

ASTRONOMY

Venus, Jupiter Bright

Venus and Jupiter, the two brightest planets, are visible in December evening skies at their maximum brilliance, although Venus sets two hours after the sun.

By JAMES STOKLEY

► DURING DECEMBER the two brightest planets are visible in the evening sky—both at their maximum brilliance.

The brighter of the pair is Venus, which is conspicuous, low in the southwestern sky soon after sunset. You will be able to see it long before the sky is dark enough to show any stars.

With its mid-December magnitude of minus 4.4, Venus is about seven times as bright as the other planet, Jupiter, which is still considerably more brilliant than any star.

Because it sets about two hours after the sun, Venus is not shown on the accompanying maps of the December evening skies. The skies are pictured as they look about 10:00 p.m., your own kind of standard time, at the beginning of the month, 9:00 p.m. at the 15th and 8:00 p.m. on the 31st.

Jupiter is shown high in the east, in the constellation of Taurus, the bull. On Dec. 18 Jupiter is at opposition, directly opposite the sun.

A third planet is also visible, although much less prominent. This is Saturn, shown in Aquarius, the water carrier, low in the southwest. Earlier in the evening, when the sky first darkens, it is farther south and higher. Its magnitude is plus 1.2, which makes it equal to the fainter of the first magnitude stars.

Mars is also in the evening sky but you will have a hard time seeing it, since it is even fainter than Saturn and sets before Venus. By the time the sky is dark enough to show Mars, it has almost reached the horizon.

Winter, in the Northern Hemisphere, begins Dec. 21, when the sun reaches a point farthest south for the year at 8:41 p.m., EST. In the Southern Hemisphere this is the beginning of summer.

Winter Constellations Seen

The evening sky reflects the start of our winter. Several constellations typical of that season have come into view in the south-east. There is Orion, the warrior, with two first magnitude stars, Betelgeuse and Rigel. Between them is the row of three stars that mark Orion's belt. Lower in the east are the two dogs of Orion: Canis Major, the greater dog, with the star called Sirius; and the lesser dog, Canis Minor, with Procyon.

Above Orion is Taurus, the bull, with the brilliant red star Aldebaran.

High in the north is Capella, in Auriga, the charioteer. Lower, and to the east, you

can see Castor and Pollux, in Gemini, the twins.

Low in the northwest are two other stars classified as first magnitude, but they are so near the horizon that the atmosphere dims them considerably. One is Deneb in Cygnus, the swan; the other is Vega, part of Lyra, the lyre.

Seen through a telescope during December, Venus does not look round, as you might expect a planet to appear, but is a crescent, like the moon a few days before first quarter.

Venus Shows Cyclic Change

Venus shows a cyclic change in phase for the same reason that the moon does. In early summer, when it first appeared in the evening sky, it was far out beyond the sun. Its entire sunlit half was turned to the earth and its phase was full, like the full moon. During the summer and autumn it has been swinging around the sun and is now coming between sun and earth. We can see less than half of the sunlit hemisphere, so it has a crescent shape.

The crescent will become narrower and narrower until the end of January when Venus will be nearly in front of the sun and the bright half will be turned away

