ASTRONOMY

Comet Remains Visible

Bright comet shares honors in the sky with four planets. A fifth planet, Mercury, will be visible as it crosses the sun's surface on May 5, one of 14 transits this century.

By JAMES STOKLEY

➤ AREND-ROLAND COMET, most conspicuous visitor of this kind since 1910, which came into view in mid-April, may still be seen in the western sky on May evenings. (See p. 249).

Rapidly drawing away from the sun, it is fading in brightness and by the end of May it will no longer be visible to the naked eye. But even then it should still be possible to pick it up with a pair of binoculars.

At the beginning of May the comet will be in the northwest, just above the constellation of Perseus, between the bright star Capella and the W-shaped group of stars marking Cassiopeia.

After that it will move up toward Ursa Major, the great bear, passing to the left of the pointers (the two stars in the great dipper which indicate the direction of the pole star) during June.

Its path is indicated on the accompanying maps, which show the brighter stars and planets as they will appear about 10:00 p.m., your own kind of standard time, at the first of May, an hour earlier in the middle of the month, and two hours earlier at the end.

Other Bright Planets

In addition to the comet, two planets will be shining brightly during May evenings. A third will be seen if you know where to look and a fourth may be glimpsed low in the west as the month closes.

Jupiter is the brightest of these. It stands high in the south, a little east of the meridian as the sun sets on May 1. After that it remains in view into the early morning hours. Jupiter, of magnitude minus two on the astronomical brightness scale, is in the eastern end of the constellation of Leo, the lion, close to the next-door group of Virgo, the virgin.

Saturn, the second planet, considerably fainter, but still comparable to a bright star, is low in the southeast, in Ophiuchus, the serpent-bearer.

The third planet is Mars, to the northwest in Gemini, the twins. This planet has now pulled so far away that it resembles a star of the second magnitude, and its low altitude makes it look even fainter.

Venus, the fourth planet, is not shown on the map. On April 14, it passed behind the sun and was, therefore, invisible. By May 1 it will be far enough to the east of the sun that it will remain above the horizon for nearly half an hour after sunset, and will still be difficult to see.

By the end of May, almost an hour will elapse after the sun has gone down before Venus follows. Then, perhaps, you may begin to get a glimpse of the planet, very low in the west, at dusk.

Brightest May evening star is Vega, in Lyra, the lyre, in the northeast. Below it we find Cygnus, the swan, with the star Deneb, another body whose light is dimmed because of its low altitude.

High in the south, around Jupiter, are are several bright stars. To the right is Regulus, part of Leo. This star is in a smaller group called the Sickle, with Regulus at the end of the handle, which points downward. To the left of Jupiter, in Virgo, stands Spica, and above this figure is Bootes, the bear-driver. Arcturus is the bright star in this group.

Low in the southeast, near Saturn, is another star of the first magnitude, Antares, in Scorpius, the scorpion. This, too, is greatly dimmed because it is so near the horizon.

Low in the west are a few of the bright constellations of winter, now making their last stand before they disappear for the summer months. There are Castor and Pollux, in Gemini, the group in which Mars appears. To the right is Auriga, the charioteer, with Capella. Canis Minor, the lesser dog, stands to the left, with Procyon its brightest star.

Of the five planets that are ever visible to the naked eye, four will be seen, though perhaps with a little difficulty, during May.

The fifth is Mercury, and although it will not appear in the evening sky, it will also be visible during the month—but visible in a peculiar way.

Mercury circles around the sun once every 88 days, called its sidereal period, that is, its period of revolution with respect to the distant stars. However, it takes a longer time to catch up to the earth.

Suppose that on a certain date Mercury is between earth and sun. By the time it has made one revolution, 88 days later, the earth has moved nearly a quarter of the way around its orbit. Consequently, it takes 116 days, which is called its synodic period, before it is again in the same direction from the sun as the earth. This position is termed inferior conjunction. A few weeks before it gets there it has been to the east of the sun, when it has remained above the horizon after sunset, and may have been visible low in the west after sunset.

