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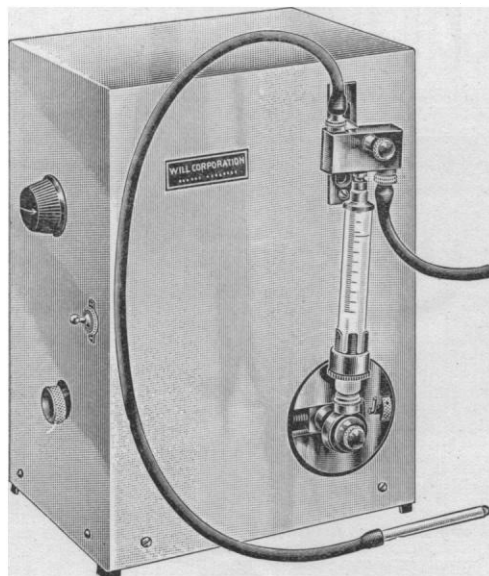
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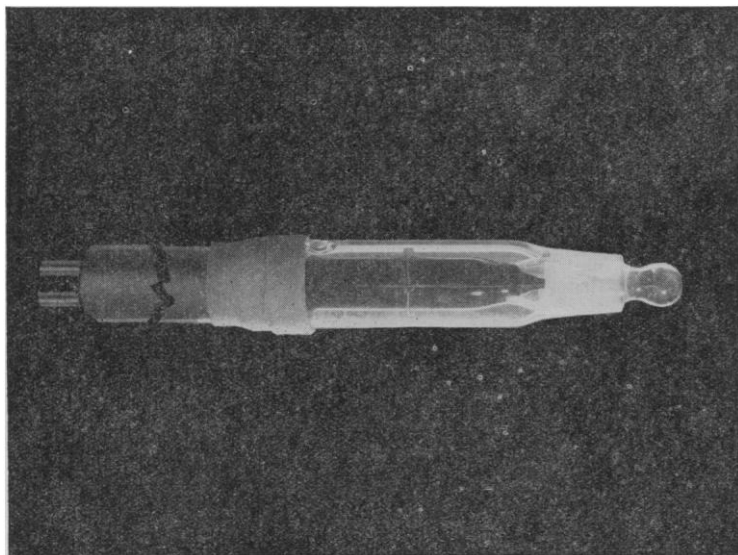
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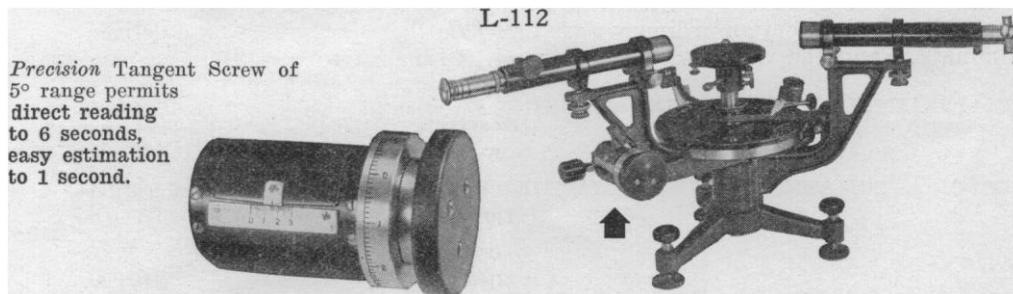
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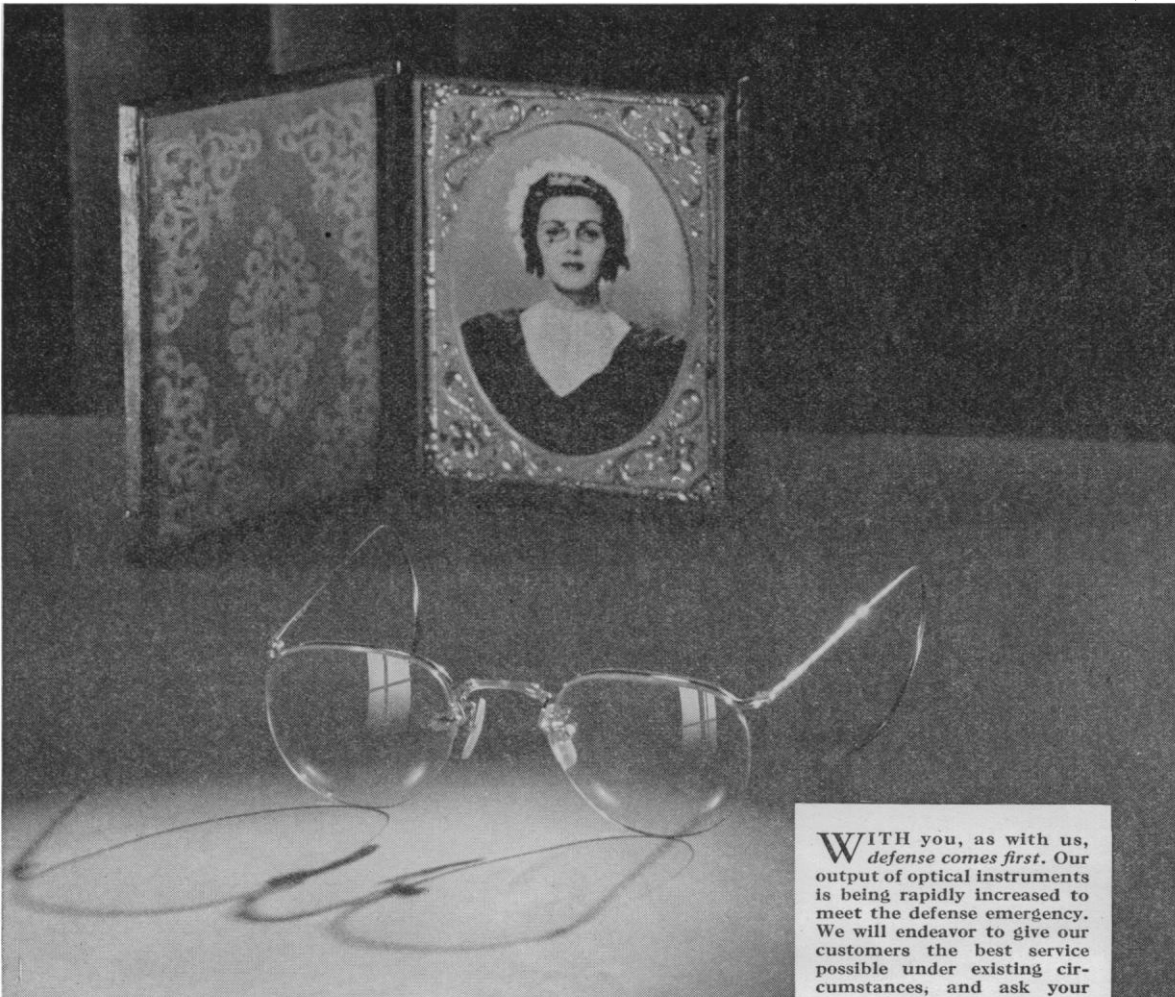


