

ASTRONOMY

Two Planets Visible

Jupiter, more brilliant than Saturn, joins it in the November evening sky. Similar names for constellations among scattered peoples suggest common plan.

By JAMES STOKLEY

► TO THE BRIGHT STARS of the late autumn evening, which herald the magnificent display that winter always brings, we have this month the added attraction of two bright planets. One is Saturn, which has been seen for some weeks past, while the second is Jupiter, even more brilliant, which now makes an appearance on the accompanying maps for the first time in many months. On these maps are shown the appearance of the heavens at 11:00 p.m. wartime, on November 1, and an hour later for the middle of the month.

A good figure from which to start finding your way about the heavens is that marked "great square," in the constellation of Pegasus, the winged horse, high in the southwest. South of the square, near the horizon, is Piscis Austrinus, the southern fish, with Fomalhaut, one of the most southerly bright stars visible from the United States. Directly west is Aquila, the eagle, with first magnitude Altair. Farther north is the northern cross, marking Cygnus, the swan. The top of the cross, at which is the star Deneb, slants to the right. Under the cross is Vega, in Lyra, the lyre.

Look to the East

It is to the east, however, that we must look for the planets and bright stars that are now returning to view. Near the horizon is Orion, the warrior. You can easily recognize this because of the three stars in a vertical row, which mark Orion's belt. To the left of the belt is Betelgeuse, and to the right is Rigel. Above Orion is Taurus, the bull. Aldebaran is the brightest star in the group, but also passing through it is Saturn, above and even brighter. The magnitude of the planet, which shines, as do all planets, by reflected sunlight, is 0.2, or about two and a quarter times as bright as the star, which is giving off light itself.

To the left of Taurus we find Auriga, the charioteer, with first magnitude Capella. And below Auriga are Gemini, the twins. Castor and Pollux are the

two bright stars in this figure, but below them, much brighter than either, is Jupiter. This planet, when so low in the sky, is not as brilliant as when it rises higher, either later in the night, or later in the year.

The origin of the constellation figures is lost in antiquity, but there are many bits of evidence that there was some system in mind among their inventors, whoever they may have been. We find the same names often given to the same star groups, even among widely scattered peoples. And in several cases we find several constellations connected in curious ways.

Wet Constellations

Among those to be seen these November evenings, for example, are a number which have to do in one way or another with water. Just south of the great square of Pegasus is Aquarius, the water carrier. This constellation may be recognized by a group of four stars forming the water jar, which the figure holds. Three of these stars form a triangle, with the fourth in the center. From this jar a stream of water is imagined to be flowing southward, into the mouth of the southern fish, Piscis Austrinus.

In many ancient nations the figure was pictured in the same way, and even certain of the American Indians called it "Kumbha," which means "a water jar." The Arabs made a slight alteration, in deference to their religious rules

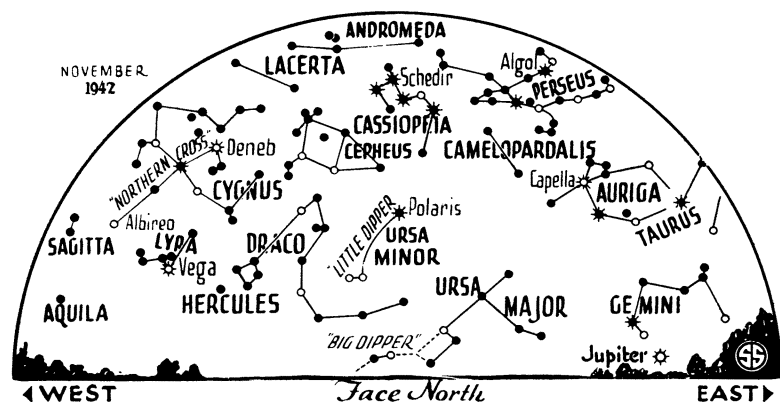
against portraying the human figure. To them it was a mule carrying two barrels of water on his back.

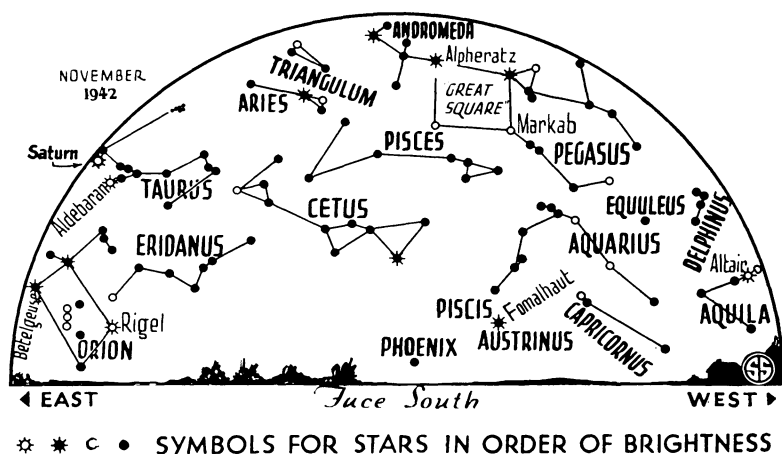
There are other moist constellations, too, also visible these November evenings. There is Capricornus, the sea goat, below Aquarius and to the right of Fomalhaut. There are the fishes, Pisces, which entwine the square of Pegasus, to the left and below. There is Cetus, the whale, below Pisces. And there is Eridanus, the river, which flows from Cetus towards Orion.

