ASTRONOMY

Five Eclipses In 1942

Two of Moon, Both Total, Will Be Visible in U. S.; Four Bright Planets Still Seen Early in January

By JAMES STOKLEY

UNFORTUNATELY, no one can tell what the year of 1942 is going to have in store for the world, and for us in particular. Despite claims of the astrologers and charlatans, there is no way of telling this from the stars. But the stars do tell us what is happening in the heavens. We know the movements of the heavenly bodies, and can tell where they will be months and even years from now. Therefore we know what planets will be seen, when eclipses will occur, what other phenomena will happen.

Mercury, for example, which many people have never seen at all, will be in its best evening position about May 18, when it is farthest east of the sun, remaining low in the western sky after sunset.

By the end of February Venus will appear as a morning star, seen in the east before sunrise. It will gradually dim from its early splendor, drawing again into line with the sun, and vanishing for a time, on November 16. By the end of 1942 it will again be in the evening sky, slowly brightening for another brilliant appearance in the spring of 1943.

Mars will continue getting fainter, and will be completely out of sight by October 6, when it will be in line with the sun.

Jupiter will continue shining in the evening sky until a few weeks before June 25, when it comes into the same direction as the sun. After that, it will be a morning star, coming back into the evening sky at the end of the year.

Saturn Makes Exit

Saturn will exit from the evening celestial stage early in May. It will be in line with the sun May 23, and will show as a morning star during the summer. By December 1, it will be visible all through the night, and will be seen easily in the evening once more.

As if to make up for the poor planet display, 1942 will bring five eclipses, two of which, both total, of the moon, will be seen from the United States and Canada. The other three, of the sun, are all partial, and will have no scientific interest. Two, on March 16 and on August 12, will be seen in the Antarctic regions, and the third, on September 10, in the Arctic.

The first total eclipse of the moon occurs on the night of March 2. It begins before moonrise in the United States, but the ending will be seen all through North America, except the extreme northwestern part.

The second eclipse of the moon, also total, will happen on August 26. This time the beginning will be visible in all North America except the western and northwestern part. The end will be seen in all except the northwestern part.

Three more occultations of Aldebaran, like the one this month on the 27th, are on the program. The one on March 22 is in the evening, that of September 2 in the afternoon and of October 27 late at night.

As the new year opens, our planet display of recent months comes toward its end. At the beginning of January, it is still possible to see four of the five naked eye planets in the sky simultaneously, but one, Venus, is gone by the end.

Venus Still Brightest

Venus is still the most brilliant of the stars or planets. It shines low in the southwest just after sunset. However, the sun is rapidly catching up to it, and will pass the planet on February 2. For several weeks before this date, Venus will be so nearly in line with the sun, and will set so early, that it will be gone from view.

Mars, high in the southwest, appears in the accompanying maps, which reveal the way the heavens appear at 10:00 p.m. January 1; 9:00 p.m. on the 15th and 8:00 p.m. on the 31st. Mars is drawing away from earth after its close approach of last October, and is rapidly getting fainter, though it is still brighter than most first magnitude stars. It is now in the constellation of Aries, the ram, though just on the edge of his neighbor, Pisces, the fishes. Above, and a little distance to the left, near the cluster of faint stars called the Pleiades, is Saturn, now standing in Taurus, the bull. Its brightness is about the same as that of Mars.

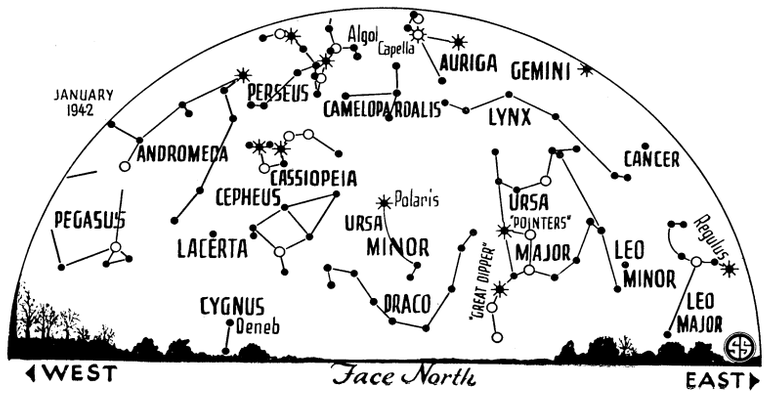
The brightest planet that is seen throughout the month is Jupiter, also in Taurus, near the V-shaped star group called the Hyades, outlining the bull's face.

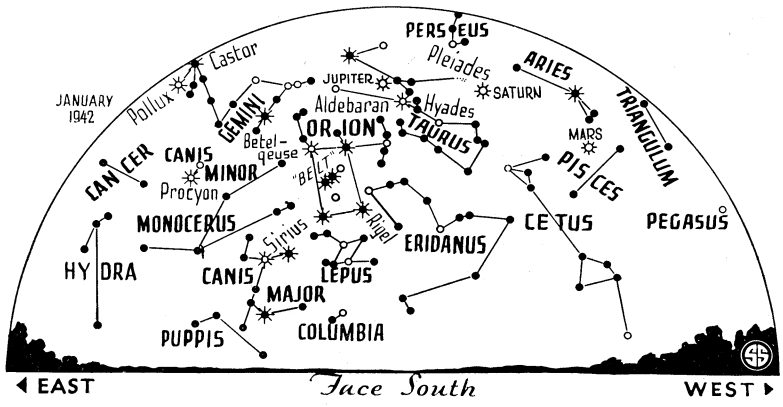
Brief Visit of Mercury

Mercury will make a brief appearance about the 25th, when it is farthest east of the sun. For a few evenings around that date it will set about an hour after the sun, but it will be rather difficult to see.