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6. GRIFFITH, W. H., and WADE, N. J.: *J. Biol. Chem.*, 132:627:1940.
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VOL. 94

FRIDAY, OCTOBER 31, 1941

No. 2444

<i>Cultivation of Rickettsiae of the Rocky Mountain Spotted Fever, Typhus and Q Fever Groups in the Embryonic Tissues of Developing Chicks: DR. HERALD R. COX</i> .....	399
<i>Rafinesque's Interests—a Century Later: Medicinal Plants: DR. H. B. HAAG</i> .....	403
<i>Obituary: August H. Wittenborg: PROFESSOR O. W. HYMAN and OTHERS. Deaths and Memorials</i> .....	407
<i>Scientific Events: Damage to the University of London and Its Hospitals; The Mount Desert Island Biological Laboratory; The Pan American Congress of Mining Engineering and Geology; The Attack on the City College System of New York City; Answer from Sixty-four Soviet Mathematicians to Letter of Greetings from American Mathematicians; Priority Rating Given to Research Laboratories</i> .....	408
<i>Scientific Notes and News</i> .....	410
<i>Discussion: Auroral Display and Geomagnetic Storm of September 18–19: A. G. McNISH. Mosses in the Virginia Caverns: WALTER B. LANG. Stone Man Cave, Shasta County, California: E. L. FURLONG. Reprint Size: PROFESSOR CLIVE M. MCCAY. Leonhard Stejneger: PAUL H. OEHSER</i> .....	413
<i>Quotations: Science and World Order</i> .....	415
<i>Scientific Books: Mammalian Fauna: DR. GEORGE GAYLORD SIMPSON. Physics: DR. W. F. G. SWANN</i> .....	416
<i>Reports: Statement by the Board of Directors of the American Chemical Society</i> .....	418

