ASTRONOMY

Jupiter Prominent

Giant planet makes close approach during February. Star maps may be mounted in box, illuminated from the back, with pinholes through stars to aid study.

By JAMES STOKLEY

➤ THE PLANET Mars, which has been so bright in the evening sky during recent months, is receding from the earth and is diminishing in brilliance. In its place Jupiter, even more brilliant than Mars was at its maximum, is now coming into prominence as it makes a close (for Jupiter) approach to the earth. The accompanying maps give the appearance of the skies about 11:00 p.m. War Time, on Feb. 1, or an hour earlier in the middle of the month. Jupiter is visible in the southeast, close to the star Regulus, in Leo, the lion. Regulus marks the end of the handle of the sub-group called the sickle.

Jupiter now rises about sunset, and is visible all through the night. On the night of Feb. 8 it will be seen close to the moon, which will then be full. From the western United States, the moon will actually pass in front of Jupiter, just as it did for more easterly states on the morning of Jan. 13. (*See page 67*)

The other two planets of the February evening are high in the southwest, in the constellation of Taurus. These are Mars and Saturn, with the latter now slightly brighter. Look for the red star Aldebaran, which marks the eye of the bull. This is in a V-shaped aggregation of stars, known as the Hyades. The two planets are now almost in a position to mark the continuation of the arms of the V, with Saturn to the left and Mars to the right. Mars is red in color, another point which will aid in distinguishing it from its neighbor.

Below Saturn is the magnificent constellation of Orion, the warrior, of which the most conspicuous stars are Betelgeuse and Rigel. Between them is the row of three stars forming Orion's belt. Below and to the left of Orion is Canis Major, the great dog, with Sirius, the dog star, the closest bright star seen from the United States and Canada.

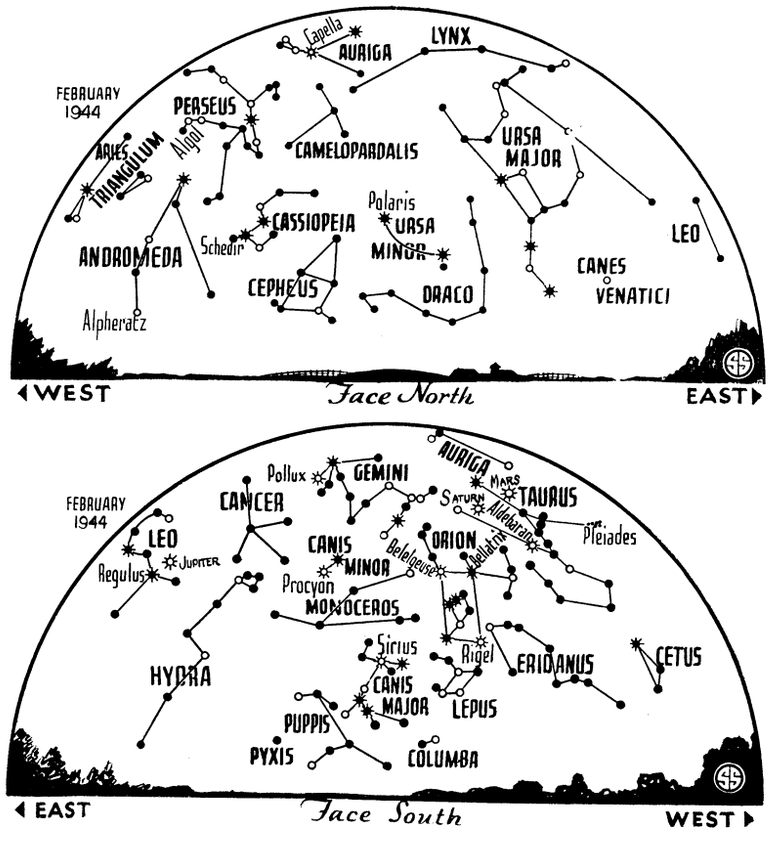
Just to the left of Canis Major is the group marked Puppis on the map, which is not one of the dog's pups! Puppis means the poop, an old term for the stern of a ship, for this is part of the great constellation of Argo Navis, the great ship that carried Jason and the Argonauts on their voyages in quest of the golden fleece. Pyxis, the compass, is another part of this group, which is so big that it is subdivided into four sections. The others are Vela, the sails, and Carina, the keel. These contain brighter stars than any in the parts of Argo that we can see. But although we cannot see these stars, many of our friends and relatives are looking at them now, for they ascend high in the heavens for the boys in the South Pacific.