Rainy Season a Reason

An explanation, perhaps of the reason that this part of the sky, with all its watery significance, was made into a sort of celestial sea, was that the sun passed through this region in the rainy season. Coincidence would hardly account for it, and this is one reason that many believe the constellation figures to have originated in some one place.

To the student of meteors, those flashes of light across the nighttime sky commonly called shooting stars, the month of November is a time of especial interest. This month brings those of the Leonid showers, which seem to radiate from the figure of Leo, the lion, a group which rises in the east about 1:00 a.m. Any Leonid meteors seen before this time will be seen shooting upwards from the eastern horizon. In the early morning hours, when Leo has risen, they will seem to emerge from that section of the sky in all directions. Actually, however, the meteors, each of which is scarcely larger than a grain of sand, are moving through space in parallel paths, and these paths converge in the distance, like the parallel tracks of a railroad.





On the average, on the night of November 15, when the Leonids will be at their height, about twenty will be seen an hour, though the number is greater after 1:00 a.m. (wartime, or midnight by eastern standard time) than before. This is because we are then on the advancing part of the earth, and meet the meteors head-on. Those reaching us in the earlier hours must catch up to us.

Celestial Time Table for November

Nov.	EWT
1	2:18 a.m. Moon in last quarter.
	8:21 p.m. Algol at minimum
4	5:10 p.m. Algol at minimum
8	11:19 a.m. New moon.
10	1:00 p.m. Moon nearest, distance 225,300 miles.
12	1:00 p.m. Jupiter stationary, starts retrograde or westward motion among stars.
15	2:56 a.m. Moon in first quarter.
16	Early a.m. Leonid meteors.
19	1:14 a.m. Algol at minimum.
21	10:03 p.m. Algol at minimum.
22	4:24 p.m. Full moon.
23	10:50 a.m. Moon passes Saturn.
24	6:52 p.m. Algol at minimum.
25	7:00 a.m. Uranus nearest, distance 1,713,000,000 miles.
26	10:00 a.m. Moon farthest, distance 252,200 miles.
27	7:49 a.m. Moon passes Jupiter.
30	9:37 p.m. Moon in last quarter.

Science News Letter, October 31, 1942

GENERAL SCIENCE

"Rules of Reasoning" Urged for Modern World

AMIDST FIGHTING the war, scientists both in the United States and in England are marking the tercentenary of the birth of Sir Isaac Newton. His contributions to optics, mechanics, astrophysics and mathematics had such a radical effect upon scientific progress that they are fundamental to our whole civilization.

Newton's great work was the Principia, pronounced the greatest production of the human mind. In evaluating the

impact of Newton upon the world, the new British scientific quarterly, *Endeavour* (October) recommends to scientists today Newton's "rules of reasoning" formulated in 1687, saying: "Strict adherence to them would swiftly dispel the miasma of unfounded hypothesis that still from time to time vitiates the atmosphere of science." The world at large may be similarly admonished.

Here are Newton's rules:

1. We are to admit no more causes of natural things than such as are both true and sufficient to explain their appearances.
2. Therefore to the same natural effects we must, as far as possible, assign the same causes.
3. The qualities of bodies, which admit neither intensification nor remission of degrees, and which are found to belong to all bodies within the reach of our experiments, are to be esteemed the universal qualities of all bodies whatsoever.
4. In experimental philosophy we are to look upon propositions inferred by general induction from phenomena as accurately or very nearly true, notwithstanding any contrary hypotheses that may be imagined, till such time as other phenomena occur, by which they may either be made more accurate, or liable to exceptions.

Science News Letter, October 31, 1942

GENERAL SCIENCE

Smithsonian Research Adapted to War Effort

➤ SMITHSONIAN INSTITUTION research programs have been adapted to the needs of the country at war. Since the United States was thrust into the conflict by enemy aggression, over 500 scientific problems have been presented

for solution by the Institution's specialists. They range through all the sciences, from the workings of machines and weapons in its extensive collections to the languages and customs of South Sea Island tribes.

This is the fourth war in which the Smithsonian Institution has functioned as an arm of the government. In previous conflicts queries were mainly in the field of mechanics and invention. In this total war, they run through the whole alphabet of the sciences, from anthropology to zoology.

A special committee has been appointed for the coordinating of the scientific war efforts of the Institution's staff of nearly 100 scientists. Under the chairmanship of Carl W. Mitman, historian of inventions, it comprises also L. B. Aldrich, physicist, Wm. N. Fenton, ethnologist, Herbert Friedmann, biologist, and W. P. True, chief of the Smithsonian editorial division.

Despite immediate urgency of war work, the Institution's normal aims of peaceful, constructive research are not being shelved, declares Secretary Charles G. Abbot. Even the programs that have had to be suspended because of the war are left in such condition that they can be resumed as promptly as possible on the return of peace.

Science News Letter, October 31, 1942

PUBLIC HEALTH

Salesmen Pinch-Hitting For Doctors as Advisers

➤ SALESMEN are successfully pinch-hitting for doctors on the staffs of several health departments and there should be more such use of lay personnel in these days of acute doctor-shortage, Dr. R. A. Vonderlehr, U. S. Public Health Service, told the National Conference on Venereal Disease Control Needs in Wartime at Hot Springs, Ark.

The salesmen, of course, are not treating patients. But men who used to sell vacuum cleaners, electric refrigerators and the like have been given training in the basic facts of venereal disease and are now successfully selling the public on methods of protection against syphilis and gonorrhea.

The syphilis spirochete and the gonococcus are not part-time saboteurs, Dr. Vonderlehr pointed out, urging that all State health departments use full-time salesmen or other trained lay personnel to combat these foes by health education.

Science News Letter, October 31, 1942