

ASTRONOMY

Planets Illuminate Sky

Venus, Mars and Saturn will add to the brilliance of February evenings. Mercury will be seen at dusk and Jupiter will ascend a couple of hours before sunrise.

By JAMES STOKLEY

► BY the time February evenings are with us, the skies shine with their full winter splendor, but this year the addition of three bright planets—Venus, Mars and Saturn—makes them even more brilliant. The brightest is Venus, which sets a little too early to be shown on the accompanying maps. These show the appearance of the heavens about 10:00 o'clock on the evening of Feb. 1, and an hour earlier at the middle of the month. However, an hour before these times, Venus is easily located in the west, in the constellation of Pisces, the fishes, just below Aries, the ram, which is shown. Considerably brighter than any other star or planet, one need have no doubt of its identity.

The other two planets are to the east, both in Leo, the lion. Mars is alongside of Regulus, though considerably brighter. The magnitude of Mars is at a maximum this month (minus 1 on the astronomer's scale). Among the stars only Sirius, the dog-star, exceeds it in brightness, by about one and three-quarter times. Saturn, a little to the right of Mars, is of magnitude 0.2, which makes it about a third as bright as Mars.

Glimpse of Mercury

In addition, Mercury will be glimpsed early in the month. On Feb. 4 it is farthest east of the sun and for a few days around then it will be seen low in the southwest as the sky darkens. It will be lower than Venus. The last of the five naked-eye planets—Jupiter—is in the constellation of Sagittarius, the archer, and rises in the southeast a couple of hours before sunrise.

Among the stars (which, unlike the planets, are distant suns, shining with their own light) Sirius is the brightest, as noted above. This is low in the south, in Canis Major, the great dog. Above and to the right of this figure one sees Orion, the warrior. In this are two first magnitude stars: Betelgeuse, above, and Rigel, below. Between these are three fainter stars which form an easily recognized row that marks Orion's belt. Still higher,

and farther west, we come to Taurus, the bull, with red Aldebaran to mark his eye. In the bull's shoulder, farther to the right, are the Pleiades, a famous loose cluster of faint stars.

Directly overhead, at the time of the maps, is Auriga, the charioteer, with first magnitude Capella. Next to this group, in the direction toward Leo, are the twins, Gemini. Pollux is of the first magnitude while the other twin, Castor, is a little fainter. Below Gemini is Canis Minor, the lesser dog, in which Procyon shines.

Big Dipper in Northeast

In the northern sky the big dipper, part of the great bear, Ursa Major, hangs in the northeast, with the dipper's handle downwards. The two stars at the top are the pointers, showing the direction of Polaris, the pole star, in Ursa Minor, directly north. On the other side of the pole star is Cassiopeia, the queen, a group of stars like a letter W on one side.

Since the earth and the other planets revolve around the sun in approximately the same plane, we sometimes see these others in the same direction as the sun. Venus and Mercury, which move in orbits smaller than that of the earth, can never get to a position where they appear opposite in the sky to the sun. But the outermost planets—Mars, Jupiter and Saturn—can do so. The technical term for this is opposition, and it happens

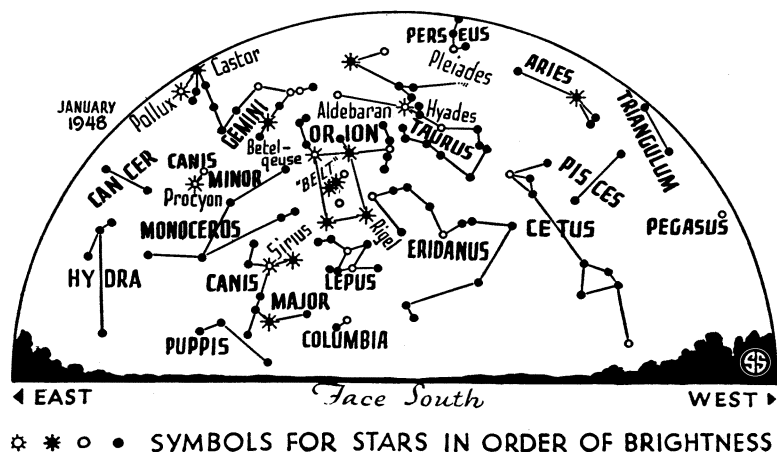
that both Mars and Saturn are in that position this month, the former on Feb. 17 and the latter on the 8th.