Above Canis Major is the faint constellation of Monoceros, and above this is the lesser dog, Canis Minor, with the star Procyon. Ascending still higher in the southern sky, we come to Gemini, the twins, with Castor and Pollux. Just north of Mars and Saturn is Auriga, the charioteer, containing the first magnitude star Capella.

To the north, the great dipper, part of Ursa Major, the great bear, is swinging up in the northeast, the dipper's handle hanging downwards. The two stars in the upper part of the bowl are the pointers, and following them to the left we come to the pole star, Polaris. On the opposite side of the pole is Cassiopeia, the queen.

One more planet is visible during the night. This is Venus, which appears low in the southeast nearly two hours before sunrise and is more brilliant even than Jupiter. However, Venus is drawing towards the sun and, like Mars, is not as prominent as it was a month or so ago.

The variation in brightness of the planets is largely due to their changing distance from the earth. Thus, on Nov. 28, Mars made its closest approach of this trip, and was then only 50,120,000 miles distant. Its magnitude on the astro-



nomical scale was minus 1.6, about the same as that of Sirius. Now, however, it has receded to a distance (on Feb. 1) of 82,591,000 miles. Its magnitude has dropped to 0.3. (The fainter a star or planet, the bigger is its magnitude number.) On the other hand, Jupiter is now relatively close, for on Feb. 11 both that planet and the earth are in the same direction from the sun, and the distance between us is least. On Feb. 1 the distance of Jupiter is 407,000,000 miles, while on the 11th this will drop to 405,500,000 miles. Jupiter's magnitude is minus 2.1.

Saturn was in opposition (in the same direction as the earth from the sun) on Dec. 15, and was then 748,000,000 miles away, with a magnitude of minus 0.3. Now it has receded to 778,340,000 miles, and its brilliance has dimmed to magnitude 0.1. Venus, likewise, is drawing away and is now at a distance of 113,400,000 miles, with magnitude minus 3.4. Last Oct. 13 its brightness was at a maximum, with minus 4.3. At that time its distance was 40,383,000 miles. In the case of Venus, however, there is another factor which determines the apparent brilliance and tends to counteract the effect of increasing distance. Like the moon, Venus changes phase, and when it was so bright last October it was a crescent. Now it is in a gibbous phase, like the moon between first quarter and full, so while it is farther away we can see more of the sunlit surface. Otherwise, it would now be much fainter.

Two books to guide beginners in finding the stars that have appeared in the last year or so make use of maps in which the stars are to be punched with pinholes and illuminated from the back for a realistic effect. One of these is *The Pin-Point Planetarium* by Armand N. Spitz, and the other is *The Star Finder,* by Henry M. Neely. This is not a new idea, as I have a set of cards made in England over a century ago using the same method, and nearly three and a half centuries ago a German astronomer named Weigel made a globe of the stars with pinholes representing them.

One of the readers of this department, G. W. Bailey, Jr., of Weston, Mass., writes me that he has used the accompanying maps in a similar way. At the time he wrote he was an aviation cadet, and he said that it helped him locate the stars he required for his studies of navigation. Perhaps others will be interested in his method.

"I put a light bulb inside a medium-sized cardboard box," he says, "and cut an opening in one end just the size of one of your charts. Then I clipped a chart to a piece of cardboard and with a needle pricked holes through the chart and the card to correspond to each star. Larger holes make brighter stars. When I put the cardboard over the opening in the box, I have the hemisphere of the sky before me. Of course a spherical sky can't be truly represented on a flat surface, but the effect in a dark room is pretty realistic. It only took me a few minutes to rig up this arrangement, and it has given me much enjoyment."

Celestial Time Table for February

Feb.	EWT	
1	3:08 a. m.	Moon in first quarter.
3	2:22 a. m.	Moon passes Mars.
4	2:42 a. m.	Moon passes Saturn.
9	1:29 a. m.	Full moon.
	7:27 a. m.	Moon passes Jupiter.
10	3:00 a. m.	Moon farthest, 252,500 miles.
11	6:00 p. m.	Jupiter nearest, distance 405,500,000 miles.
12	4:24 a. m.	Algol (variable star in Perseus) at minimum brightness.
15	1:14 a. m.	Algol at minimum.
17	3:42 a. m.	Moon in last quarter.
	10:03 p. m.	Algol at minimum.
20	6:52 p. m.	Algol at minimum.
21	3:54 p. m.	Moon passes Venus.
23	7:00 p. m.	Moon nearest, 221,700 miles.
	9:59 p. m.	New moon.

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