



Appearing too early to be shown on this map, this rarely seen planet may be observed soon after sunset in the west.

surface of Mercury reaches a temperature far above the boiling point of water, while in the opposite portions it is almost at the absolute zero of outer space. This is shown by actual measurements made at the Mt. Wilson Observatory.

Venus, Mars and Mercury are passing planetary visitors in the sky this month but none of them are visible throughout the entire evening and they are not shown on the accompanying maps. These maps depict the appearance of April skies at 10:00 p.m., April 1; 9:00 p.m., on the 15th and 8:00 p.m. at the end of the month.

At the beginning of April Venus is low in the western sky at dusk but quickly moves westward. On the 17th it is in line with the sun and cannot be seen. After a few weeks more, it will begin to appear in the eastern sky, before sunrise, that is, as a morning star.

About 10:00 p.m. in the middle of the month, Mars rises in the east and can be seen, as a brilliant red object, by 11:00 o'clock. It is in the constellation of the Scorpion, familiar in the southern evening sky of summer. The brightest star in the scorpion is called Antares, which means "rival of Mars," a name applied because it also has a red color. But at present Mars is several times brighter than its rival, and seems to have the advantage.

As for the other planets, Jupiter appears in the east about midnight, in the constellation of Sagittarius, the archer, east of the scorpion. About two and a half times as bright as Mars, it should be detected without trouble. Saturn is now almost in line with the sun and cannot be seen at all this month.

The stars now visible in the evening present a typically springtime appearance, with the Sickle very appropriately

hanging high in the south. This is part of Leo, the lion, and the bright star Regulus is at the end of the handle. About as high, in the northern sky, is the great dipper, in Ursa Major, the great bear. The "pointers" indicate the direction of Polaris, in Ursa Minor, the little bear, which is below.

Crow

If the curved handle of the dipper is followed to the south, one comes to Arcturus, in Boötes, the bear driver, and then to Spica, in Virgo. Beyond Spica is a group of four stars forming Corvus, the crow. Sometimes this is called the "mainsail," from its shape.

Orion, so brilliant during the winter months, has descended low into the west, along with the two dogs, Canis Major and Canis Minor, which follow him. Betelgeuse is the uppermost star in Orion, while Sirius and Procyon mark the dogs. Above Canis Minor are the twins, Gemini, with first magnitude Pollux. Aldebaran, in Taurus, the bull, is just north of Orion.

In the northwest is Auriga, the charioteer, with brilliant Capella, and below this Perseus is apparent. To the right of Perseus is Cassiopeia, a letter W on one side. Low in the northeast is a bright star, Vega, all that can now be seen of Lyra, the lyre, a group that will shine at the zenith on summer evenings.

During April the moon goes through its phases as indicated below. On the 12th, it will be at perigee, or nearest earth, only 223,250 miles from us. Apogee, its greatest distance of the month, comes on the 27th, with 252,320 miles. On the 27th also, at 10:27 p.m., when two and a half days after full, it passes within about twice its own diameter to the south of Mars.

Phases of Moon

E.S.T.

Last quarter	April 3	10:53 p.m.
New	" 11	12:10 a.m.
First quarter	" 17	3:34 p.m.
Full	" 25	10:24 a.m.

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PHYSICS

New Trap For Atoms In Photographic Film

THE SENSITIVE emulsion of photographic film, such as records permanently images of yourself and your friends, provides a new tool of science holding the possibility of aiding research on cosmic rays and the disintegrations of the atom.

One basic device of scientists for interpreting the multitudinous debris thrown out in atomic collisions is the Wilson cloud chamber. This machine makes visible for photographic reproduction the tracks of the charged collision of particles as they speed through the saturated water vapor of the apparatus.

Moreover, when the Wilson cloud chamber is used in conjunction with a strong magnetic field from the poles of an electromagnet the charged particles are bent in their paths. Negatively charged particles curve one way and positively charged particles the other, so that a means is thus found for distinguishing between the two types. Moreover, the radius of curvature of the bending is an index of the energy which the particle has. Such matters are highly important in cosmic ray studies and in research on atomic disintegration and bombardment of the nucleus.

It was with such an apparatus, as only one example, that Dr. Carl Anderson discovered the positron, in recognition of which he won the joint award of the 1936 Nobel Prize in physics.

The magnetic field of the Wilson cloud chamber easily distinguishes between positively and negatively charged particles—the electrons and positrons, deuterons, protons and alpha particles—but as yet has difficulty in helping decide whether a "positive" track is due to a proton (charged nucleus of a hydrogen atom) or an alpha particle (charged nucleus of a helium atom).

These two particles differ in mass by a factor of four, but may very well have the same appearance in their curved path. This is because particles having the same energy show the same amount of curvature in the magnetic field. Energy, it should be realized, is equal to the

product of the square of the velocity multiplied by the mass, so that a light proton traveling with twice the velocity of a heavy alpha particle would show the same amount of curvature in the track.

