ASTRONOMY

Planet Mars Comes Close

It is Mere 36,030,000 Miles Away on July 27, But Don't Expect Martians For They Don't Exist

By WATSON DAVIS

MARS, the ruddy planet shining brighter than any star in the southeastern sky of the early evening, is making its closest approach to earth in 15 years. On July 27 at 4 p.m. (E.S.T.) it will be only a mere 36,030,000 miles away. The moon is only about 1/150th that distance.

But don't expect a visitation of Men from Mars. Don't even expect most astronomers to be more interested in this astronomical event than they were last October when Orson Welles dramatized H. G. Wells' interplanetary fantasy. (Astronomers with dramatic critic leanings criticize Orson Welles' timing because Mars last October was several times farther away than now.)

Anew there is sure to be more discussion about the possibility of life on Mars. Meaning to most people, some sort of life like ourselves. Whenever Mars comes closer to earth this question is agitated.

"Mars, the pagan god of battle, instigated the disputes of man and the wasting of his blood," Dr. Harlow Shapley, director of Harvard Observatory, once said. "Mars, the neighboring planet, continues to incite disputes for the scientist and the wasting of his ink."

Most conservative astronomers feel that the changes in tint observed in certain areas of Mars may safely be regarded as seasonal changes in vegetation. There is also a cyclical shrinking and expanding of the polar caps with the Martian seasons, which if of snow and ice, would contribute to seasonal vegetational changes. Since vegetation is a form of life, most astronomers will agree that there is probably life on Mars. But it is life of a low order, not necessarily intelligent life.

Canals on Mars?

The idea of intelligent life is bound up with the supposed "canals" of Mars. Not over 15% at the outside of modern astronomers, Dr. Heber D. Curtis, director of the University of Michigan Observatory, estimates, believe in the existence of the long, straight and narrow markings first reported in 1877 by the Italian astronomer, Schiaparelli. He called them "canale," which should have been translated into English as "channels" connecting supposed Martian oceans. Unfortunately the word was actually translated as "canals," which suggests artificial construction. Hypothetical inhabitants were created to perform these great feats of engineering skill and the strange race of Martians was born of popular and literary imagination.

Prof. Percival Lowell in 1894 built an observatory at Flagstoff, Ariz., for the express purpose of studying the planet and its canals. He died firm in the belief that his drawings of the canals were realities, that they were the work of intelligent beings, and that they were constructed to carry down the water of the polar caps to irrigate the equatorial regions of the slowly dessicating planet.

Photos Don't Show Them

Whether these canals actually exist is one of the major controversies in astronomy with the vast majority of astronomers voting that they do not. Many admittedly keen-eyed observers cannot see them. Significant is the fact that photographs, even with the largest telescopes, do not show them. Much of the work on Mars has been done with small telescopes by observers who made drawings of what their eyes beheld. The skeptics have made experiments with random dots and markings on paper that show that the brain and the human eye play queer tricks when straining to look at something just beyond visibility. Physiological and psychological effects may build up "canals" out of random shadings and features too minute to be separately distinguished. And maps of Mars by Schiaparelli and Lowell show wide divergence in detail.

Despite the fact that Mars is the next to the nearest planet to earth, it is not a striking object. Even as seen with the aid of a large telescope, Mars looks like a small orange about five yards away. To the unaided eye it looks as large as a 6-foot man ten miles away.

The diameter of Mars is only a little more than half that of the earth. Gravity at its surface is 35% that on earth; a 150-pound earth dweller would weigh 52 pounds on Mars. Water would boil at 110 degrees F. instead of at the earthly 212 degrees. The Martian atmosphere is one-twelfth the density of air on earth. Whether there is much water or oxygen is doubtful. Mt. Wilson Observatory experiments, when Mars was fairly close in 1936, failed to detect water vapor in the equatorial regions of the planet. Its temperature may not be very different from inhabitable localities on earth. Various observations of Martian noon-day temperature range from temperate climate temperatures late of a February day to that of an April day.

Because it is low in the sky as seen from American observatories, observations at this close approach are not likely to be very fruitful. Added to the general astronomical indifference to the ruddy planet, this poor position of Mars will probably result in little new knowledge being gained through American telescopes this year. No observer in our northern latitudes can hope to see this year any of the so-called "canals."

From observatories located in the southern hemisphere there are more chances of satisfactory observations.

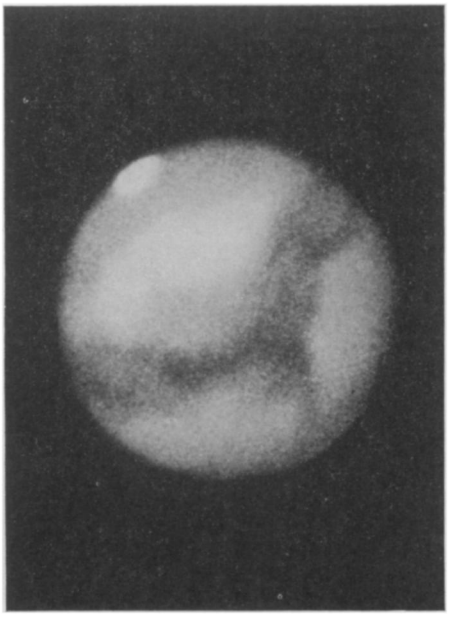
The principal American study of Mars this year will be made from Bloemfontein, South Africa, where the remarkably fine 27½-inch refracting telescope of the Lamont-Hussey Observatory, operated by the University of Michigan Observatory, will be put at the disposal of Dr. E. C. Slipher of Lowell Observatory to add to the long-continued and famous observations begun by the late Prof. Lowell himself. From South Africa, Mars will be almost directly overhead, only two degrees from the zenith.

