



## Mercury in front of sun Nov. 10

by James Stokley

Four planets, each brighter than any visible star, will be visible in November evening skies. Venus, most brilliant, will be conspicuous in the west soon after sunset. Of the three planets shown on the accompanying maps, the brightest is Jupiter. Mars, in Pisces, is about equal to Jupiter, although it looks brighter. It is much higher than Jupiter, and the dimming effect of our atmosphere is much less. Saturn, in Gemini, is about a fifth as bright as Mars. It too is dimmed by low altitude.

At the end of November, Mercury, innermost of the planets, will also be visible in the east at dawn. On Nov. 27, when farthest west of the sun, it will rise about an hour and three-quarters before sunrise. Thus you will have to look near the horizon, as the sky brightens, to find it.

On Nov. 10, Mercury will pass in front of the sun, one of 13 such "transits" during the 20th century. Transits of Mercury aren't visible to the naked eye, but astronomers will be able to watch this one from their observatories.

Observers in most of Europe, and in Africa, will be able to watch from start to finish. It will take about five and one-half hours from the time Mercury reaches the sun's eastern edge until it leaves the western. The begin-

ning will occur about 2:48 a.m. EST in the eastern parts of the United States and Canada this will be well before the sun rises. Mercury will leave the solar disk about 8:18 a.m. EST. In the western part of the country this will be before sunrise, so people there will not be able to see it.

Mercury (SN: 10/6/73, p. 220) takes 88 days for one orbital revolution around the sun. It passes earth, which moves more slowly, every 116 days. But the plane of Mercury's orbit is inclined about seven degrees to that of earth's orbit. Generally, therefore, Mercury passes above or below the sun.

Twice in each revolution it passes through the earth's orbital plane. At such a time, if it is in the right position, there will be a transit. This can only happen about May 7 or Nov. 9. Because of the relative shapes of the orbits of Mercury and earth, there's a better chance of a transit in the autumn than in the spring. Only four of the 20th-century transits occur in May, compared with nine in November. The last, before this year, was on May 9, 1970; the next will be on Nov. 12, 1986.

The above maps show the skies as they look on Nov. 1 about 10 p.m. (local standard time). They look about the same at 9 p.m. on the 15th and 8 p.m. on the 30th. □

### CELESTIAL TIMETABLE

Nov.	EST	
2	2:00 pm	Moon passes north of Jupiter
3	1:29 am	Moon in first quarter
9	2:00 am	Moon passes north of Mars
10	6:00 am	Mercury in front of sun
	9:27 am	Full moon
12	10:00 am	Moon nearest earth; distance 225,200 miles
13	noon	Moon passes north of Saturn (from NW parts of North America and Asia, will pass in front)
17	early am	Meteors in northeast, apparently radiating from constellation Leo
	1:34 am	Moon in last quarter
24	2:55 pm	New moon
28	8:00 am	Moon farthest from earth; distance 252,200 miles
30	6:00 am	Moon passes north of Jupiter

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