

ASTRONOMY

Saturn and Jupiter Visible

Three bright stars now seen in the eastern sky will become even more prominent in upcoming months. June 21 marks official beginning of summer in Northern Hemisphere.

By JAMES STOKLEY

► BRILLIANT JUPITER, to the south, and Saturn, conspicuous although it is less than a sixth as bright, are two of the principal objects seen in the June evening sky. Both of these planets are shown on the accompanying maps, which depict the heavens as they look about 10:00 p.m., your own kind of standard time (add one hour for daylight saving time) at the first of June, or an hour earlier at the middle of the month.

The stars are the background against which the man-made earth satellites can be seen as they flash briefly across the heavens.

Jupiter is in the constellation of Virgo, the virgin, and just above the brightest star in that group, Spica. On the astronomical brightness scale, Spica is classed as magnitude 0.9, but Jupiter is now minus 1.8, which is about 12 times as bright. Saturn, in Ophiuchus, the serpent-bearer, is of intermediate brightness, with magnitude 0.2.

A little to the right of Saturn you will see Scorpius, the scorpion, with Antares, a bright star that is distinctly red in color. And over in the west, to the right of Virgo, stands Leo, the lion, with Regulus and Denebola. Low in the northwest, parts of Gemini, the twins, and Auriga, the charioteer, are still visible. Pollux and Capella, first magnitude stars in these groups, appear much fainter because they are close to the horizon and there is so much absorption of their light by the earth's atmosphere.

Bright Stars in East

In the east you will find three bright stars that will become even more prominent during the coming months. These are Vega, in Lyra, the lyre; Deneb, in Cygnus, the swan, which is just below Lyra; and Altair, in Aquila, the eagle, to the right of Cygnus.

Another name for the swan is the Northern Cross, which is now seen in a partially inverted position, for Deneb is at the head of the cross.

The Great Dipper, part of Ursa Major, the great bear, stands high in the northwest. Dubhe and Merak, the "pointers" in the bowl of the dipper, are below; if you follow them to the right, you come to Polaris, the pole star, in Ursa Minor, the lesser bear.

The dipper's handle forms a guide to other prominent stars. If you follow its curve, through Alioth, Mizar and Alkaid, toward the south, you come to brilliant Arcturus, in Bootes. Continuing still farther, it brings you to Spica, and Jupiter.

In June, although Mercury is too close to the sun to be seen, Venus and Mars are visible later in the night. Mars comes up

about three hours ahead of the sun. Its brightness is almost as much as that of Saturn, and its red color makes it easy to identify. It is now in Pisces, the fishes.

Venus, nearly five times as bright as Jupiter, is in Taurus, the bull, rising about two hours before the sun.

On June 21 the sun will reach its farthest north position for the year. This event, which marks the beginning of summer in the Northern Hemisphere, is called the summer solstice. It occurs at 4:57 p.m., EST. At that moment the sun will be directly over a point in the Pacific Ocean, on the Tropic of Cancer, and some 500 miles north-east of Hawaii.

Jupiter's Motion Visible

With Jupiter so close to Spica, a star that occupies a fixed position in the sky, the movement of the planet is readily seen.

If you have been watching it during recent months, you will have noticed that it has been moving westerly among the stars since Feb. 15. This is called its "retrograde," or backward, movement. Actually Jupiter, like the earth and all the other planets, is going around the sun in the same direction, which is from the west

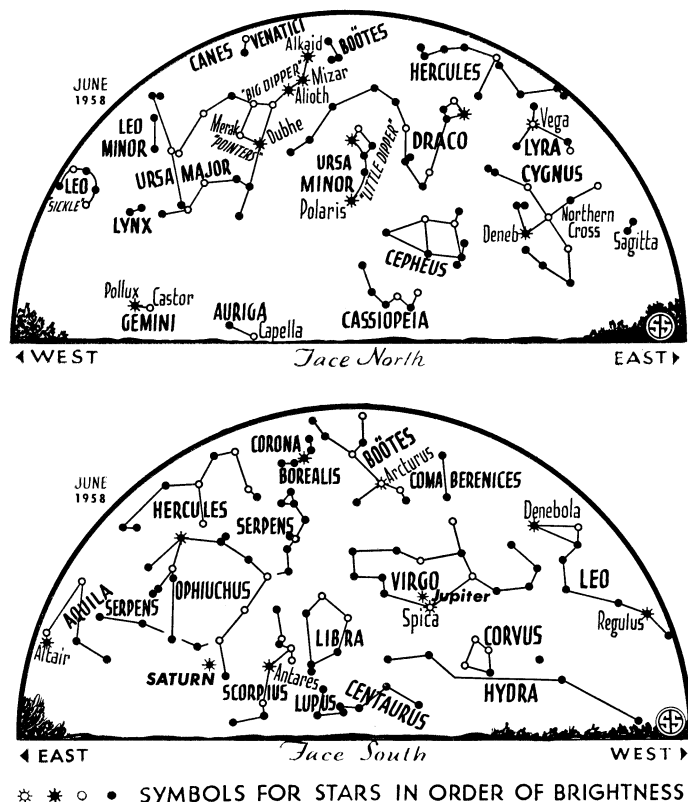
to the east. But the nearer a planet is to the sun, the higher the speed. The earth's mean velocity in its orbit is 18.5 miles per second, compared with 8.1 mps for Jupiter.