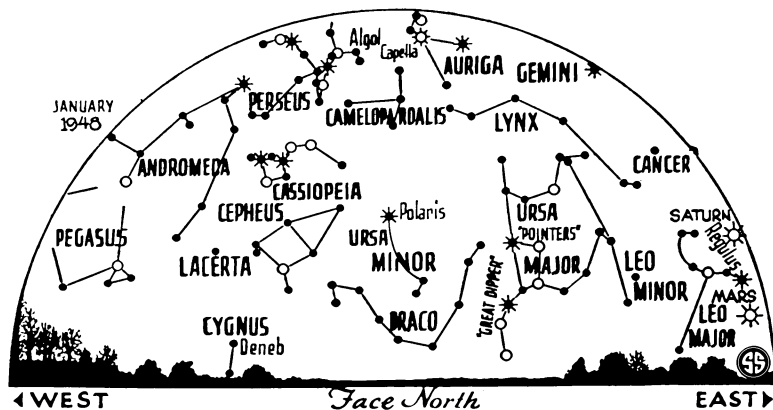
At opposition these planets are nearest, for they are only as far from us as the difference between their distance from the sun and that of the earth. When they are in the sun's direction (called conjunction) they are at a distance from us equal to the sum of these figures. When Saturn is at opposition on Feb. 8, at 9:00 p.m., it is 761,610,000 miles away, quite far, but it must be remembered that Saturn is the farthest of the naked-eye planets.

The orbit of Saturn is nearly circular, but that of Mars is more eccentric, i.e., more stretched out into an ellipse. Its mean distance from the sun is 141,690,000 miles, but once in the 687 of our days which it takes to go around its orbit, it comes as close to the sun as 128,690,000 miles, and at another time it is 26,000,000 miles farther, or 154,690,000 miles. The earth's orbit is much more circular than this, so at some oppositions Mars is considerably closer than at others. On March 5, Mars will be at aphelion (farthest from the sun). Opposition occurs only a couple of weeks before, so the two planets will be 63,020,000 miles apart, even when closest together.

The Red Planet Mars

In striking contrast was the opposition of Aug. 22, 1924, when Mars was nearly at perihelion (closest to the sun), and it was only 35,000,000 miles from us, only about 400,000 miles more than the very minimum possible. Not for centuries will we again be as close, but on Sept.





11, 1956, Mars will be only 35,400,000 miles away. By that time powerful new telescopes, such as the 200-inch at Mt. Palomar, which will start operation this year, and the 120-inch of the Lick Observatory, now planned, will be in operation. New electronic observing techniques, now under development, may well by then have been perfected, further augmenting our telescopic powers, and the solutions to many problems concerning this red planet may finally be given.

One of the chief of these concerns the so-called "canals," curious straight markings on its surface which some expert observers with the largest telescopes never could see, while others have reported seeing them plainly with smaller instruments. They are best observed with the eye at the telescope. Some photographs seem to show them, but not clearly, for they are just at the limit of what can be recorded in this way.

The trouble is that the air through which we have to point our telescopes is continually in motion, and this bends the light rays and blurs the image. Occasionally, perhaps only for a fraction of a second, conditions may become very steady and the visual observer can get a glimpse of very fine detail. Since, in the past, photographic exposures have been at least several seconds, they were always

somewhat blurred. The tremendous light-gathering power of the 200-inch telescope may make it possible to take very short exposures which will catch the instants of "good seeing." This will involve taking hundreds or even thousands of pictures, one after the other, and then studying them to see which is the best. No doubt such a program will be carried out in 1956 at Mt. Palomar, and also, perhaps, about June 25, 1954, when Mars will be a little more than 40,000,000 miles away.

