ASTRONOMY

Two Bright Planets

Dominating the Evening Skies in August Are Venus, Low in the West at Sunset, and Jupiter, in East

By JAMES STOKLEY

VENUS and Jupiter, brightest of the planets, are the principal objects which decorate the evening skies of August. The former is seen low in the southwest, soon after sunset. The latter, slightly inferior in brilliance though brighter than any star, appears in the east about as soon as Venus goes down in the west. On August 21 Jupiter is directly opposite the sun. Then it rises at sunset.

In the beginning of the month it may be possible to obtain a glimpse of a third planet, Mercury. On the last day of July it was at its greatest distance east of the sun, and for a few days before and after such a time it can generally be seen in the gathering western twilight. The only other planet that August brings into view is Saturn, which rises about midnight. The remaining naked eye planet, Mars, is now too nearly in line with the sun to be seen.

Vega, directly overhead, in the constellation of Lyra, the lyre, is the brightest star seen in August. Below it, to the northeast, is Deneb, of Cygnus, the swan, a figure often referred to as the northern cross. The cross is on its side, and Deneb is at the northern end. To the southeast of Vega stands Aquila, the eagle, with Altair. This star is attended both above and below by a fainter star, which helps find it.

Summer Group

Low in the south is a characteristic summertime group, Scorpius, the scorpion. Red Antares marks the heart, and the tail curls down to the left. Following this figure comes Sagittarius, the Archer, an arrangement easily found, though it contains no star of the first magnitude. In the east, resting on one corner, is the "great square of Pegasus," the winged horse, while in the northwest is the always visible great dipper. The curved handle leads to the west, and to Arcturus, bright star in Bootes.

In the constellation of Lyra we can easily find Vega, which is, of all the stars in the sky, the fourth brightest. Of those which can be seen in the United States it is exceeded only by Sirius, the dog-star, which is so conspicuous in winter evenings. But there is in Lyra another object of interest, the star called "epsilon Lyrae." This is simply the astronomer's designation, and really means that it is the fifth brightest star in the group. But with Lyra now so high in the sky, it can be located without difficulty. First of all, look near Vega for two stars, much fainter, which make with it an equilateral triangle. The one to the south is at the northern corner of a little parallelogram, the other is epsilon Lyrae. To the naked eye it generally appears a single star. But if your eyesight is unusually keen, or if you use a pair of opera glasses or binoculars, you can see that it consists of two stars. Now, if you look at the pair through a medium-sized telescope, you find that each member is also a pair, so that the group is sometimes called the "double-double."

Phases of Venus

Venus and the moon are interesting to watch this month. On the 28th the moon passes the planet, which is only about two lunar diameters to the north. The moon is in the crescent phase, and if you then look at Venus through a telescope, you would find that it looks like the moon when just past first quarter. During this month Venus is drawing between the earth and the sun. On the first of August its distance is almost the same as the sun, about 92,639,000 miles. But on August 31 it will have approached to within 70,174,000 miles. Venus, like the earth, is illuminated only by the sun, so one half is bright, the other dark. As it comes between the sun and earth, and as the sun-lit half turns from us, it assumes a crescent phase, so that it really goes through phases similar to those of the moon itself.

The moon's phases are indicated below. The first two weeks will have moon-lit evenings, and so will the last few days. On August 7 the moon will be at apogee, or farthest from earth, with a distance of 252,100 miles. It will be at perigee on the 23rd, when it approaches to a mere 224,700 miles.

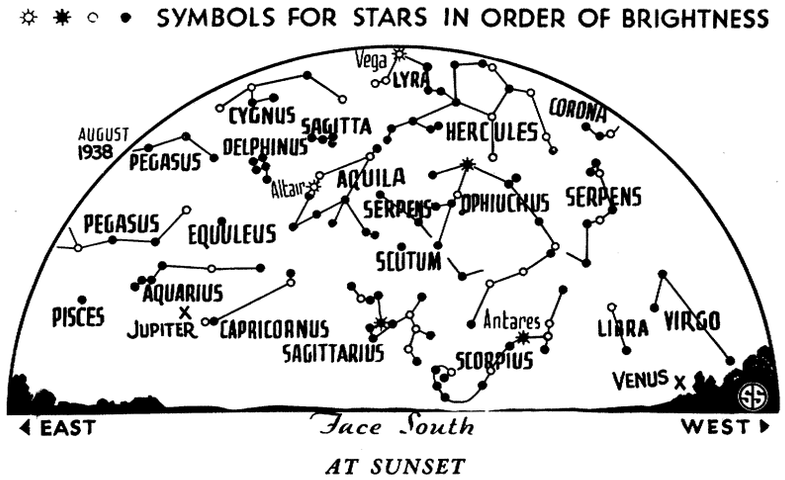
Phases of the Moon

		E. S. T.
First quarter	Aug. 2	9:00 p.m.
Full moon	Aug. 11	12:57 a.m.
Last quarter	Aug. 18	3:30 p.m.
New moon	Aug. 25	6:17 a.m.