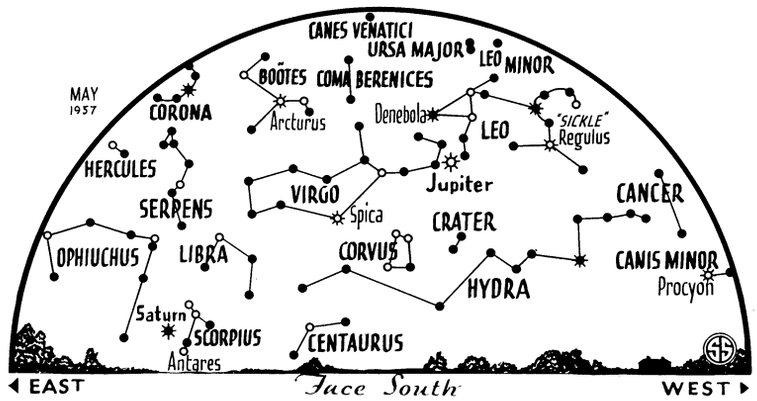
Generally, at inferior conjunction, Mercury does not come precisely between sun and earth, but rather it is north or south of the line from our planet to the sun. Occasionally, however, Mercury does come right in front of the sun, as we view it, producing what is called a transit.

Transit of Mercury

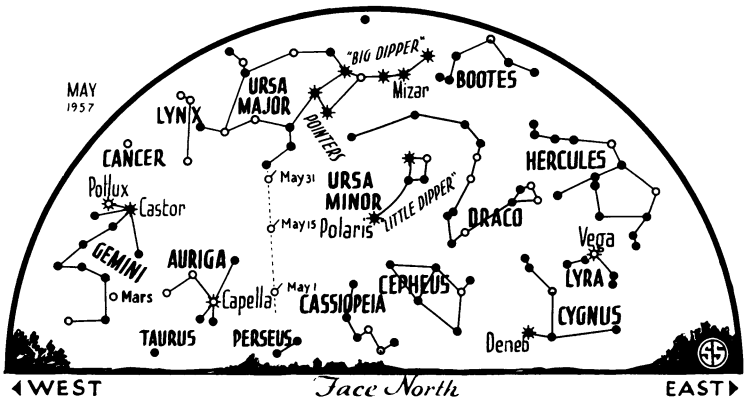
Such an event occurs on May 5. It will take about two hours for the planet to pass completely across the solar disc. From the extreme eastern part of the nation, the transit cannot be seen. Over most of the country, the sun will set while the transit is in progress, but in the far west the entire transit will be observable.

Mercury is much smaller than the sun and, at the time of the transit, appears only about 1/160th the solar diameter. This means that it cannot be seen, as it crosses the sun's face, without some telescopic aid having a magnification of at least 100.

Of course, one should never look at the sun directly—particularly not with a tele-



☼ ✷ ○ • SYMBOLS FOR STARS IN ORDER OF BRIGHTNESS



scope—and special attachments are provided for telescope eyepieces to enable one to make solar observations without danger. Also, when a telescope is pointed to the sun, its image may be projected on a sheet of white paper held a little distance in back of the eyepiece.

With such aids as these, amateur astronomers all over the country will be busy watching the sun on the evening of May 5, to see Mercury crossing it.

Transit's Time Schedule

In New York the planet will start to enter the disc of the sun at 6:56 p. m., EST, just as the sun is about to set. St. Louis will see the beginning of the transit at 5:56 p. m., CST, and at 6:06 CST the planet will be fully in front of the sun. Astronomers around San Francisco will be watching the entrance of the planet on the sun's disc between 3:57 and 4:07 p. m., PST. At about 5:14 PST Mercury will be nearest the sun's center. At 6:19, in the Bay area, the planet will start across the sun's edge again, and at 6:29 PST the transit will be over.

Mercury will be moving from east toward the west so its passage across the sun will be downwards. The whole event will occur near the right-hand edge of the sun, or between two and three if you think of the sun as a clock-face.

During this century there are 14 transits of Mercury, two of which are grazing contacts—ten in November, four in May. The last occurred Nov. 14, 1953, but the last full transit at this time of year was on May 7, 1924. The next will occur Nov. 7, 1960, and the next May transit on the eighth in 1970.

Only Venus and Mercury can undergo transits, since they are the only planets nearer the sun than the earth.

