

ASTRONOMY

Mars Now Closest to Earth

The red planet Mars, closer than it has been for two years, shines brilliantly in the February sky, but brighter still is Sirius, the dog star, James Stokley reports.

➤ OVER in the southeastern sky on February evenings you will see a brilliant object shining with a distinctly red color.

This is the planet Mars, now closer than it has been in about two years; closer than it will be for about two years to come. It will be nearest on Feb. 2, when it will be 62,280,000 miles away. And because of this relatively close approach, it is shining brilliantly. Its magnitude, using the astronomer's scale of brightness, is minus 0.9.

However, Mars is not as bright as the star known as Sirius, the dog star, in the constellation of Canis Major, the great dog. This is in the south, lower and to the right of Mars. Both star and planet are shown on the accompanying maps, which depict the sky as it looks about 10:00 p.m., your own kind of standard time, at the first of February; 9:00 p.m. at mid-month and 8:00 p.m. at the end. The magnitude of Sirius is minus 1.4, or about 58 per cent brighter than Mars, although we see it somewhat dimmed. Being lower than Mars, some of its light is absorbed by the greater thickness of the atmosphere that it must penetrate.

Mars in Cancer

Mars is in the constellation of Cancer, the crab, which is not a very conspicuous group of stars. Toward the left and a little lower is Leo, the lion, with first magnitude Regulus, represented by the symbol for a fainter body because it is low enough in the sky that its light is somewhat dimmed by atmospheric absorption. To the right of Cancer is Gemini, the twins. In this figure stands Pollux, also of first magnitude.

Gemini is one of a group of six prominent constellations which are seen at their best on evenings of mid-winter. Directly below the twins is Canis Minor, the lesser dog, with brilliant Procyon. Still lower, and a little to the right, is the great dog, Canis Major, with Sirius.

Higher and to the right of the great dog is the constellation generally considered the finest in the sky. This is Orion, with two stars of the first magnitude: Betelgeuse, above, and Rigel, below. Between them are three stars in a row that represent the belt of the warrior that this figure is supposed to represent.

Still higher—and still farther right—is Taurus, the bull, with Aldebaran, reddish in color, to represent the animal's eye. And above this group, directly overhead, in fact, stands Auriga, the charioteer. This also contains a star of the first magnitude, called Capella.

Although Mars is the only planet shown on the maps, another is visible earlier in the evening than the times for which they are drawn. Jupiter, of magnitude minus 1.6

and slightly brighter than Sirius, is in Aquarius, the water carrier. It sets in the west about 8:00 p.m. at the beginning of the month and about an hour earlier at the end. But you can easily find it earlier in the evening as it shines so brightly in the southwestern sky. And early in the morning, for about two hours before sunrise, Venus shines, even more brilliantly, in the southeast.

It was because Mars is now the closest it has been for the past two years or will be for the next two that Soviet scientists on Nov. 2 launched their spacecraft, Mars I, to make closeup pictures of Mars before it has receded too far from earth. The spacecraft will probably pass quite close to the planet, but it has to radio its pictures back to earth, and that means that the planet cannot be too far away.

Actually, for a so-called "close approach," Mars is now quite far away! It came to somewhat more than half this distance in September 1956 and will do so again in August 1971. Then, no doubt, many important observations will be made of Mars—from the earth, from satellite observatories circling the earth, and from spacecraft flying near the planet.

