Like the moon, it has no light of its own but is illuminated by the sun, so that one half is bright and the opposite half dark.

Last April 14 it was out beyond the sun, with the entire bright hemisphere turned earthwards. Since then it has been moving and is now coming between the earth and sun. Thus, most of its sunlit hemisphere is turned away, and we have a crescent phase.

On Jan. 28 it will be, nearly, directly between us and the sun, and this will correspond to new moon. After that it will become a crescent again, visible in the morning sky before sunrise.

Unlike the moon, Venus is always so far away that only through a telescope are its phases visible.

The phases of Venus differ from those of the moon in another respect.

As the moon travels around the earth, its distance does not change very greatly, only from about 221,000 miles to 253,000 miles.

Thus there is no great change in its apparent size, and the diameter of the full moon is about the same as when it is in a narrow crescent phase. But when Venus is full it is out far beyond the sun, about 160,000,000 miles away. Just before Christmas it will be less than 40,000,000 miles away, and on Jan. 28 its distance will be about 26,000,000 miles. Thus, as it gets near the "new" phase, it is much larger, seemingly, in the sky.

That is why it is brightest when a crescent. Although less than half of the bright side is visible to us, its proximity more than makes up for this, and the part we can see fills the largest area of the sky. Then it is at the greatest brilliance.

Winter Arrives

On Dec. 21 the sun, which has apparently been traveling southward in the sky since last June, reaches its southernmost point. This is the winter solstice—the beginning of winter in the Northern Hemisphere—and it occurs at 9:49 p. m., EST.

At that moment the sun will be directly over a point near the eastern edge of the Arunta Desert, which is in Australia, on the border between Queensland and the Northern Territory. In Australia, and other southern countries, the sun will be high in the sky, marking summer's beginning.

Celestial Time Table for December

Dec. EST

3	6:10 p.m.	Algol (variable star in Perseus) at minimum brightness.
7	1:16 a.m.	Full moon.
8	10:00 p.m.	Saturn on far side of sun, distance 1,030,000,000 miles.
13	early a.m.	Geminid meteor shower, meteors apparently radiating from constellation of Gemini.
	midnight	Moon nearest, distance 230,100 miles.
14	12:45 a.m.	Moon in last quarter.
16	12:57 p.m.	Moon passes Jupiter.
18	2:15 a.m.	Algol at minimum.
	3:56 p.m.	Moon passes Mars.
20	11:04 p.m.	Algol at minimum.
21	1:12 a.m.	New Moon.
	9:49 p.m.	Winter commences in Northern Hemisphere.
23	7:53 p,m.	Algol at minimum.
	11:00 p.m.	Venus at greatest brilliancy.
24	1:27 p.m.	Moon passes Venus.
27	11:00 p.m.	Moon farthest, distance 251,300 miles.
28	11:52 p.m.	Moon in first quarter.

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

Science News Letter, November 23, 1957

GEOPHYSICS

Sputniks in Collision Seen Extremely Unlikely

➤ THE CHANCES of sputniks and other earth satellites colliding in space are just about zero, so unlikely that no one in the U. S. satellite program has bothered to calculate them.

Dr. S. F. Singer, University of Maryland physicist and member of the rocketry committee for the U. S. International Geophysical Year, estimated a collision might occur once every few hundred million years.

"Space is extremely big," Dr. Homer E. Newell of the Naval Research Laboratory, vice chairman of the rocketry committee, said. He pointed out that even on the oceans where thousands of ships sail, collisions at sea are very rare and usually occur only near ports.

"When you go out into space several hundred miles," Dr. Newell said, "the area is just that much bigger." There are also three dimensions, not just two, in which to maneuver, thus reducing the possibilities of collision very much more.

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