The moon, in a gibbous phase just after first quarter, will pass through this part of the sky January 25-27. At 3:22 a.m., E.S.T., on January 24, the moon passes Mars. The next afternoon, at 12:23 p.m., E.S.T., it goes past Saturn. Then, on the 27th, at 4:44 a.m., E.S.T., it passes Jupiter. And just for good measure, earlier that same morning, about 2:00 a.m., E.S.T., the moon will go in front of the star Aldebaran, which indicates the bull's eye. For nearly an hour the star which is of the first magnitude, will be eclipsed, or "occulted."

The usual brilliant stars of January have some competition at this time from the planets, but they are well worth seeing. Most brilliant of all is Sirius, the dog-star, in Canis Major, the big dog, to





the southeast. Between Sirius and Aldebaran are the three stars of Orion's belt. Above the belt is Betelgeuse, below is Rigel. Procyon, in Canis Minor, the little dog, is above and to the left of Sirius, while still higher is Pollux, in Gemini, the twins. Almost directly overhead is Capella, in Auriga, the charioteer. All of these stars mentioned by name are of the first magnitude. So also is Deneb, in Cygnus, the swan, low in the northwest, and Regulus, in Leo, the lion, to the west.

Celestial Time Table for January, 1942

Friday, Jan. 2, 10:42 a.m., Full moon; 2:00 p. m., Earth nearest sun—distance 91,314,000 miles. Saturday, Jan. 10, 1:05 a. m., Moon in last quarter. Wednesday, Jan. 14, 5:00 p. m., Moon nearest—distance 225,670 miles. Friday, Jan. 16, 4:32 p. m., New moon. Sunday, Jan. 18, 8:06 a. m., Moon passes Venus. Saturday, Jan. 24, 1:35 a. m., Moon in first quarter; 3:22 a. m., Moon passes Mars. Sunday, Jan. 25, 7:00 a. m., Mercury farthest east of sun, sets about an hour after sunset, but difficult to see; 12:23 p. m., Moon passes Saturn. Monday, Jan. 26, Noon, Moon farthest —distance 246,790 miles. Tuesday, Jan. 27, about 2:00 a. m., Moon occults Aldebaran; 4:44 a. m., Moon passes Jupiter.

Eastern standard time throughout.

Science News Letter, December 27, 1941

PHYSIOLOGY

Enzyme in Body Prevents Squandering of Food Store

AN ECONOMIZER enzyme of the body which, like a thrifty housewife, helps to prevent squandering of foodstuff reserves, is giving scientists clues to some unsolved cancer riddles, it appears from the report of Dr. Kurt G. Stern, of Yale University School of Medicine, to the American Chemical Society.

The economizer enzyme has been christened the Pasteur enzyme by Dr. Stern and his associates, Dr. Joseph L. Melnick and Delafield DuBois, in honor of Louis Pasteur, French bacteriologist and chemist who discovered the power of oxygen to throttle fermentation processes and thus protect food stores of the body from needless destruction. It is the Pasteur enzyme which keeps the oxygen at this thrifty task. Otherwise food combustion in the body would be so uneconomical that each adult would have to consume daily more than 10 loaves of bread.

Shortage of the thrifty Pasteur enzyme, Dr. Stern believes, is responsible for the fact that all cancer cells form lactic acid in air from foodstuffs instead of following the more efficient food combustion process of normal cells.

How the shortage of the Pasteur enzyme comes about in the cancer cells is not known, "but," Dr. Stern said, "we do know that the Pasteur effect is impaired if cells suffer chemical or mechanical damage and that tumors frequently arise in the wake of serious injuries sustained by normal tissues."

Science News Letter, December 27, 1941

AERONAUTICS—MEDICINE

Mayo Doctor Urges Pilots To Take up Hobbies

Men Trying To Adapt to Super-Powered Machines and Extreme Altitudes Must Learn To Rest and Relax

TODAY'S high and fast flying pilots will take up stamp collecting, gadget making or the study of foreign languages if they listen to the advice of Mayo Clinic nerve specialist, Dr. M. N. Walsh.

The modern pilot's nerve-splitting profession not only requires that he groom his body like Joe Louis, but that he save every possible milligram of his nervous energy by learning how to relax, Dr. Walsh declares.

Although men still have horse-and-buggy bodies, they are trying to adapt themselves to super-powered machines piercing the new and startling environment of the icy upper air. Science is inventing devices to help—the oxygen mask—but, as one veteran pilot told Dr. Walsh, "man is so far behind the airplane in efficiency that it will be difficult to catch up."

Dr. Walsh points out "that altitudes to which certain of the high-powered airplanes of today will take their pilots exceed by 300 to 400% the peak . . . altitude (which human beings can endure) without additional supply of oxygen. The rate of climb is so fast that human beings may not be able to accommodate themselves . . . (without the formation of) air bubbles in the tissues."

"In addition, the factors of intense cold, bulky and uncomfortable clothing, and the necessity of combating the well-known decrease in mental efficiency and the feeling of malaise common at high altitudes, all tend to produce a state of exhaustion in the pilot and crew which may become chronic if work at high altitudes is often necessary."

To combat excess drain on nervous energy, Dr. Walsh urges perfect physical condition aided by frequent rest periods and hobbies.

"The importance of hobbies in securing mental relaxation is much underestimated," he says. "The chief value of hobbies . . . lies in their capacity to release pent-up nervous tension."

"The most satisfactory hobbies are those which involve making something with the hands or forming collections, so that the individual can enjoy the feeling that he has created something worth having, and can spend a quiet and restful hour with his hobby in forgetfulness of the worries of his daily occupation."

Dr. Walsh suggests carpentry, shop work, model making, the formation of scrapbooks, and the study of foreign languages.

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