Mars goes around the sun in a year equal to 687 of our days. We go around more

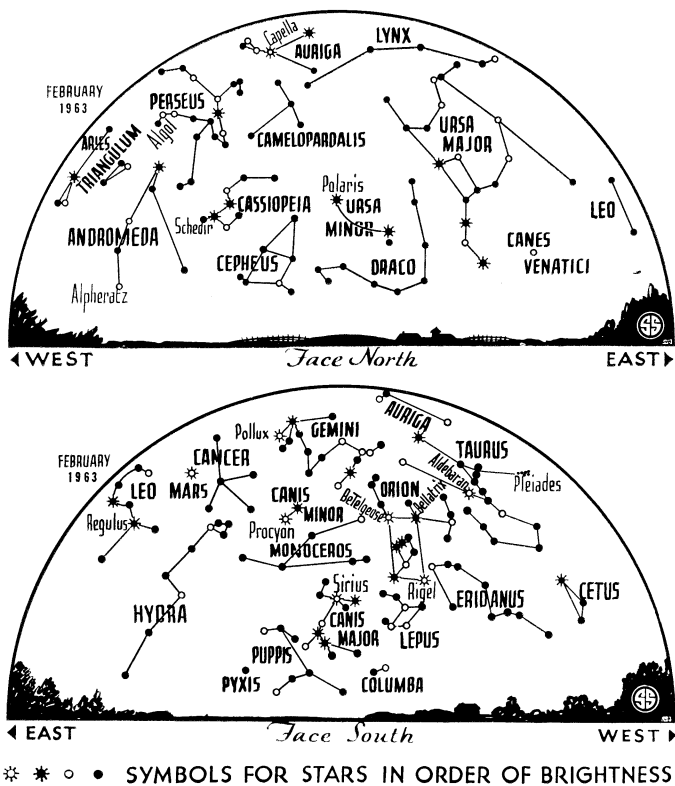
rapidly, and every 780 days (about two years and two months) we go past it. At such a time we are closest to Mars, which is in a direction opposite to that of the sun. Such an event is called an "opposition" of Mars. About halfway between oppositions, earth and Mars are in opposite directions from the sun. As seen from earth, Mars is in "conjunction" with the sun.

The earth's mean distance from the sun is 93,000,000 miles; that of Mars is 141,500,000 miles. If both planetary orbits were exact circles, at any opposition Mars would be 48,500,000 miles away (the difference between the two distances). At conjunction they would be 234,500,000 miles apart (the sum of the distances).

Orbits Elliptical

But both orbits are elliptical, that of Mars even more so than ours. The result is that if we happen to pass Mars at the point where the two orbits are closest, it will be only 34,500,000 miles away. That almost happened in 1956 when the minimum distance was 35,200,000 miles. Then we swung around our orbit far away from Mars, and when we passed it again, in November 1958, the planets were separated by 45,400,000 miles. The next opposition came at the end of 1960, with 56,500,000 miles. And now, in February 1963, even though we swing toward Mars, that planet is 62,280,000 miles away.

The next after this will come in March 1965 and it will be a little better, with the



distance reduced to 62,100,000 miles. Still better oppositions will come in April 1967 and May 1969. And then comes the very favorable approach on Aug. 10, 1971, when Mars will be only 35,000,000 miles away—the best in the second half of the 20th century.

Next month Mars will be farther away—and fainter—than it is now, but will still be a prominent object in the evening. And so, in the article for the March evening skies, we will tell some of the interesting things that astronomers have already learned or surmised about this fascinating and mysterious planet.

Celestial Time Table for February

FEB.	EST	
1	3:50 a.m.	Moon in first quarter
2	10:00 p.m.	Mars nearest earth, distance 62,280,000 miles
3	4:00 a.m.	Saturn in conjunction with sun
8	1:00 a.m.	Moon passes Mars
	9:52 a.m.	Full moon
11	2:26 a.m.	Algol (variable star in Perseus) at minimum brightness
13	11:00 p.m.	Moon farthest, distance 251,600 miles
	11:15 p.m.	Algol at minimum
16	12:39 p.m.	Moon in last quarter
	8:05 p.m.	Algol at minimum
19	4:54 p.m.	Algol at minimum
20	10:00 a.m.	Moon passes Venus
23	9:06 p.m.	New moon
24	9:00 p.m.	Moon passes Jupiter
25	7:00 p.m.	Moon nearest, distance 225,000 miles

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

• Science News Letter, 83:58 January 26, 1963

ASTRONOMY

Faint Comet Seen In Southeastern Sky

► A FAINT COMET, named Ikeya after its Japanese discoverer, has been observed through observatory telescopes in the southern United States.

Ikeya comet, 12th magnitude, moved southeastward in the constellation of Centaurus, the centaur, probably away from the earth. Harvard College Observatory, Cambridge, Mass., distributed information on the comet to U.S. astronomers.

• Science News Letter, 83:59 January 26, 1963

Do You Know?

In Sweden there are twice as many bicycles, motorbikes and scooters as automobiles.

A new alloy of columbium and hafnium may be used in rocket engines where high temperatures and corrosive gases ruin ordinary metals.

Overweight, high blood pressure or high blood cholesterol count conditions increase heart disease risk 50 per cent.

Five European countries—Italy, Denmark, Sweden, Norway and Spain—have banned over-the-counter sales of drugs likely to be used by expectant mothers.