Science News Letter, July 30, 1938

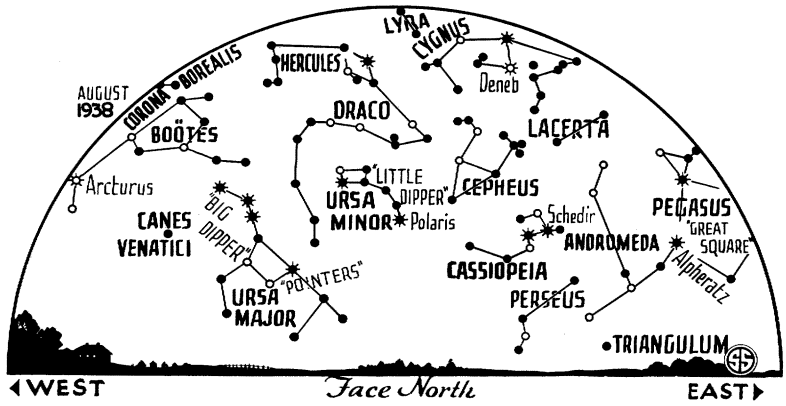
Water at the bottom of the ocean is very cold, even at the equatorial region.

The village blacksmith is being replaced by the repair man who can mend farm machinery, vacuum cleaners, sewing machines, and harness.



AT SUNSET

In the early evening you can see two bright planets one in the east, the other in the west.



WINGED HORSE

The great square of Pegasus may be seen in the east.

PHYSICS

Spectroscope Becomes Tool For Standard Medical Tests

Extremely Small Amount of Metal Impurities Can Be Detected With This Instrument; Aids in Research

FOR the first time in the history of medicine, standards depending on analysis with the spectroscope, science's most powerful research tool, have been accepted for a medicinal product by the American Medical Association.

This was reported to the Massachusetts Institute of Technology Spectroscopy Conference by Dr. Henry R. Kreider of the American Medical Association's chemical laboratory who related the spectroscopic requirements which riboflavin, or vitamin B_2, must meet to gain approval of the A.M.A.'s council on pharmacy and chemistry.

Heretofore, the standards for medicinal products have been determined largely by chemical and physical methods but the spectroscope, Dr. Kreider said, provides an "excellent means of standardization" and he indicated that it would probably find wider and wider use with passing time.

Small Amounts Found

Dr. Kreider stressed the ability of the spectroscope's powerful eye to detect extremely small but nevertheless therapeutically significant amounts of metals in medicinal compounds, whether they are present as impurities or as physiologically active ingredients.

In one case he described, a salve claimed to contain mercury in organic combination baffled all attempts to detect the mercury chemically but the spectroscope quickly revealed its presence, although in an amount much smaller than that claimed.

The spectroscope has also been very useful to the laboratory in examining physical therapy equipment such as therapeutic lamps and ultraviolet ray lights, he declared, for it enables precise investigations of their emissions and easy comparison with standards.

Still another example of solving puzzling problems, accurately, quickly and cheaply, Dr. Kreider said, is the use of the spectroscope in testing portions of a patient's skin for metals, wherein a small piece of tissue is removed and examined under the spectroscope.

O. Ivan Lee and Thomas A. Wright, both of Lucius Pitkin, Inc., reported their comprehensive attempt to correlate the 2700-odd recognized minerals into an organized table which would enable the most precise and careful analysis.

The result is a simple but extensive chart of minerals, designed for daily use by the spectroscopist and mineralogist, a distinct contribution to the art of determinative mineralogy. It is the first set of tables of this nature in the field since 1925.

Used on Vitamin B_1

A significant chapter in the history of science was related here when Dr. A. E. Ruehle, of the Bell Telephone Laboratories, a member of the group whose research paved the way for the laboratory manufacture of vitamin B_1, the anti-neuritic vitamin, back in 1936, told the story of the research.

Dr. Ruehle was a member of the group working under Dr. R. R. Williams who applied the spectroscope to learn the manner in which the atoms of the vitamin are hitched together and thus provide the clue most badly needed for duplicating nature's handiwork in the laboratory.

Ultraviolet absorption spectra were particularly well fitted for this work, Dr. Ruehle pointed out, for not only does the delicate technique yield precise analyses, but it has the added advantage of requiring only minute amounts of the substance under investigation for these tests. This was a tremendous advantage over other analytical methods with vitamin B_1 because only small amounts are available for study.

In the research unusual and extensive use was made of absorption spectra in an effort to secure hints as to what products were formed in various chemical reactions with the vitamin, how the atoms in the vitamin molecule divided, and to confirm later chemical findings.

The vitamin molecule, it was found, can be chemically split into two parts and by comparing the tell-tale spectra of one of these and its derivatives with those of corresponding derivatives of a chemical known as thiazole, strong evidence was obtained that there was a so-called thiazole ring in the vitamin. This finding, incidentally, was later confirmed by the chemical synthesis of this part of the vitamin and was given by Dr. Ruehle as the first evidence of a thiazole derivative in nature.

Similarly the other portion of the vitamin molecule was shown by absorption spectra to contain a pyrimidine ring and it was indicated that at a certain place on the ring an amino group was substituted for another group. Use of absorption spectra also gave the investigators the first evidence of the manner in which these two rings were linked together in the vitamin molecule.

From this information Dr. Williams and his associates were able to establish absolute chemical proof of the manner in which all the atoms comprising the complex vitamin molecule are hitched to each other and furnished chemists