

Double the full moons marks this December

December has always brought us the start of winter and two meteor showers, but in 1990 it also brings two full moons and the end of the decade of the '80s. (Contrary to popular belief, the 1990s did not start on Jan. 1, 1990.)

The amount of sunlight we receive this month decreases by 11 minutes. On Dec. 1, sunrise is at 7:42 a.m. and sunset is at 5:01 p.m., for a possible nine hours and eight minutes of sunlight.

Mars, Jupiter and Saturn will be easily visible this month. Saturn is in the evening sky; Mars and Jupiter are visible most of the night. Mercu-

ry and Venus can be viewed, late in the month, with difficulty.

Look toward the east northeast around 6 p.m. on Dec. 1 and locate the moon. The bright "star" three degrees to the south (right) of the moon is the planet Mars. Mars was nearest the earth last month and will be fading as it orbits farther away from it. Mars will be visible in the evening sky through July, 1991.

Directly above Mars is the Pleiades (P.L.I.E. a dees) star cluster. It will be difficult to see the fainter members of this cluster with the "lily dipper" of stars marks the shoulder



skywatch
Raymond E. Bullock

of Taurus the bull and is a delight to see through binoculars. The red star below Mars is Aldebaran (al DEE a ran) the "eye" of the bull.

THE FIRST FULL MOON of the month occurs at 2:50 a.m. on Dec. 2. The moon is fully lit by the sun. The amount of time it takes the moon to complete a full cycle, from full moon to full moon, is 29 days, 12 hours, 44 minutes and three seconds (approximately). This is called the moon's synodic (sin NOD ik) period.

When a full moon occurs very early in the month, it is possible to complete a synodic period within that month and experience two full moons. (Logically, the same holds true for two new moons, or two first-quarter moons happening in the same month, but they don't have the same romance of Full Moon.) The second full moon of the month is called the "Blue Moon" and, as you might suspect, doesn't happen very often. The last "Blue Moon" was in May, 1988; the next occurs in September, 1993.

Notice the equilateral triangle formed by the setting moon, Mars and Aldebaran in the west northwest before sunrise on the morning of the

second. This is one of the closest full moons in many years: the moon is 355,525 km (221,534 miles) away and will produce extreme tides.

The moon is in Gemini on the evening of the fourth, forming a line with the stars Pollux (above the moon) and Castor (above Pollux). These two stars each mark a "head" of the twins and will be up in the east, five hours after sunset.

The planet Mercury is at maximum elongation (greatest apparent angle) from the sun on the evening of the fifth. Mercury is 21 degrees east (left) of the sun, but only a few degrees above the southwestern horizon. Higher in the southwest, and easier to see, is Saturn, located about 18 degrees to the south (left) of Mercury.

LOOK TOWARD the east, five hours after sunset on the fifth, and you'll see the moon about six degrees above and to the right of Jupiter. Notice the bright star to the right of the moon. This is Procyon (PRO see on), a name which means "before the dog." Procyon rises in the east shortly ahead of Sirius (SEER e oos) the "dog star." Sirius is the brightest

star in the night sky and easy to spot, rising in the southeast after Procyon. Procyon is the eighth brightest star in the sky and the fifth closest, being about 11.3 light years away. (The light we see tonight left Procyon 11.3 years ago.)

Watch the moon pass through Cancer and Leo on the mornings of Dec. 6 and 8. The moon, high in the west southwest, is approaching Jupiter on the morning of the sixth. On the next morning, the moon is to the south (left) of Jupiter and below the star Regulus (REG u lus), forming a triangle. On the morning of the eighth the moon, approaching last quarter phase, has passed Regulus.

Last Quarter Moon occurs at 9:04 p.m. on Dec. 8. The moon is beginning the last quarter of its orbit around the earth.

The waning (fading) crescent moon, now in Virgo, will be six degrees to the south (right) of the bright star Spica (SPY ca) on the morning of the eleventh. On the next morning the moon has passed Spica.

One of the year's best meteor showers, the Geminids (GEM in ids), reaches its peak on the morning of Dec. 14. Meteor showers are named for the constellation from which they appear to radiate, in this case Gemini.

Meteors are more commonly known as "falling stars" because they look like little stars falling from the sky. Some American Indi-

ans thought they were stars running from danger. But they have nothing to do with stars; meteors are rocks falling out of the sky.

MANY OF these meteors are orbiting around the sun in well-defined orbits. They may be trailing along as the debris of a comet, or they may be the remains of a comet that disintegrated long ago. When the earth passes through the orbit of a meteor swarm, many more meteors than usual can be seen, and we can predict precisely when that happens.

The Geminid swarm is one of the richest. A patient observer can expect to see an average of 50 meteors every hour, which is about one every minute. The best meteor display occurs between 2 a.m. and sunrise. Although Gemini is nearly overhead, the meteors can appear in any part of the sky. Their trails can be traced back to Gemini.

Mars passes two degrees below the Pleiades on the evening of the 14th. The moon is nowhere near Taurus now, so the fainter members of the Pleiades will be much easier to see.

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

Post office has holiday gifts

Shopping for gifts at the post office can save time and gasoline. "Convenience shopping at the post office can help you get an early start on your gift mailing," says John M. Horne, field division, general manager/postmaster, Detroit Division.

Most of the following items are on sale in many post offices and Detroit Division's Philatelic Boutiques (Ann Arbor, Dearborn, Detroit, Wayne/Westland, Pontiac, Royal Oak and Port Huron).

Creature of the Sea, a 24 by 36-inch poster, depicts the killer whale and dolphin, \$4.95.

Three ornaments, crafted in bass, silver plated in a snowflake shape and crowned with one of the 1990 Christmas stamps, are priced at \$14.95 each. Ornaments are sold over the counter or by mail. Mail order forms are available in the post office lobby.

Stampin', a board game, costs \$13.95 by mail order and over the counter. The game is for those ages 8 to adult. Each game includes the pamphlet, "Introduction to Stamp Collecting."

The "Best of the Decade Mint Set, is \$18.95 and contains 51 stamps

from the most popular issues of the 1980s. The set includes protective mounts and a 58-page book of illustrations and narrative.

The Postal Service Guide to U.S. Stamps contains a list of stamp values for new and used stamps, full-color illustration facts about all U.S. stamps printed since 1847. It also contains a list of valuable stamp errors. The 336-page booklet costs \$5.95.

The 1990 Commemorative Mint Set, features the enter collection of 31 commemorative stamps (valued at \$2.45) featured in a colorfully illustrated album. Look for coupons in post office lobbies offering \$2 off the regular price of \$16.50.

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