• Science News Letter, 83:59 January 26, 1963

GET READY FOR THE SPACE and SCIENCE ERA! SEE SATELLITES, MOON ROCKETS CLOSE-UP

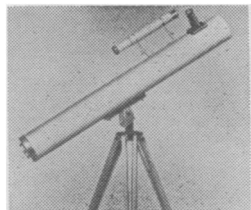
AMAZING SCIENCE BUYS

for FUN, STUDY or PROFIT

See the Stars, Moon, Planets Close Up!

3" Astronomical Reflecting Telescope

Study Venus—the brightest star Probed by Mariner II Spacecraft (Famous Mt. Palomar Type)

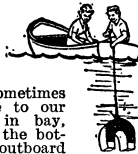


60 to 180 Power An Unusual Buy!

Assembled—Ready to use! You'll see the Rings of Saturn, the fascinating planet Mars, huge craters on the Moon, phases of Venus, Star Clusters, Moons of Jupiter in detail, Galaxies! Equatorial mount with lock on both axes. Aluminized and over-coated 3" diameter a 60X eyepiece and a mounted Barlow Lens, giving you 60 to 180 power. An Optical Finder Telescope, always so essential, is also included. Sturdy, hardwood, portable tripod. FREE with Scope: Valuable STAR CHART plus 272-page "HANDBOOK OF HEAVENS," plus "HOW TO USE YOUR TELESCOPE" BOOK. Stock No. 85,050-Q.....\$29.95 Postpaid 4 1/4" Reflecting Telescope—up to 255 Power, all-metal pedestal mount. Stock No. 85,105-Q \$79.50 F.O.B. Barrington, N.J.

'FISH' WITH A MAGNET!

Go Treasure Hunting on the Bottom



Great idea! Fascinating fun and sometimes tremendously profitable! Tie a line to our 5-lb. Magnet—drop it overboard in bay, river, lake or ocean. Troll it along the bottom—your "treasure" haul can be outboard motors, fishing tackle, all kinds of metal valuables. 5-lb. Magnet is war surplus—Alnico V Type. Gov't cost \$50. Lifts over 125 lbs. on land—much greater weights under water. Order now and try this new sport.

Stock No. 70,570-Q—3 1/2 lb. size...\$8.75 Postpaid
Stock No. 70,571-Q—5 lb. Magnet...\$12.50 Postpaid
Stock No. 85,152-Q—15 lb. size...\$33.60 F.O.B. Barrington, New Jersey

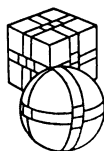


NEW ZOOM MICROSCOPE EYEPIECE

ZOOMS POWERS FROM 30X TO 2000X

Greatest microscope accessory yet! Priced amazingly low. Combines all eyepiece powers from 10X to 200X in one assembly. Twist of dial...without more focusing...without extra eyepieces changing...and you command powers up to 2000X. Professional all-metal quality construction, heavily plated, anodized. Fits any standard .917" dia. microscope tube. Built-in, adjustable clamping ring insures tight, mar-free attachment. Stops eyepiece changing. Coated elements, 2 3/4" long, 1 1/4" max. dia., 5 oz. wt. Stock No. 60,270-Q.....\$25.00 Postpd.

WOODEN SOLID PUZZLES



12 Different puzzles that will stimulate your ability to think and reason. Here is a fascinating assortment of wood puzzles that will provide hours of pleasure. Twelve different puzzles, animals and geometric forms to take apart and reassemble, give a chance for all the family, young or old, to test skill, patience and, best of all, to stimulate ability to think and reason while having lots of fun. Order yours now.

Stock No. 70,205-Q.....\$3.00 Postpaid



Terrific Buy! American Made!

OPAQUE PROJECTOR

Projects illustration up to 3" x 3 3/4" and enlarges them to 35" x 30" if screen is 6 1/2 ft. from projector; larger pictures if screen is further away. No film or negatives needed. Projects charts, diagrams, pictures, photos, lettering in full color or black-and-white. Operates on 115 volt, A.C. current...8-ft. extension cord and plug included. Operates on 60 watt bulb, not included. Size 12" x 8" x 4 1/2" wide. Weight 1 lb. 2 ozs. Plastic case with built-in handle. Stock No. 70,199-Q.....\$7.95 Postpaid

MINIATURE WATER PUMP



Wonderful for experiments, miniature waterfalls, fountains, HO gage railroad backdrops, etc. Tiny (2 1/2" x 1 1/4") electric motor and pump, ideal for hobbyists, labs, schools. Pumps continuous flow of water at rate of one pint per minute at a 12" head. With 2 D batteries in series will pump to 24" high. Runs 48 hours on battery. Works in either direction. Self priming.

