

goes past it, to the south, on Aug. 3, and it passes north of Jupiter on the 12th. However, Mars is now rather faint, only second magnitude, and will be difficult to see in the dawn's early light.

On Sunday, Aug. 14, the moon, in a narrow waning crescent, passes south of these four planets. It goes past Jupiter first, at about 4 a.m. (daylight time). Two hours after that it passes Mars and, later in the day, Venus and Mercury.

August is also the month for one of the most reliable displays of meteors or shooting stars—the Perseid shower. They are so named because they seem to radiate from the constellation of Perseus, which appears on the northern sky map below Cassiopeia in the northeast. Actually the meteors move in parallel paths, becoming visible when they encounter the earth's atmosphere and vanish in a streak of light.

The meteors will be most easily seen in the early morning, when Perseus is higher in the east. After midnight we are on the forward side of the earth as it revolves around the sun, so we meet the meteors head-on. In the evening we can only see those that are moving fast enough to catch up to us.

The Perseid display begins about July 25, and continues until Aug. 17,

with the maximum about Aug. 12. The moon, by that time, will not rise until well after midnight, so its glare will not interfere. If you watch the night sky for even a few minutes around the time of peak activity, you will probably see several bright meteors.

Celestial Time Table for August

AUG.	EDT	
1	5:06 a.m.	Full moon
3	10:00 p.m.	Venus passes south of Mars
4	noon	Moon farthest, distance 252,200 miles
5	9:00 a.m.	Moon passes south of Saturn
7	1:00 p.m.	Venus passes south of Jupiter
9	8:56 a.m.	Moon in last quarter
12	early a.m.	Perseid meteors at height 1:00 a.m.
		Mars passes north of Jupiter
14	4:00 a.m.	Moon passes north of Jupiter
	6:00 a.m.	Moon passes north of Mars
	4:00 p.m.	Moon passes north of Venus
	10:00 p.m.	Moon passes north of Mercury
16	3:00 a.m.	Mercury farthest west of sun
	7:48 a.m.	New moon
17	3:00 a.m.	Moon nearest, distance 222,600 miles
22	11:02 p.m.	Moon in first quarter
30	8:14 p.m.	Full moon
31	7:00 p.m.	Moon farthest, distance 252,500 miles

Subtract one hour for CDT, two hours for MDT, and three hours for PDT.

• Science News, 90:58 July 23, 1966

SPACE

Mars Pictures Year Old

► THE FIRST CLOSE-UP photos of Mars, taken last year by Mariner 4, were a year old on July 14, and scientists still have more than three years to wait before they receive any more.

For two and a half months after it took its pictures, Mariner kept sending data of various kinds, until it finally got out of range of the huge antennas on earth that were listening to its every word. On May 21 of this year, the spacecraft began talking again.

But Mariner 4 may not be "alive" for more than another two birthdays.

A bottle that originally contained 3.22 pounds of nitrogen gas will run out some time in 1968. The gas is used in attitude control jets that enable the spacecraft's computers to keep it steady and pointed in the right direction. When the bottle is empty, Mariner will have no way of responding to instructions from its star-sensors, which use the stars to determine position just as did early seafarers.

The next close-ups of Mars will be taken late in 1969 by another Mariner spacecraft, which almost died before it even got to the drawing board. Tight budgeting had caused the mission to be cancelled in favor of one in 1971, but the earlier flight has been restored to the schedule. Actually, two spacecraft will be launched early in the year, though scientific payloads have not yet been selected.

Since Mariner 4, several new sources of photos have been added to the Outer Space Art Gallery: five Gemini spacecraft (5 through 9), two ESSA weather satellites and perhaps a secret or two from the Defense Department. And of course, Surveyor 1.

A trip to Venus will precede the next one to Mars. Launched early next year will be the spacecraft that would have backed up Mariner 4, had it not done so well. Previously, Mariner 2 flew within 21,600 miles of the planet.

• Science News, 90:59 July 23, 1966

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