Transits of Venus are far more rare, and there is none in the 20th century. The last happened on Dec. 6, 1882, and the next will come on June 8, 2004.

Since Venus is considerably larger than Mercury, as well as nearer to the earth, during a transit it can be seen in front of the sun without the aid of a telescope.

With smoked glass or other suitable protection for looking directly at the sun, Venus can be seen as a dark, round spot, moving slowly across the bright solar disc.

On May 13 there will be a total lunar eclipse, as the moon passes through the earth's shadow. It will be visible generally in Europe, Asia, Africa and over the Atlantic Ocean but will end 6:10 p. m., EST, before moonrise in the eastern U. S. and Canada.

However, the moon will remain partly in the earth's shadow until 7:17 p.m., and by then it will have risen for some points along the Atlantic Coast.

People at these locations may notice, just after the moon appears, a curious shading of its upper edge, where it has not yet emerged into full sunlight.

Celestial Time Table for May

MAY	EST	
3	1:07 p.m.	Moon passes Mars.
5	late afternoon	Transit of Mercury across face of sun (see text).
8	10:00 p.m.	Moon nearest, distance 229,200 miles.
9	1:39 p.m.	Moon passes Jupiter.
13	5:34 p.m.	Full moon, and total eclipse of moon, visible along eastern coast of U. S. (see text).
15	4:20 a.m.	Moon passes Saturn.
21	11:00 a.m.	Moon farthest, distance 251,200 miles.
	12:03 p.m.	Moon in last quarter.
29	6:39 a.m.	New moon.
30	4:56 a.m.	Moon passes Venus.

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

Science News Letter, April 20, 1957

SOCIOLOGY

"FAS" Scores Give Neighborhood Types

➤ PEOPLE DIFFER psychologically from one neighborhood to another in big cities, with about eight different types of neighborhood. Generally the kinds of people in a given neighborhood remain the same even though the turnover is sizable.

These are some of the conclusions reached by Dr. Robert C. Tryon, psychology professor at the University of California at Berkeley, in a socio-psychological study he made.

Dr. Tryon made his study of the San Francisco Bay area, but he said the same principles apply to other large urban areas, although the neighborhood types may be more or less than eight, depending on the city.

The psychologist used census statistics of the San Francisco Bay area, especially the statistics for small areas which are called census tracts. In the 1940 Bay area census there were 33 measures of people living in 243 tracts. Dr. Tryon boiled this down to eight subcultural types that could be identified on the basis of three characteristics, family life, assimilation, and socio-economic independence.

Family life ("F") indicates orientation around the home. High scoring "F" people live in their own single-family homes, have large families, the women do not work, and there are more younger age groups.

Where there is low assimilation ("A"), there were relatively more of the less-assimilated minorities, more women in blue-collar jobs and unskilled men. High "A" indicates majority groups.

Socio-economic independence ("S") shows how autonomous people are economically. High "S" people are in the managerial and professional classes, with many college-educated people, living in high quality homes.

Dr. Tryon classed neighborhoods on the basis of "FAS" scores.

In a re-check with the 1950 census, the psychologist found no essential difference over the 10-year period, even though in some areas almost 90% of the people were different from those living there in 1940.

"Our findings add up to the general conclusion that neighborhoods that are alike in their status in family life, assimilation, and socio-economic independence comprise a kind of people that are enduringly different psychologically from the kinds that inhabit other social areas," Dr. Tryon said.

Science News Letter, April 20, 1957

TECHNOLOGY

Tough New Plastic Can Replace Metals

➤ A TOUGH NEW plastic that can withstand the blows of a carpenter's hammer has been discovered and developed. The plastic is expected to replace metals and ceramics in some applications.

Called Lexan by its developer, the General Electric Company in Pittsfield, Mass., the plastic is a polycarbonate resin. Now made in small lots, the polymer is being evaluated in the form of molding compound, film, varnish and coatings. It can be produced in a variety of opaque and transparent colors, and has excellent electrical characteristics, high thermal stability, low water absorption and high tensile strength.

Polycarbonate chemistry, which resulted in the development of Lexan, is a new technology that promises newer and better plastics.

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