

## ASTRONOMY

# Pursue Sun's Last Mystery

**Astronomers confident that every chemical element in the sun can be found here on earth, although form might be obtainable only in atom bomb heart.**

► THE LAST mystery as to the chemical composition of the sun's atmosphere is now being pursued by scientists, it was learned from Dr. Walter Orr Roberts, astrophysicist of the High Altitude Observatory of Harvard University and the University of Colorado.

Astronomers are now completely confident that every chemical element in the sun can be found here on earth, even though their form is frequently unobtainable here on earth except possibly in the heart of an atom bomb. There is one major line in the fanned-out light of the sun's atmosphere, however, that remains to be identified as some form of terrestrial element.

This unidentified line is bright yellow. It is seen only during an eclipse of the sun, and is not always present then. It usually appears as short-wave radio broadcasts are suddenly and unexpectedly blacked out.

Positive identification of this line is important to understanding the rapid movement of the gases in the sun's atmosphere. It would also help to explain the regions of abnormal temperatures in the solar atmosphere.

The yellow line, instead of being sharp, is quite fuzzy at the edges. It shows up when prominences, those huge clouds of atmospheric gas extending high above the sun's surface, can be seen moving at tremendous speeds, sometimes up to 300 miles a second.

"This line probably represents some kind of missing link between prominences and

the sun's corona or outer envelope," Dr. Roberts points out. He was in Washington to speak before the Smithsonian Institution.

This erratic line was discovered by the French astronomer B. Lyot 15 years ago during a man-made eclipse. It has probably never been seen during a natural eclipse, but has been noticed and studied with great detail with a coronagraph.

Embarking on an intensive study of this yellow line, Dr. Roberts is rounding up all previous observations, a large majority of which he made at Climax. He is looking for peculiarities connected with its appearance.

The canary-color in the sun's spectrum may be found to appear suddenly and fade out gradually. It may be seen only when there is extreme activity such as prominences and sunspots on that portion of the sun. It may even be a clue to regions of abnormally low temperature in the sun's corona. Astronomers may discover that when this special yellow hue appears in the sun's spectrum, the "forbidden" red line becomes most intense. Whatever the findings, interpretation would be necessary.

For decades, the bright red and green lines in the sun were believed due to a mysterious element, named "coronium," present in the sun but unknown here on earth. Then less than a dozen years ago the distinguished Swedish astronomer, Bengt Edlen, succeeded in identifying these lines as due to gaseous iron, nickel and silicon raised to such high temperatures that they were stripped of about half their electrons.

This yellow line, found quite near the yellow sodium line, has tentatively been identified as calcium stripped of many electrons. But this places the temperature much too high for the gases causing this line to be connected with a prominence, Dr. Roberts complains. So search for another element which would cause the yellow line at the temperature known to exist in prominence is under way.

Science News Letter, March 31, 1951

## SCIENCE NEWS LETTER

VOL. 59 MARCH 31, 1951 No. 13

44,900 copies of this issue printed

The Weekly Summary of Current Science, published every Saturday by SCIENCE SERVICE, Inc., 1719 N St., N. W., Washington 6, D. C., North 2255. Edited by WATSON DAVIS.

Subscription rates: 1 yr., \$5.50; 2 yrs., \$10.00; 3 yrs., \$14.50; single copy, 15 cents, more than six months old, 25 cents. No charge for foreign postage.

Change of address: Three weeks notice is required. When ordering a change please state exactly how magazine is now addressed. Your new address should include postal zone number if you have one.

Copyright, 1951, by Science Service, Inc. Reproduction of any portion of SCIENCE NEWS LETTER is strictly prohibited. Newspapers, magazines and other publications are invited to avail themselves of the numerous syndicate services issued by Science Service. Science Service also publishes CHEMISTRY (monthly) and THINGS of Science (monthly).

Printed in U. S. A. Entered as second class matter at the post office at Washington, D. C. under the act of March 3, 1879. Acceptance for mailing at the special rate of postage provided for by Sec. 34.40, P. L. and R., 1948 Edition, paragraph (d) (act of February 28, 1925; 39 U. S. Code 283), authorized February 28, 1950. Established in mimeographed form March 18, 1922. Title registered as trademark, U. S. and Canadian Patent Offices. Indexed in Readers' Guide to periodical literature, Abridged Guide, and the Engineering Index.

Member Audit Bureau of Circulation. Advertising Representatives: Howland and Howland, Inc., 393 7th Ave., N.Y.C., Pennsylvania 6-5566 and 360 N. Michigan Ave., Chicago. STAtE 2-4822.

### SCIENCE SERVICE

The Institution for the Popularization of Science organized 1921 as a non-profit corporation.

**Board of Trustees**—Nominated by the American Association for the Advancement of Science: Edwin G. Conklin, Princeton University; Karl Lark-Horowitz, Purdue University; Kirtley F. Mather, Harvard University. Nominated by the National Academy of Science: Harlow Shapley, Harvard College Observatory; R. A. Millikan, California Institute of Technology; L. A. Maynard, Cornell University. Nominated by the National Research Council: Ross G. Harrison, Yale University; Alexander Wetmore, Secretary, Smithsonian Institution; Rene J. Dubos, Rockefeller Institute for Medical Research. Nominated by the Journalistic Profession: A. H. Kirchhofer, Buffalo Evening News; Neil H. Swanson, Baltimore Sun Papers; O. W. Riegel, Washington and Lee School of Journalism. Nominated by the E. W. Scripps Estate: H. L. Smithton, E. W. Scripps Trust; Frank R. Ford, Evansville Press; Charles E. Scripps, Scripps Howard Newspapers.

**Officers**—President: Harlow Shapley; Vice President and chairman of Executive Committee: Alexander Wetmore; Treasurer: O. W. Riegel; Secretary: Watson Davis.

**Staff Director:** Watson Davis. **Writers:** Jane Stafford, A. C. Monahan, Marjorie Van de Water, Martha G. Morrow, Ann Ewing, Wadsworth Lively. **Science Clubs of America:** Joseph H. Kraus, Margaret E. Patterson. **Photography:** Fremont Davis. **Sales and Advertising:** Hallie Jenkins. **Production:** Priscilla Howe. **In London:** J. G. Feinberg.

## Question Box

### ASTRONOMY

How big is the supergiant star recently discovered? p. 195.

Where might the only as yet unidentified line in the sun's atmosphere be found on earth? p. 196.

### BOTANY

Why is the ginkgo tree known as the living fossil? p. 206.

### GENETICS

Why do some mice get fat? p. 195.

**Photographs:** Cover, NACA; p. 195, Jackson Laboratories; p. 197, National Geographic; p. 198, General Motors; p. 199, University of Wisconsin.

### PHYSICS

What recent observations may change thinking of cosmic ray scientists? p. 194.

### PHYSIOLOGY

For how long have pieces of human adult brain been kept alive outside the body? p. 199.

### RADIO

How are singing commercials cut from radio programs? p. 204.

### ZOOLOGY

How does the Texas nighthawk cool itself on hot days? p. 198.

How are arctic animals giving clues to help humans withstand severe Arctic cold? p. 199.