Red Sensitive Photos

New photographic plates more sensitive in the red part of the spectrum will be used in Mt. Wilson Observatory observations. Direct photographs will also be taken with the giant Mt. Wilson telescopes.

Harvard Observatory is planning no special program, although its Boyden station in South Africa is expected to make some observations.

The University of California's Lick Observatory on Mt. Hamilton, Calif., does not plan a major program of observations.



MARS

This photograph made at Yerkes Observatory at the time of a previous close approach shows the planet that has been the subject of so much discussion among astronomers and laymen.

The new 82-inch McDonald Observatory telescope, world's second largest, on Mt. Locke, Tex., recently dedicated, will be used on Mars for the first time. A special camera has been built for this purpose.

Color photographs will be taken with the 40-inch reflector of the U. S. Naval Observatory at Washington and the planet will also be observed visually with the historic 26-inch lens telescope.

Science News Letter, July 22, 1939

MEDICINE

20,000 Fever Treatments Of 4,000 Patients Surveyed

THE IDEA of deliberately giving a sick person a high fever in order to cure him is such a contradiction of old established ideas about illness and its treatment that it is no wonder it has attracted wide attention among laymen as well as physicians.

Fever treatment has been tried for a great variety of ailments and much knowledge about its use has accumulated in the past eight or ten years, during which the method attained popularity. An analysis of some 20,000 treatments given to over 5,000 patients was presented by Dr. John D. Currence, of New York Post-Graduate Medical School and Hospital, Columbia University, at the last meeting of the American Medical Association.

"Strongest indications" for giving fever treatment, according to Dr. Currence, are gonorrhea (fever treatment combined with the new chemical remedy, sulfanilamide, is suggested) and complications of gonorrhea such as arthritis, complications of syphilis (again in combination with chemical treatment), such as optic atrophy, paresis and locomotor ataxia; Sydenham's chorea, familiarly known as St. Vitus' dance; early multiple sclerosis; and certain types of rheumatic disorders. Favorable results have been reported in cases of intractable bronchial asthma, undulant fever, encephalitis (so-called sleeping sickness), and a variety of skin ailments.

Fever treatment helps the patient get well, it is believed, by its effect on invading disease germs and by stimulating chemical and physiological reactions in the patient's body. It either kills germs or checks their growth and mobilizes some of the body's germ fighters. It causes dilation of the blood vessels, increased velocity of the blood flow, an increase in pulse and breathing rates, and an increased volume output of the heart. The blood-cell producing system is stimulated.

Conditions in which this treatment should not be used include heart and blood vessel and kidney disorders, pregnancy, active tuberculosis, alcoholism and general debility.

Science News Letter, July 22, 1939

PHYSICS

Physicists May Have New Link Between Atoms and Gravitation

Decay of the Mesotron May Provide Long-Sought Connection Betwen Atomic and Large-Scale Forces

OUT of the discovery of the mesotron particle, now shown to be the piercing component of cosmic rays, science has come across a new dimensional constant that may be the long-sought, never-found connecting link between small-scale atomic forces and large gravitational forces.

In a significant report (*Nature,* July 1), Prof. P. M. S. Blackett of Manchester University, describes the new constant which is the mean "life" of the mesotron particle at rest. It turns out to be 25 ten-millionths of a second (2.5×10^{-6} seconds).

The mesotron is the heavyweight kind of electron that spontaneously disintegrates with extreme rapidity; so fast in fact that it is only with extreme difficulty it can be detected.

"It is more convenient to consider not the average life," says Prof. Blackett, "but the related fundamental length which equals 7.5 times 10^4 centimeters."

This length comes out to be 2,460 feet and is obtained by multiplying the "life" time by the speed of light.

If the length of 2,460 feet (which is the average distance traveled by the average mesotron before it disintegrates) is to be related to the other natural constants like the charge on the electron, Planck's constant and the speed of light, "it is clearly necessary to include the gravitational constant G," says Prof. Blackett.

In calculations involving the gravitational constant of mesotrons, Prof. Blackett is able to work backward and compute the average path-length of travel of a mesotron. It comes out to be of the same order of magnitude as that obtained from physical measurements.

"It would be attractive to conclude from this result that perhaps the decay of the mesotron may provide a link between atomic and gravitational phenomena," says the British scientist.

There is one possibility which might make his whole argument invalid, explains Prof. Blackett. It is the unlikely possibility that the life-time of the mesotron as measured in the earth's atmosphere may not be the same as that in free space, but may depend on local conditions such as local gravitational fields, or electric and magnetic forces.

Science News Letter, July 22, 1939

●RADIO

Robert P. Shaw, director of the New York Museum of Science and Industry, will be the guest scientist on "Adventures in Science" with Watson Davis, director of Science Service, over the coast to coast network of the Columbia Broadcasting System, Monday, July 31, 5:45 EDST, 4:45 EST, 3:45 CST, 2:45 MST, 1:45 PST. Listen in on your local station. Listen in each Monday.