Increasingly in cosmic ray and nuclear disintegration research the need has been felt for a simple, sure way to distinguish between the tracks of such particles and also, to differentiate the newer deuteron particles which are the charged nuclei of hydrogen's heavy isotope of mass two.

Prof. T. Russell Wilkins of the physics department of the University of Rochester has now provided this new tool in his studies of the kind of tracks which each of these particles make when they hit directly the emulsion on a photographic plate. So simple is the process that one only has to wrap up the photo plates in the boxes as they come

from the maker and expose them to the particle radiation being studied. The skill comes in the photomicrographic enlargements and their interpretation. Knowing the temperature of the emulsion at the time of the experiment, it is possible for Dr. Wilkins and his co-workers to distinguish between protons and alpha rays. For example, in an alpha ray track the little silver grains "developed" by the particle are spaced about 1.47 microns (58 millionths of an inch) apart. Protons, in contrast, show a grain spacing of about 2.16 microns (86 millionths of an inch). The difference is comparatively large and serves as a valuable aid to differentiation between the two particles.

Just recently Dr. Wilkins, cooperating with Dr. J. M. Cork of Michigan University, has obtained a deuteron particle track in an emulsion for the first time.

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exploiters must be safeguarded against, for "we no longer have opportunity to become fully acquainted with a new thing before its mass impact has confronted us with a major problem of social control and legal regulation for which we have no established guides."

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GENERAL SCIENCE

Science on Radio Chains Totals 2 1/4 Hours Weekly

NATION-WIDE radio networks carry 2 1/4 hours of science broadcasts each week. In the schedule below, times given are Eastern Standard. CBS means Columbia Broadcasting System and NBC means National Broadcasting Company. Local stations carrying these programs can be determined by reference to programs in local newspapers.

Tuesdays

3:45 to 4:00 p.m. **HAVE YOU HEARD?**—Curious and interesting facts in natural science, presented under the auspices of the Federal Office of Education. NBC Blue Network.

5:00 to 5:30 p.m. **YOUR HEALTH**—Dramatized health broadcasts under auspices of the American Medical Association. NBC Blue Network.

5:15 to 5:30 p.m. **SCIENCE SERVICE SERIES**—a notable scientist is interviewed each week by Watson Davis, director of Science Service. CBS Network. (See page 207.)

6:00 to 6:15 p.m. **SCIENCE IN THE NEWS**—Arranged by the University of Chicago Educational Council. NBC Red Network.

Thursdays

2:00 to 2:15 p.m. **ACADEMY OF MEDICINE**—Medical programs, arranged by the New York Academy of Medicine. CBS Network.

Saturdays

5:30 to 5:45 p.m. **DRAMA OF THE SKIES**—Dr. Clyde Fisher of the Hayden Planetarium, speaking on astronomical subjects. CBS Network.

Sundays

11:30 to 12:00 a.m. **THE WORLD IS YOURS**—Dramatizations based on Smithsonian Institution activities, arranged by cooperation with the Federal Office of Education. NBC Red Network.

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GENERAL SCIENCE

Civilization Fails in Proper Absorption of Science

DISSATISFACTION with the manner with which society has met and absorbed scientific changes was expressed in a series of four lectures in Princeton by Dr. Frank Baldwin Jewett, president of the Bell Telephone Laboratories.

Speaking on "An Engineer Looks at the Social Implications of Science," he said of the government, "the political government, since it must of necessity be organized to do a vast number of things, is less likely to be competent in a highly technical matter such as the development and application than is a private organization designed and operated solely for that scientific purpose."

Dr. Jewett declared that although the government cannot directly use the services of engineers and scientists "because their field is one in which they can operate with entire absence of certain factors normally present and controlling in other human affairs," still the government should make more use of the knowledge of these men.

Speaking from an international viewpoint, Dr. Jewett asked, "How will the world of those who wish to retain what they have protect themselves against the degrading effects of those who, equipped with the same tools, are struggling to elevate their standards?"

"One has only to visit the more recent of the vast technical establishments of the Orient, particularly those of Japan, to be acutely conscious of how far the migration of applied science has carried the world since the days of its beginning, and how pregnant with social and political problems the future is."

To meet these problems, he recommended the inclusion of science training in the education of every student, "with the thought that thereby they and the society they are to form will be better equipped to handle the problems of science and particularly the problems created by science."

He made "a complete refutation of any claim that applied science has reduced gainful employment," and citing the automobile industry, which threw out of work many drivers, hostlers, wagon-builders, and farm laborers, he pointed to the mushroom growth of allied industries of the automobile that have in the end increased the total of employed labor.

One evil of science Dr. Jewett showed to be that "frequently the appeal of some new thing is such as to offer a lush field for the get-rich-quick artists or those who pander to the baser sides of human nature." He added that such