

Coming up: longest day of year

ON THE EVENING of June 15, Mars, Pollux and Castor form a straight line, but not for long. The daily motion of Mars is very apparent when compared to the non-moving stars. Watch Mars from night to night, and notice how quickly this alignment changes.

The moon is passing through Scorpius on June 16. The bright orange-red star below and to the left of the moon is Antares (an **TAR** ee), the "heart" of the scorpion. Antares is the 15th brightest star in the sky.

On the following night, the 17th, the moon is below and to the left of Antares.

Mercury is at maximum elongation (greatest apparent distance) from the sun on June 18. Mercury is 18 degrees west (left) of the sun and can be seen rising in the east northeast, about 45 minutes before the sun. Mercury is still going to be only a few degrees above the horizon, and trees or buildings might block your view of this illusive object. A better chance of seeing Mercury in the morning sky will occur in October.

Full Moon occurs at 2:57 a.m. on June 19. The moon will be fully lit by the sun and have completed one-half of its orbit around the earth.

The planet Saturn, appearing as a zero magnitude star, is four degrees above and to the left of the moon on

June 20. Look toward the east-northeast horizon, 45 minutes after sunset. Saturn is in the constellation of Sagittarius.

SUMMER OFFICIALLY arrives on Wednesday, June 21, at 5:53 a.m. Eastern Daylight Time. On this day the sun will be rising at its farthest point north of east, have its highest altitude in the sky, and set at its farthest point north of west for the entire year.

The sun appears in different parts of the sky at different times of the year. Remember where the sun was rising back in December? It was rising far south of east and setting south of west. The days were short and cold and we had winter. The difference in the sun's position is not due to any movement on the part of the sun. Instead it's due to the tilt of Earth's axis of rotation.

We orbit around the sun, but our axis is tilted 23 1/2 degrees. It just happens to be pointing toward a star named Polaris, the North Star. In summer, when the North Pole of the earth is pointed toward Polaris, it is tilted 23 1/2 degrees toward the sun as well. Six months later the earth is on the opposite side of the sun. The North Pole is still aimed toward Polaris, but now it tilts 23 1/2 degrees away from the sun. Therefore the

skywatch

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sun appears in a different part of the sky.

The moment when the earth reaches the point in its orbit, where the North Pole is at the greatest tilt toward the sun, is the exact moment of summer. At least it is for the Northern Hemisphere. When the North Pole is tilted toward the sun, the South Pole is tilted away from it. We may be enjoying the start of summer, but for people south of the equator the days are short and cold and it's the start of winter.

If it were not for the tilt of Earth there would be no change of seasons. If the earth's axis was straight up and down, everyone would have March-type weather year-round. That may not be bad if you live in the tropics, but it's awful in Michigan!

LOOK FOR MERCURY on the morning of the 23rd. It is about four degrees above the east-northeast horizon. If you're having trouble finding it, look for the Pleiades (PLEE a

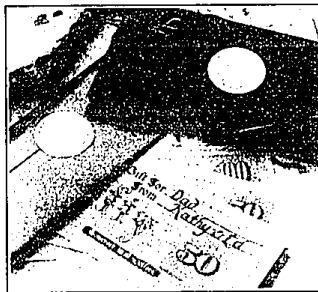
dees) instead. Looking like a tiny dipper, the Pleiades star cluster marks the "shoulder" of Taurus the bull. The Pleiades is a good 15 degrees above the horizon and easy to find, especially if you are using binoculars. Once you locate the Pleiades, trace a line down toward the horizon and look a little to the left. You will be able to see Mercury, provided you have an unobstructed horizon.

Venus is five degrees to the left of Pollux on the evening of the 24th. Because Venus is closer to the sun than Mars, Venus orbits faster. Its alignment with Pollux and Castor will change even faster than Mars' alignment earlier this month.

The moon is at Last Quarter phase at 5:09 a.m. on June 26. It is beginning the last quarter of its orbit around the earth.

An excellent aid for learning constellations and keeping up to date with the sky is the monthly "Sky Calendar." A one year subscription is \$6. It is available from Abrams Planetarium, Michigan State University, East Lansing, 48824.

Raymond Bullock was the former coordinator of the planetarium and observatory at Cranbrook Institute of Science. He now works for a company which specializes in Laser displays and effects.



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