## Special Articles:

<i>P-Aminobenzoic Acid Prevents the Growth-Inhibitory Action of Sulfanilamide: DR. NAOMI S. DIMOND. The Inhibition of Brain Oxidations by a Convulsant Barbiturate: DR. F. A. FUHRMAN, PROFESSOR A. W. MARTIN and PROFESSOR J. M. DILLE. Indications of an Increase in Number of C-Atoms in Acids and Number of Acids in Seed Fats with Advance in Evolutionary Position: JAMES B. MCNAIR</i> .....	420
<i>Scientific Apparatus and Laboratory Methods: An Apparatus for the Determination of the Solubilities of Gases at High Temperatures and High Pressures: DR. V. N. IPATIEFF and G. S. MONROE. A Safety Switch for Water-Cooled X-Ray Tubes: DR. PAUL C. HODGES</i> .....	423
<i>Science News</i> .....	8

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## CULTIVATION OF RICKETTSIAE OF THE ROCKY MOUNTAIN SPOTTED FEVER, TYPHUS AND Q FEVER GROUPS IN THE EMBRYONIC TISSUES OF DEVELOPING CHICKS<sup>1</sup>

By Dr. HERALD R. COX

THE ROCKY MOUNTAIN LABORATORY, THE NATIONAL INSTITUTE OF HEALTH, HAMILTON, MONT.

I AM deeply conscious of the honor which the American Association for the Advancement of Science has conferred in selecting me as the recipient of the Theobald Smith award.

I take this opportunity to express my appreciation

<sup>1</sup> Contribution from the Rocky Mountain Laboratory (Hamilton, Montana) of the Division of Infectious Diseases of the National Institute of Health. Address delivered on September 22, 1941, to the Section on Medical Sciences upon receipt of the Theobald Smith Award of the American Association for the Advancement of Science.

to my former chief, Dr. Peter K. Olitsky, of the Rockefeller Institute, for his continued and neverfailing interest in my work, to Drs. R. R. Parker, director of the Rocky Mountain Laboratory, and R. E. Dyer, chief of the Division of Infectious Diseases, The National Institute of Health, for their sympathetic understanding and cooperation in making these studies possible, and to my assistants, E. John Bell and Lyn-dahl E. Hughes, for their loyal and invaluable aid.

In 1938 the author reported: First, a simple tech-

gen in the amount given above not affecting the break on the pressure-temperature curve to any noticeable amount.

The critical temperatures of two-component systems may be determined by the same procedure.

This apparatus can be used for other studies such as the investigation of equilibria in heterogeneous systems.

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SINCE water-cooled x-ray tubes may be damaged if the flow of water is interrupted during operation, it is a common practice in physics laboratories to insert in the control circuits of x-ray machines so-called bucket switches which are held closed by the weight of the water that leaves the cooling system of the tube but which open automatically if for any reason this flow ceases. Such switches are satisfactory where the waste water can be dumped into a sink and where bulk is not a disadvantage. However, because they take up considerable space and can not be connected into a closed water system, it may be inconvenient or impossible to employ bucket switches in connection with medical x-ray apparatus.