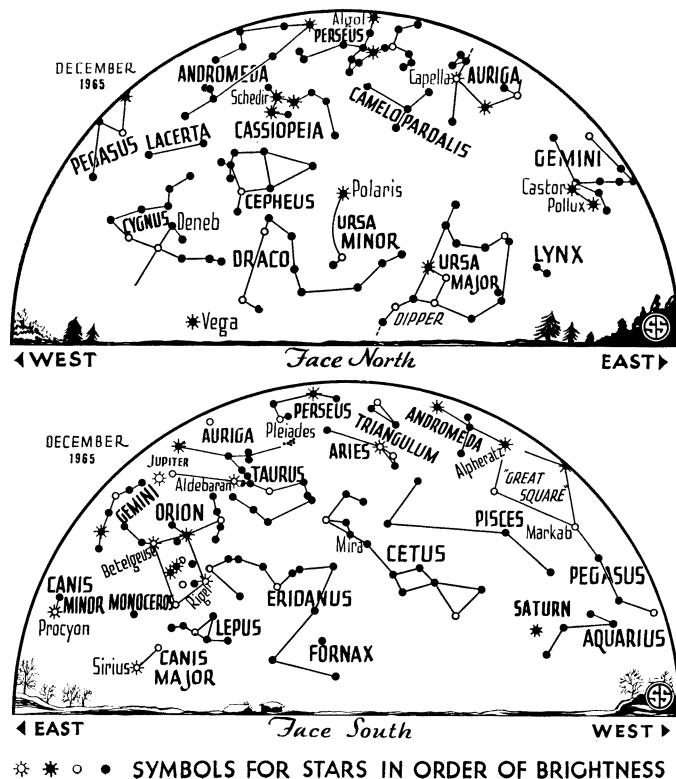
from us. It will not circle exactly in front of the sun until June 8, 2004, the date of the next transit of Venus across the sun's face.

The surface of Venus is always hidden by some kind of clouds in its atmosphere, and astronomers have held various theories as to what lies beneath. Some authorities thought the planet to be covered completely with water; others believed that it must be an arid and dusty desert. Several years ago studies of radio waves constantly emitted from Venus indicated that the surface temperature was nearly 600 degrees F.

Mariner Observes Venus

In December 1962, the U.S. space probe, Mariner II, passed within 21,594 miles of Venus and obtained additional data about the radio waves, indicating that its surface temperature is about 800 degrees F. or even more. Such a temperature of course would eliminate any possibility of liquid water.

Life, at least as we know it, would also be impossible at such temperatures. Living things on earth all require water to carry nutrients to their tissues. However, there have been speculations about living systems using other compounds. For example, silicon is an element very similar to carbon, which is at the basis of our life chemistry. Silicon can form a system of compounds that are quite similar to those of carbon, and that remain stable at considerably higher temperatures. Could there be on Venus and other hotter planets, some have



asked, living organisms using silicon instead of carbon?

The question cannot yet be answered.

Celestial Timetable for December

DEC.	EST	
1	12:25 a.m.	Moon in first quarter
	2:00 a.m.	Moon passes south of Saturn
2	11:00 p.m.	Mercury between earth and sun
8	12:22 p.m.	Full moon
9	7:00 a.m.	Moon passes north of Jupiter
11	1:00 a.m.	Moon nearest, distance 226,500 miles
12	4:20 a.m.	Algol (variable star in Perseus) at minimum brightness
15	1:10 a.m.	Algol at minimum
	4:52 a.m.	Moon in last quarter
17	10:00 p.m.	Algol at minimum
18	4:00 a.m.	Jupiter opposite sun
20	6:50 p.m.	Algol at minimum
21	noon	Venus at greatest brightness
	5:00 p.m.	Mercury farthest west of sun (visible for a few days around this time low in east before sunrise)
	8:41 p.m.	Sun farthest south, winter begins in Northern Hemisphere
22	4:03 p.m.	New moon
25	4:00 a.m.	Moon passes south of Mars
	11:00 p.m.	Moon passes south of Venus
27	2:00 a.m.	Moon farthest, distance 252,100 miles
28	noon	Moon passes south of Saturn
30	8:47 p.m.	Moon in first quarter

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

• Science News Letter, 22:346 November 27, 1965

ASTRONOMY

'Shooting Stars' Fall Heavily in November

► THE SO-CALLED SHOOTING STARS that result from a meteor shower again rained heavily from mid-November skies.

During Leonid meteor showers the number of shooting stars seen by a single observer can jump from the usual seven per hour to at least 17 and even as high as 27.

Because the shooting stars appear to radiate from the constellation Leo, the lion, the meteors are called the Leonids. They appear every year, but in some years put on a much more brilliant display than in others. The constellation of Leo is low in the southern sky, so the display was seen best after midnight.

The Leonid shower which will occur two years from now is predicted to be unusual. It might rival the one in 1833, when so many shooting stars fell that they were reported to resemble snowflakes.