Since February, both earth and Jupiter have been in about the same direction from the sun. With the earth's greater speed, it has pulled past the outer planet, however. Viewed against the background of distant stars, therefore, Jupiter has seemed to move backwards, toward the west. In the same way, if you are traveling on an express train and pass a freight train on the next track, the slower freight may seem to be going the other way, even though actually it is moving in the same direction that you are. On Feb. 15 the earth began to pass Jupiter. By June 19 it will have pulled by and Jupiter will resume its usual, direct, easterly motion among the stars.

Also, the earth is now passing Saturn which is opposite the sun and closest to the earth (839,900,000 miles away) on June 13. Saturn, whose orbital speed is six miles per second, is also moving backward among the stars, as it has been since April 4. On Aug. 24 it will resume its direct or eastward movement.

At this time of year we have the opportunity of catching a fleeting glimpse, in the evening sky, of a prominent constellation which can never be seen completely from most parts of the United States. This is Centaurus, the centaur.

A few of the northernmost stars in this constellation are shown on the map of the



southern sky, just above the horizon. The rest of the group is so far south that it fails to rise at all. The farther south you are, the higher these stars rise, and from southern Florida on June evenings, if it were perfectly clear right down to the southern horizon, you would see two very bright stars in the centaur, Alpha and Beta Centauri.

Sun's Closest Star

Alpha Centauri is famous because it is the sun's closest neighbor in space. Actually it is a double star, consisting of two separate orbs, revolving around a common center of gravity. They have a more distant and fainter companion, which may be a little closer than the bright pair. This is called Proxima.

The distance of the Alpha Centauri system is about 26 million million miles, or 4.3 light years. That is, their light, which travels 186,000 miles every second, takes that many years to reach us. If, in a scale model, the period at the end of this sentence represented the sun, Alpha Centauri would be a colon five miles away!

The centaur, it will be recalled, was a mythological creature with the head and shoulders of a man and the body and legs of a horse. This constellation, on the old star maps, was shown holding a spear which he was using to defend himself from a wolf, represented by the constellation of Lupus, to the left of Centaurus.

The hind legs of the centaur are a very famous group of stars, for these make up the Southern Cross, the constellation Crux. Originally considered part of Centaurus, it is now listed separately. From southern Florida, and the vicinity of Brownsville, Texas, the Southern Cross just rises above the horizon; from Central and South America it comes well up into the sky.

Crux is directly south of Corvus, the crow, a constellation to the right of Spica and a little lower, which is shaped like a ship's mainsail.

Actually, the Southern Cross is not as "good" a cross as our Northern Cross. Four bright stars mark its extremities, but there is no star, as there is in its northern counterpart, to mark the intersection. To people who live in southern countries, it is a symbol of their homeland, and the southern cross appears on the flags of New Zealand and Australia.

Celestial Time Table for June

June	EST	
1	3:55 p.m.	Full moon.
2	12:35 p.m.	Moon passes Saturn.
9	1:59 a.m.	Moon in last quarter.
10	11:08 a.m.	Moon passes Mars.
	midnight	Moon farthest, distance 251,300 miles.
13	6:00 p.m.	Saturn opposite sun and nearest earth, distance 839,900,000 miles.
	9:31 p.m.	Moon passes Venus.
17	2:59 a.m.	New moon.
21	4:57 p.m.	Sun farthest north, summer commences.
24	4:44 a.m.	Moon in first quarter.
25	2:59 p.m.	Moon passes Jupiter.
26	4:00 a.m.	Moon nearest, distance 229,200 miles.
29	6:10 p.m.	Moon passes Saturn.

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

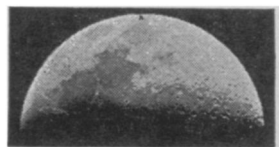
Science News Letter, May 24, 1958

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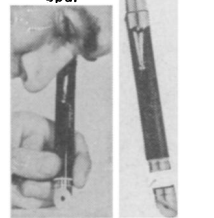
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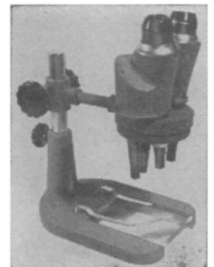
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