Time Table for February

Feb.	EST	
1	7:31 p. m.	Moon in last quarter
4	11:00 a. m.	Mercury farthest east of sun, visible for a few days in west in early evening
5	1:08 a. m.	Moon passes Jupiter
8	9:00 p. m.	Saturn opposite sun and nearest earth, distance 761,610,000 miles
	10:02 p. m.	New moon
9	1:00 a. m.	Moon farthest, distance 252,670 miles
11	1:07 a. m.	Moon passes Mercury
13	7:03 a. m.	Moon passes Venus
17	11:00 a. m.	Mars opposite sun and nearest earth, distance 63,020,000 miles
	8:55 p. m.	Moon in first quarter
19	10:00 p. m.	Mercury between earth and sun
23	7:45 a. m.	Moon passes Saturn
	7:00 p. m.	Moon nearest, distance 222,130 miles
	8:51 p. m.	Moon passes Mars
24	10:10 p. m.	Full moon

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

Science News Letter, January 31, 1948

in England, owned by the Duke of Bedford, is not quite purebred—there is a little more than three percent of domestic cattle blood in the strain.

The wisent is a taller, longer-bodied animal than its American cousin, states Mr. Glover. It is higher in the hind-quarters and not so thick in the body. He regards the wisent as much superior to the American bison.

Wisent are naturally forest animals, requiring food elements obtained by browsing on twigs and bark of shrubs and trees for best health. They do, however, eat some grass.

Before World War I there was a large herd in the Caucasus region, comprising well over a thousand head. There was a smaller herd, of possibly 200 animals, in a forest preserve in Poland. Besides these, there were smaller groups elsewhere in Europe, principally in zoos. During the period of confusion and want after 1918, all the animals in the Caucasus herd were killed for food by the natives of the region. The herd in Poland survived, but World War II resulted in the disappearance of most of its specimens. Now the rehabilitation of the species must be attempted with the 97 known pure-blooded animals.

In prehistoric times the wisent was abundant and widely distributed over Europe and parts of Asia. Its pictures were accurately drawn by Cro-Magnon artists in the caves of France and Spain. It figures in very early Mesopotamian art, and was probably the prototype of the great winged bulls of Assyria, long after it had disappeared from that part of the world.

During the Middle Ages and early modern times, hunting and the spread of cultivation steadily diminished its numbers and drove the survivors eastward. Then the staggering blows of two world wars have all but finished it off.

Science News Letter, January 31, 1948

WILDLIFE

Bison Near Extinction

► THE European bison, or wisent, close cousin to the North American bison, has been pushed to the edge of extinction by two world wars, reports Richard Glover of the University of Manitoba. Most recent available figures show a total of exactly 97 pure-bred specimens, 48 of them males and 49 females. Fifty of the animals are in Poland and the USSR; the rest are divided among Germany, the Nether-

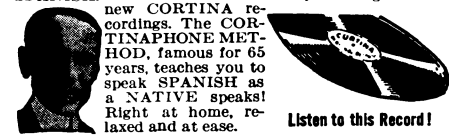
lands, Sweden and Switzerland. If there is to be a comeback of the species, it is from these animals that the new stock must be bred.

Since the wisent crosses readily with both American bison and domestic cattle, there are a good many hybrids in various European countries. These, however, will be rigidly excluded from the comeback effort. Unfortunately, a well-tended herd

Learn to SPEAK SPANISH

FRENCH • GERMAN • ITALIAN
Famous Cortina Method Makes It EASY

BIG OPPORTUNITIES await Americans who speak SPANISH. Learn as a child learns—"by listening" to these



new CORTINA recordings. The CORTINAPHONE METHOD, famous for 65 years, teaches you to speak SPANISH as a NATIVE speaks! Right at home, relaxed and at ease.
Listen to this Record!
Sent On 5 Days' Approval Write today for our amazing free book, "The Cortina Short-Cut." State language interested in.
CORTINA ACADEMY FREE
Dept. 601D 105 W. 40th St. **BOOK**
New York 18, N. Y.

VETS
When writing for free book—mention that you are a veteran.