month an hour earlier, or two hours earlier as August comes to an end.

Five Bright Stars

Antares is one of five bright stars—that is, of the astronomer's first magnitude—visible in August evenings.

The most brilliant of these is Vega, in Lyra, the lyre, which is almost directly overhead at the hours for which the maps are prepared. Second brightest is Arcturus, in Bootes, the bear-driver, high in the west. Antares is in third place.

Glancing downwards a little from Vega, toward the eastern horizon, you will come to Cygnus, the swan. In this group one finds Deneb, fourth brightest of our August stars. The fifth is not far away. It is Altair, in Aquila, the eagle, high in the south. Altair is easy to recognize because it is attended by two fainter stars. The one below is called Alshain and the one above Tarazed; they are, respectively, of the fourth and third magnitudes.

Low in the southwest is Scorpius, in which Antares appears. The curved row of stars in this group is supposed to form the scorpion's tail, as it is pictured on the old star maps, which drew the figures around the stars. A little higher, and to the left, is Sagittarius, the archer, now in the best position of the year for northern countries.

It is hard to recognize an archer in this group but one can easily find a teapot. The handle is to the left and the spout to the right, as if its hot tea were being poured on the scorpion's tail! The six stars that make the handle and the lid also form a dipper, which is sometimes called the milk dipper, perhaps because the Milky Way passes through this part of the sky.

The other two dippers, which are much better known, are in the northern sky.

To the northwest we see the Great Dipper, the handle extending to the left, toward Arcturus. In the dipper's bowl, opposite the handle, are the "pointers," which show the direction to Polaris, the pole star, around which all the other stars seem to wheel once every day. This star is at the end of the handle of the Little Dipper, which extends upward and to the left.

Northern Lights Glow

During this summer of 1957, if the sky is dark and you are away from the glare of city lights, there is a good chance that you may see the aurora borealis, the "northern lights."

The aurora has various forms. Sometimes it is just a pale green arch, low in the northern sky. After remaining quiescent for a while, rays extending toward the zenith may develop along the upper edge. Sometimes the arcs may pulsate, or beams like those from a battery of huge searchlights may appear for a few seconds at a time.

Other times the arc with its associated rays may rise until it is nearly overhead, with the rays seeming to converge at a single point to form an auroral crown.

Or again "waves of excitation" may move rapidly upward from the northern horizon, every few seconds. Such waves light up rays, arcs and other forms, such as luminous draperies, as they go past. While yellow-

green is the most usual color seen in the aurora, many others have been observed. The draperies are often red, while pale blues and even violets have been reported by observers.

Although auroras occur in the earth's atmosphere, at heights of 60 or more miles, they are caused by the sun.

When the sun reaches its maximum of activity, which varies over a cycle of about 11 years, and sunspots are most numerous, as they are about now, it emits large quantities of fragments of atoms bearing electrical charges—some positive, some negative. These enter the earth's atmosphere, especially near the poles, where they are drawn in by the magnetic field of our planet. In some manner, not yet fully understood, the gases in the upper atmosphere are made to glow, resulting in auroras.

Auroras Reported Low

A recent report on auroras published in Great Britain suggests that they can occur as low in the atmosphere as 24 miles above the earth's surface.

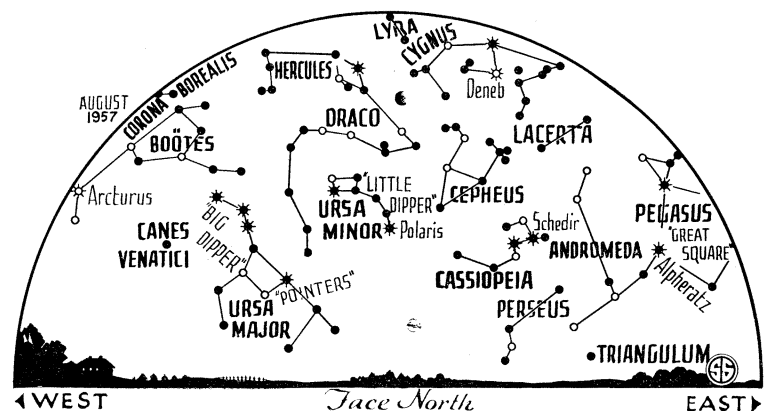
Wallace B. Murray of the Geophysical Institute, College, Alaska, found this by studying the radiation emitted by atmospheric ozone during an aurora.

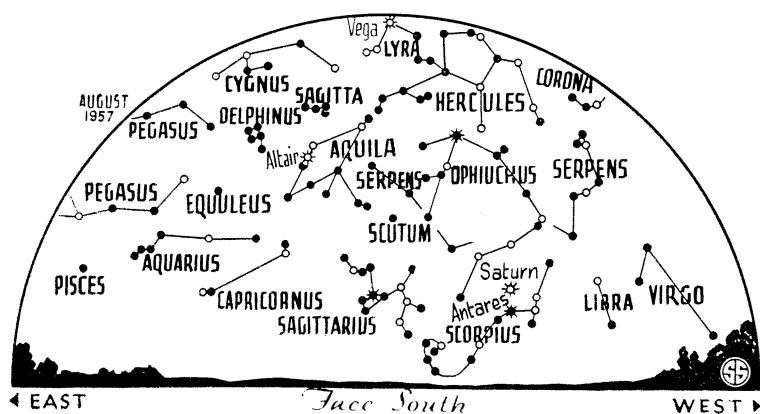
Atmospheric ozone is the triple form of life-giving oxygen that provides a blanket protecting living things from the sun's intense ultraviolet radiation. Without this blanket, life would be burned to a crisp.

Mr. Murray is measuring the infrared radiation given off at night by ozone. Small changes in its intensity are normal, but on March 26, he observed an "exceptionally large increase," amounting to 18%. This increase occurred immediately after an aurora had moved into the region of sky covered by this instrument.