The Leonids move around the sun in an egg-shaped orbit that the earth crosses every November.

The brightest showers occur because there are more meteors in the stream at one place in the orbit than another.

The meteors appear to radiate from the constellation of Leo only because of perspective. The paths of meteors are actually parallel, although they seem to converge in the distance in the same way that the parallel tracks of a railroad appear to come together at the horizon.

• Science News Letter, 22:347 November 27, 1965

CHANGING YOUR ADDRESS?

If you are moving soon please help to assure prompt receipt of all your copies of Science News Letter—and without interruption—by sending your NEW and OLD addresses at least three weeks in advance. For speedier processing, send mailing label from this issue, along with your new address. Thanks!

Subscriber Service Division

SCIENCE NEWS LETTER

1719 N St., N.W., Washington, D. C. 20036



Instant Coffee

AUTOMATICALLY!

Transforms 5 or 6 oz. coffee jars into automatic dispensers! Dial exact amount! Seals in freshness! \$1.25 ea., 2 for \$2.25, ppd.

CHESPA SALES

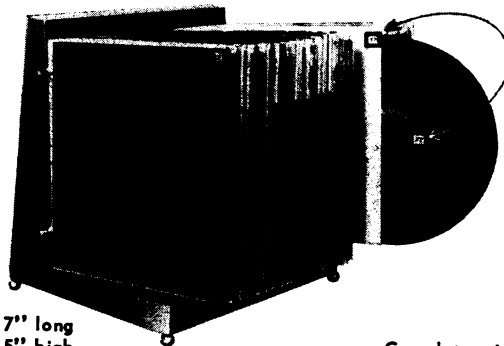
P. O. Box 117-5NL, BARRINGTON, N. J. 08007

GOODBYE FLAB!

Doctors at the famous Max-Planck Institute have discovered a slimming system that reduces waistlines 2 inches in 30 days . . . puts you back in shape fast. No sweat, strain or tiring repetition. Just 10 simple, motionless Isometric Contractions. Acclaimed internationally for people of all ages by scientists, coaches, athletes and actresses. Free illustrated information about new guaranteed technique. Write AWARD-WINNING-MINUTE-A-DAY METHOD, Dept. H, 37 Centuck Station, Yonkers, N. Y. 10710.

"The finest record storage filing system I have seen!"

Dr. M.W. Sullivan, President, Sullivan Associates



A Revolutionary New Way to Store and File Valuable Hi-Fi Records only \$12.95

plus \$2.00 p.p. & hdg.

Complete with Heavy Duty Punch, Permanent Record Index and Duplicate Numbers.

17" long
15" high
11" deep

- THE RECORD IS REMOVED, NOT THE ALBUM • HOLDS 120 RECORD ALBUMS IN ONLY 17"
- ALL ALBUMS ARE NUMBERED AND INDEXED • RECORDS ARE EASY TO FIND, REPLACE
- PROTECTS RECORDS AGAINST DAMAGE • PREVENTS ALBUM COVER MUTILATION

No more searching—no more clutter—the records you want are at your fingertips—automatically! No record in your collection need be at the bottom of the stack or mislaid in the record cabinet.

The RECORD STORAGE SYSTEM is designed to fit any home decor. You will play more of your records more often, if you order your RECORD STORAGE SYSTEM today.

NO RISK COUPON Calhoun's SINCE 1923

800 White Bear Ave. St. Paul, Minn. 55106

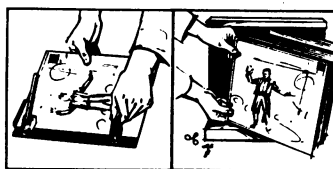
Please send me RECORD STORAGE SYSTEM/S at \$12.95 each, plus \$2.00 each for postage and handling. I enclose \$_____. If I'm not completely satisfied I'll return the material in 10 days for full refund. (SNL)

Please send your FREE catalog.

Name _____

Address _____

City _____ State _____



Punch

File