

When Easter Sunday falls depends on moon

Easter Sunday is on April 15 this year, but next year it falls in March. Determining the date of this very erratic holiday is not as difficult as you may think. All you need to know is the phase of the moon and a few rules.

The ground rules for determining Easter were set up in the year 325 A.D. when the Emperor Constantine called for a Council at Nicea for the purpose of calendar reform. Based on the advice of his Christian council, he decreed that Easter would be observed on the first Sunday following the first full moon that occurs after the vernal equinox (the start of spring).

The reason for choosing the full moon, rather than the new moon, was so that people making a pilgrimage to the Holy Land could travel at night by the light of the moon. Since the start of spring occurs on March

20 or 21, the earliest date that can be Easter is March 22.

But now we have to consider the inevitable exceptions to the rule.

If the first full moon to occur after the start of spring falls on a Sunday, then the following Sunday is Easter. If the full moon happens to be on the same day as the vernal equinox, then the April full moon is used. If the April full moon falls on a Sunday, the following Sunday is Easter unless that date is later than April 25, which is the latest date Easter is permitted to fall. If that Sunday does fall after the 25th, then the previous Sunday, the one with the full moon, must be used.

SO ALL THINGS considered, Easter can come as early as March 22, which it last did in the 1818 and will again in 2285, or as late as April 25, which it did in 1943 and will



skywatch Raymond E. Bullock

again in 2038. This year, Easter Sunday is six days after the full moon. Want that simple?

The moon is approaching the planet Saturn on the morning of the 17th. They are in the constellation of Sagittarius the archer. Saturn, one of the slower moving planets, moves less than one degree this month.

The moon is at Last Quarter phase at 3:02 a.m. on April 18. It is beginning the last quarter of its orbit around the earth and is now to the east (left) of Saturn.

Look for Mercury again on the

evening of the 19th. It is nine degrees above the west northwest horizon 45 minutes after sunset, but will begin to fade rapidly during the next few days as it moves closer to the sun.

The crescent moon is approaching Mars on the morning of April 20. Watch the moon pass Mars and then Venus during the next two days. On the 21st the moon is midway between the two planets. On the 22nd the moon is to the east (left) of Venus.

The Lyrid meteor shower reaches

its peak in the pre-dawn hours of the 22nd. This is a fairly weak shower; only 15 "shooting stars" per hour are visible on average. This shower is named for the constellation of Lyra, from which the meteors appear to radiate. Lyra is nearly overhead at 5 a.m.

THE NEW MOON is at 12:27 a.m. on April 25. The moon is located between the earth and the sun and is not visible.

The one-day-old crescent moon will be two degrees above the Pleiades (PLEA) star cluster on the evening of the 26th. The Pleiades looks like a tiny "dipper" and marks the shoulder of Taurus the bull. Above and to the left of the moon is Aldebaran (al DEB a ran), the "eye" of Taurus. Follow the moon through Taurus and Gemini for the next four nights.

On the 28th the moon is approach-

ing Jupiter in the west. On the following night the moon will have passed Jupiter and will form a triangle with the stars of Pollux (above the moon) and Castor (to the right of Pollux). The month ends nearly the same way it began; the moon forms a line with Pollux and Castor on April 30.

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 and is available from Abrams Planetarium, Michigan State University, East Lansing, 48824.

Raymond Bullock is the former coordinator of the planetarium and observatory of the Cranbrook Institute of Science. He now works for a Troy company that specializes in laser displays and effects.



Terry Gibb

Q. I've been reading that the state has changed its policy on solid waste. Can you explain these changes? Thank you.

A. Historically, the state was reluctant to require specific methods of solid waste management. However, all that changed in 1988.

A statewide policy was enacted that set as its goals the percentages of Michigan's solid waste that would be handled through the following six strategies:

- Waste reduction — 8-12%*
- Reuse — 4-6%
- Composting — 8-12%
- Recycling — 20-30%
- Incineration — 35-45%
- Using landfills — Less than 25%

In 1984, Michigan produced 26,000 tons per day of solid waste with the prediction that the amount would increase to 29,000 tons per day by the year 2000.

TODAY, Michigan residents create 32,000 tons of refuse per day or 11.6 million tons per year. Michigan residents are already producing more trash than was expected by the year 2000, 10 years from now.

Another change is that the six components of the state's new policy are designed to complement each other in reducing the amount of solid waste of rather than be independent options.

1. Reducing the amount of waste produced at the source is the most direct and cheapest component. Choosing products with minimal packaging and using durable goods rather than disposable items are two ways to reduce solid waste.

2. Reuse involves using a product again without altering its original form.

3. Composting is the natural decay of organic wastes, such as food scraps, yard waste, leaves and grass clippings. These products can be combined and processed to produce compost for use in gardens.

4. Recycling is the separation, collection and processing of materials (glass, paper, aluminum, metals, plastic) that can be converted into raw materials to produce new products.

CURRENTLY just eight other states have set recycling as such a major component in their solid waste management plans.

However, the recyclability of a product depends on the collection system that is available and where you are located. Even if the collecting and processing systems exist, there is no guarantee that the waste will be recycled.

Markets must exist for the new products produced. Michigan's new policy calls for the development of markets for recycled goods.

5. Incineration with energy recovery is the burning of solid waste at high temperatures under controlled conditions to produce energy. The new state/DNR policy calls for incineration only after waste reduction, reuse, composting and recycling.

6. Landfills are carefully constructed pits used to bury solid waste. Burial will be required for all of the residuals that are not converted by the first five techniques.

MANY COMMUNITIES are seriously evaluating the potential recovery and recycling of their solid wastes. Many new recycling drop-off sites have opened since last fall.

Now it's time for communities to take the next step: buy and use recycled products (particularly paper) that are created by their collection efforts. Recycling is not complete until the products generated by our recycling efforts are reused. Increasing the markets for recycled products is the only way to ensure the success of recycling.

*This is according to "Water Impact," October 1989.

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