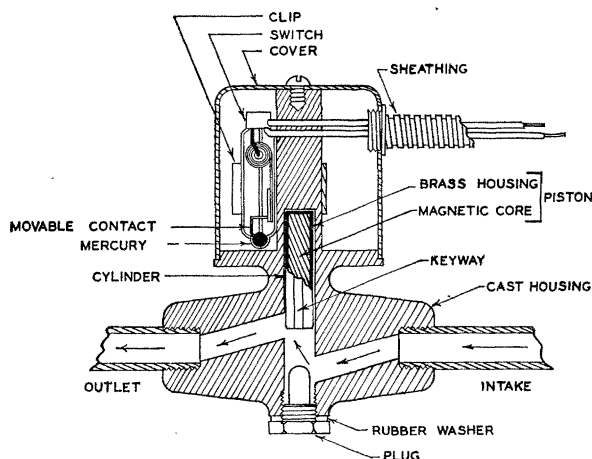


FIG. 1. Flow switch.

There is described here a simple, small, dependable flow switch which can be connected into a closed water-cooling system. The switch is normally open, closing when water flows through it and opening again when the flow stops, either because of pressure failure or a clogged waste line. The switch itself (a commercial product, Mercoid Magnetic Switch, No. 9-81R) consists of a glass capsule containing a pool of mer-

cury and two electrodes. One electrode is permanently bathed in the mercury; the second is held away by means of a coil spring but makes contact with the mercury whenever a permanent magnet is brought up to the side of the capsule.

The mercury switch is mounted against the outside of a vertical brass cylinder within which lies a piston made up of a brass housing surrounding a magnetic core. The fit between piston and cylinder is purposely loose and to further facilitate leakage between the two a longitudinal keyway is cut in the piston.

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*Operation:* When no water is flowing through the switch, the piston under the action of gravity moves down until it strikes a mechanical stop, in which position direct communication between intake and outlet ports is cut off and the magnet is below the level at which it will operate the magnetic switch. The latter, therefore, is open and the x-ray machine can not be operated.

When water flows through the device, the piston moves upward until a free communication is established between intake port and outlet port in which position the armature of the magnetic switch is attracted, the second electrode makes contact with the mercury, the control circuit of the x-ray machine is completed and the x-ray tube can be operated.

PAUL C. HODGES

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### BOOKS RECEIVED

- A.S.T.M. Standards on Petroleum Products and Lubricants, 1941; Methods of Testing, Specifications, Definitions, Charts and Tables.* Pp. viii + 398. Illustrated. American Society for Testing Materials, Philadelphia. \$2.00.
- CRILE, GEORGE. *Intelligence, Power and Personality.* Pp. vi + 345. 42 figures. Whittlesey House, McGraw-Hill. \$3.00.
- EBERSON, FREDERICK. *The Microbe's Challenge.* Pp. viii + 354. The Jaques Cattell Press, Lancaster, Pa. \$3.50.
- LUTZ, FRANK E. *A Lot of Insects.* Pp. 304. Illustrated. Putnam's. \$3.00.
- MAKEMSON, MAUD W. *The Morning Star Rises; An Account of Polynesian Astronomy.* Pp. xii + 301. Yale University Press. \$5.00.
- NEEDHAM, JAMES G. *About Ourselves; A Survey of Human Nature from the Zoological Standpoint.* Pp. xi + 276. Illustrated. The Jaques Cattell Press, Lancaster, Pa. \$3.00.
- PENFIELD, WILDER and THEODORE C. ERICKSON. *Epilepsy and Cerebral Localization.* Pp. x + 623. 163 figures. Charles C. Thomas. \$8.00.
- SEARES, FREDERICK H., FRANK E. ROSS and MARY C. JOYNER. *Magnitudes and Colors of Stars North of +80°.* Pp. 89. Carnegie Institution of Washington. \$1.50.



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In this book the authors meet the need for a textbook covering the fundamentals of conduction in gases, suitable for undergraduate students in electrical engineering and applied physics. Thus the purpose of the book is to give such students a knowledge of the fundamental theory of high vacuum electronic equipment and of the theory of gaseous conduction. To that end the authors discuss not only high vacuum conduction as found in radio tubes, cathode ray tubes, and phototubes, but also the theory and application of corona, sparking, glows, and arcs.

### Dynamic Meteorology

By BERNHARD HAURWITZ, Massachusetts Institute of Technology. 365 pages, 6 x 9. \$4.00

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