



**OLD FRIENDS**

Here are the familiar constellations of the north

the sun, mere speck, in fact. If it comes in front of the sun at all, it is generally completely in front of it. If it does not cross the disc, it misses it completely. But, at rare intervals, about once in a thousand years, it just skims along the sun's edge, partly on it, partly off. That is what will happen May 11. It will take about 40 minutes from the time the edge of the planet first touches the edge of the sun until it leaves.

From a point in the Indian Ocean, about 2000 miles south of Australia, Mercury would be seen to enter for more than half its diameter on the solar disc. It is not very likely that anyone will see it from this inaccessible location. But from most of southern Asia, the Philippine Islands, Western Australia, the Indian Ocean, and central and southern Africa, the planet will be seen to enter the sun's disc to a lesser extent. Many observatories are located in these regions, and to astronomers watching, the sun's disc will be seen to have a small nick in the edge.

**Is There Atmosphere?**

The chief value to astronomy of this partial transit will be in the possibility that it affords of checking the existence of an atmosphere on Mercury. Theoretically, it has none. For every planet there is a velocity of escape, a speed at which a thing, whether as small as an atom or as large as a house, can be thrown so that it overcomes the planet's gravitational attraction and leaves it for good. For the earth this is about 7 miles per second. Because Mercury is so much smaller, the critical speed there is only 2.2 miles per second.

The molecules of a gas, like the atmosphere of the earth, are in constant motion, but they seldom achieve the speed of 7 miles per second. Therefore,

the molecules do not leave the earth, as they would if they were moving more rapidly. On Mercury, not only is the velocity of escape lower, but the planet is nearer the sun, the temperature is higher, which would give the atmosphere molecules higher velocities than they would have on earth. Consequently, most of them move faster than 2.2 miles per second. Therefore, if Mercury were suddenly to be endowed with an atmosphere like that of the earth, it could not hold it very long for the molecules would soon shoot off into space.

**Opportunity for Tests**

There seems to be no flaw in this reasoning, but certain observers of Mercury have noticed peculiar effects which they interpret as showing the presence of an atmosphere after all. If there were an atmosphere, it would bend light rays around it, like a prism, and, with the sun behind it, the dark disc of the planet should be surrounded by a brilliant halo. Venus has some sort of an atmosphere, and, at the time that it enters or leaves the sun's disc, at a transit, shows such a halo.

At ordinary transits of Mercury, the planet is so small, and moving so quickly, that there is little time to make these observations as it enters or emerges from the disc of the sun. When it is on the disc, the sun's own brilliance would make it impossible to see a halo. But this time there will be many minutes while the planet is partially on the disc. During this time, there should be plenty of opportunity to see whether there is any effect of an atmosphere. If there is, observers should notice a half ring of light, extending out from the sun's edge. If this is not seen, it will be good evidence that the theoretical considerations are correct.

On May 10, at 1:00 p. m., E. S. T.,

the moon will be at perigee, or nearest the earth, with a distance of 222,040 miles. It will be at apogee, on the 24th at 8:00 a. m., 252,430 miles away.

On May 24, during the daytime for us, the moon will pass very close to Mars. On the evening of that date, as well as the previous night, the two objects will be very close together. In some parts of the southern hemisphere, Mars will actually pass behind the disc of the moon, it will be occulted.

**Phases of the Moon**

E. S. T.

Last Quarter.....	May 3	1:36 p. m.
New .....	10	8:18 a. m.
First Quarter .....	17	1:49 a. m.
Full .....	25	2:38 a. m.

*Science News Letter, April 24, 1937*

**PSYCHOLOGY**

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*Science News Letter, April 24, 1937*

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