Stock No. 50,345-Q.....\$2.25 Postpaid

50-150-300 POWER MICROSCOPE



Amazing Value—3 Achromatic Objective Lenses on Revolving Turret! Imported! The color-corrected, cemented achromatic lenses in the objectives give you far superior results to the single lenses found in the microscopes selling in this range. Results are worth the difference! Fine rack and pinion focusing. Stock No. 70,008-Q.....\$14.95 Postpd.

MOUNTED 500 POWER OBJECTIVE

Threaded for easy attachment on above microscope. Achromatic lenses for fine viewing. 3 mm. focal length. Stock No. 30,197-Q.....\$5.00 Postpd.



MAT ALARM — NEW SIGNALING DEVICE — FOR HOME, STORES AND OFFICES

Mat Alarm and Signaling Device, 3/32" thick x 17" x 23", detects presence of anyone entering a home, store or office. May be used as burglar alarm, entrance signal in small stores, professional offices, provide front and back door illumination for private homes, etc. It may be placed under rugs or other floor covering at entrances or below windows. Pressure of 5 lbs. or more on any part of mat actuates low-voltage bell or buzzer, or lights an electric bulb. Switching elements electronically sealed between sheets of tough vinyl. Transformer to step down voltage to proper level for alarm or signaling circuit included. Bell or other alarm device may be obtained locally.

Stock No. 70,591-Q.....\$10.75 Postpaid
CONSTANT-SIGNALING DROP RELAY activated by pressure on mat is optional. This keeps alarm on until manually reset. Stock No. 40,592-Q.....\$7.50 Postpaid

NEW... PORTABLE ELECTRIC GREENHOUSE FOR YEAR-ROUND GARDENING MAGIC



Now you can practice gardening as a hobby 12 months a year! Grow endless varieties of plants to maturity summer and winter...experiment continuously with plant growth and development. Thermostatically controlled temperature and humidity for rapid germination of seed, rooting of cuttings, and maximum growth potential. Size 15" x 18", with styrofoam base. 25-watt heater and thermostat. 2 polystyrene planter trays, clear styrene lid. 2 sizes available each including bag of growing medium.

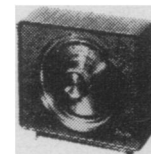
Stock No. 70,490-Q—Low-lidded model, 7" high \$4.85 Postpaid
Stock No. 70,491-Q—High-lidded model, 15" high \$21.95 Postpaid

SCIENCE TREASURE CHESTS

For Boys—Girls—Adults!



Science Treasure Chest—Extra-powerful magnets, polarizing filters, compass, one-way-mirror film, prism, diffraction grating, and lots of other items for hundreds of thrilling experiments, plus a Ten-Lens Kit for making telescopes, microscopes, etc. Full instructions included. Stock No. 70,342-Q.....\$5.00 Postpaid
Science Treasure Chest DeLuxe—Everything in Chest above plus exciting additional items for more advanced experiments, including crystal-growing kit, electric motor, molecular models set, first-surface mirrors, and lots more. Stock No. 70,343-Q.....\$10.00 Postpaid



Highly Sensitive "Wide-Angle" TAYLOR UNI/MAG BAROMETER

Exciting Breakthrough in Barometer Design—2 1/2 Times More Pointer Action

Tremendous advance in local weather forecasting. Accurate at any elevation—sea level for every degree of change in barometric pressure. Temperature compensated. High utility-and-interest value for homes, businesses, farms—forecasts weather changes 12 to 24 hrs. in advance. Attractive design. Simulated brass finish. Brown leatherette front panel. Forecast Chart on back of case—guide to quick, easy reading. 5" x 5 1/2" x 2 1/2". Directions included. Stock No. 70,593-Q.....\$11.95 Postpaid

MAIL COUPON for FREE CATALOG "Q"

NEW! 1000's of bargains—164 pages
EDMUND SCIENTIFIC CO.,
Barrington, New Jersey
Please rush Free Giant Catalog Q.
Name.....
Address.....
City..... Zone.. State..



ORDER BY STOCK NUMBER . SEND CHECK OR MONEY ORDER . SATISFACTION GUARANTEED!

EDMUND SCIENTIFIC CO., BARRINGTON, N. J.