The scientist believes that the increase was due either to more ozone being present or its temperature being higher. He points out in his report, which appears in *Nature* (July 20), that this relatively low-level occurrence might have some influence on the weather.

There is now going on, all over the





☼ * ○ ● SYMBOLS FOR STARS IN ORDER OF BRIGHTNESS

world, the greatest concerted scientific effort ever attempted, to learn more about the earth and its environment. This is the International Geophysical Year and the earth satellite program is part of it, designed to tell more about the upper atmosphere itself.

Another important group of studies is concerned with the auroras, both of the north and south polar regions, along with other effects which the sun has on the earth. Indeed, the period from July 1, 1957, to Dec. 31, 1958, was chosen for the IGY largely because solar activity is now at maximum, and these effects are at their height, permitting observation by scientists around the world.

Celestial Time Table for August

AUG.	EST	
2	1:55 p.m.	Moon in first quarter
4	4:03 p.m.	Moon passes Saturn
10	8:08 a.m.	Full moon
12	early a.m.	Meteors visible radiating from constellation of Perseus
	9:00 a.m.	Moon farthest, distance 252,400 miles
18	11:16 a.m.	Moon in last quarter
22	10:00 a.m.	Venus passes Jupiter
25	6:32 a.m.	New moon
27	11:52 a.m.	Moon passes Jupiter
	8:16 p.m.	Moon passes Venus
31	10:33 p.m.	Moon passes Saturn
	11:34 p.m.	Moon in first quarter

Science News Letter, July 27, 1957

PUBLIC HEALTH

Sex Affects Longevity

➤ IN THE LAST 50 years, men have not only continued to die off faster than women, but the difference between their life expectancies is on the increase.

The Institute of Life Insurance, New York, reports that in 1900 the life expectancy of males of all races was 46.3 years as against 48.3 for females. In 1955, the top ages were 66.7 for the males and 73.6 for females, the difference having increased from two years to seven years.

Some experts have claimed that men just live a more stressful life these days. This explanation is contradicted by a study of men and women who had taken religious vows as Catholic Brothers and Sisters made by Francis C. Madigan, S.J., University of North Carolina, Chapel Hill.

Brothers and Sisters were chosen as the study group since they were considered to have about the same amount of cultural stress and strain. Any difference in life expectancy found between them must then be ascribed to biological differences.

"While in the general public single men are more given to dissipation than single women, a life of dissipation is equally out of the question for both sexes in religious communities," Father Madigan says.

Furthermore, Brothers are not subject to military service after entering religious life and the daily regime of both Brothers and Sisters is extremely similar.

Life records of more than 9,000 Brothers

and 32,000 Sisters were compiled covering the period 1900 to 1954. They showed that even in these matched communities the males were still being outlived by the females, even though both groups enjoyed longer life than the average population.

Another finding was the spectacular improvement in mortality of young Sisters under observation from the early to the late years of the study. This suggests that, contrary to popular belief, women may be no more resistant to infectious or contagious diseases than men, under conditions of equal stress, but that their gain in longevity is mainly due to a greater resistance to the degenerative diseases.

The finding that biological factors played by far the chief part in differentiating the death rates of these two groups is very important, Father Madigan reports.

The same factors probably are at work in the general public and the social stresses associated with the man's role in society play only a small and unimportant part in causing the difference in life span between the sexes.

If medical science can find out what these biological factors are, the growing sex difference in life expectancy may be eliminated.

The results of Father Madigan's study are contained in a report in *The Milbank Memorial Fund Quarterly*.

Science News Letter, July 27, 1957

BIOCHEMISTRY

Blood Pressure Secrets From "Hot" Tomatoes

➤ "HOT" TOMATOES may furnish a clue to certain problems related to high blood pressure.

Dr. Irving Zabin, physiological chemist at the University of California at Los Angeles Medical School, is using radioactive tomatoes, the garden variety, to study certain chemical structures similar to those found in cholesterol. Cholesterol is the fatty substance found in the body thought by some scientists to be related to high blood pressure.

The center of interest is the substance that makes tomatoes red, a carotenoid pigment. This substance contains a multiple of a five-carbon-atom structure, which is also found in cholesterol.

Dr. Zabin is currently tracing the formation of the tomato red pigment.

Compounds containing radioactive carbon are injected into tiny holes drilled in green tomatoes, and the holes are sealed with paraffin. When the tomato ripens, that is when the carotenoid red replaces the chlorophyll green, the red pigment is extracted. It is then analyzed to see how the radioactive carbon atoms are incorporated in the chemical structure.

While these studies have no direct bearing on the treatment of high blood pressure, they are a basic step in gathering the vast amount of data necessary to understand how nature builds complex substances such as cholesterol.

Science News Letter, July 27, 1957

ENTOMOLOGY

Mosquitoes and Flies Win Unpopularity Poll

➤ MOSQUITOES and house flies share top honors in a nation-wide unpopularity poll conducted by the U. S. Department of Agriculture. About three-fourths of the 33 states reporting in the survey listed these insects among the most important household pests for 1956.

Several insects normally found out of doors have gotten into enough homes to become serious problems. Clover mites were among the top ten household pests in 11 states; boxelder bugs in five and earwigs in five states.

Ants, however, seem to stick pretty much to picnic grounds. Only eight states listed them as an important household insect problem.

Termites, carpet beetles and clothes moths, and cockroaches turned up among the top ten in more than half the state lists.

The survey covered all sections of the country and included insect pests affecting livestock. Number one pest in this category was the horn fly, with cattle grubs, cattle lice and stable flies as runners-up.

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About three in ten households in the U. S. eat less calcium and one in four less ascorbic acid than recommended.