

## MEDICINE

## New Sulfa Drug Promising As Tuberculosis Remedy

**A** NEW drug of the sulfanilamide group, called promin, is under investigation as a possible tuberculosis remedy. Trials in guinea pigs with experimental tuberculosis appear promising, according to results reported by Dr. W. H. Feldman, Dr. H. C. Hinshaw and Dr. H. E. Moses, of the Mayo Foundation.

Guinea pigs with experimental tuberculosis lived longer when treated with promin than those not so treated. All of the 20 untreated animals were dead in 82 days, but 13 of the 29 promin-treated animals were living after 164 days, suggesting, the Mayo doctors cautiously state, that the drug was of value as a remedy.

The severity of tuberculosis when it developed in the treated animals was, with one exception, "impressively less" than among the animals not treated with promin, it was found in examination of the animals after death.

The promin, supplied by Dr. E. A. Sharp, of Parke, Davis and Company, Detroit, was given by mixing it with the animals' food. No sign of poisoning from the drug was seen.

Sulfathiazole was also investigated as a possible remedy for experimental tuberculosis in guinea pigs. This sulfa drug, however, had little, if any effect on the expected course of the disease.

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## PHYSICS

## Television by X-Rays One of Week's Inventions

**X**-RAY beams may form the fingers that paint pictures of distant scenes on viewing screens of television receivers, if a newly patented invention comes into wide use.

The X-ray system, just granted U. S. Patent 2,221,374, was made by Philo T. Farnsworth, well-known television experimenter, of Springfield Township, Montgomery County, Pa. His rights were assigned to Farnsworth Television and Radio Corporation, of Dover, Del.

In his specifications, Mr. Farnsworth points out disadvantages of two of the most common present types of television receiving tubes. In one, a beam of electrons, made to fluctuate by the incoming signal, is sprayed on a screen that glows where they strike. The electrons travel freely only in a vacuum, which means

that the screen must also be inside the tube. Thus, with a large screen, an equally large (and expensive) tube is required. In another arrangement the image screen is made small and very bright, and lenses are used to project the image to a screen which may be in the air. This, however, requires the use of expensive projection lenses.

To avoid these difficulties, Mr. Farnsworth uses X-rays, which are generated by electrons hitting a metallic target. So he sprays his electron beam not on a fluorescent screen, but on a metal target. X-rays are emitted where there should be bright parts of the picture.

This tube is entirely surrounded by lead, except for a small hole at the front, through which a pencil of the X-rays may pass. It is really a pin-hole camera, and an X-ray image, the sharper the smaller the hole, is formed on a viewing screen like that used in hospitals for examinations of the inside of the body. As X-rays travel freely through air, only the part containing the electron gun and the metal target need be enclosed in a vacuum.

Recognizing a loss of efficiency in the method, because only a small portion of the X-rays, which are emitted in all directions, go through the pinhole, he also suggests two schemes, making use of the ionization of liquids or gases, to increase the brilliance of the final picture.

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## GENERAL SCIENCE

## New Directory Lists Amateur Scientific Groups

**A**MATEUR scientists have opportunities to carry on their work in 287 organized groups in one area, it has been found from a survey conducted under the auspices of the American Philosophical Society. The first results of this survey, which began more than a year ago, are contained in a booklet just issued, "The Layman Scientist in Philadelphia." (Reviewed, SNL, this issue.)

More than 32,000 persons are included in these groups. They have access to 72 different museums, libraries, observatories and other science resources. Over 120 courses in 19 science fields are open to them.

Made possible by a grant from the Carnegie Corporation of New York, the survey is in charge of a committee headed by Dr. Edwin G. Conklin, vice-president of the Society, with W. Stephen Thomas as executive secretary.

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# IN SCIENCE

## PHYSICS

## Meteoric Iron Composition Similar to Iron on Earth

**I**RON in meteorites which have fallen from the sky is similar in its composition to iron from terrestrial sources, G. E. Valley and H. H. Anderson, of Harvard University, told American Physical Society meeting in Chicago.

Practically all elements consist of several chemical "twins," called isotopes, which are made of atoms slightly different in weight. Iron consists mostly, more than 90%, of the isotope of atomic weight 56. The rest is largely 54 and 57, with a slight amount of 58. The experimenters determined the isotopes in both meteoric and terrestrial iron, and found them to be nearly the same.

The slight differences, they said, "can be accounted for by instrumental effects. We conclude that the abundance of the stable isotopes of iron does not depend upon the place of origin of the specimen within the solar system."

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## ENGINEERING

## Electric Eye Control Becomes a Handy Man

See Front Cover

**A** NEW electric eye control is only half the size of a loaf of bread and is designed to fill many and varied jobs in the home as well as in industry.

The instrument, developed by engineers of the Westinghouse Electric and Manufacturing Company, serves as safety engineer by automatically stopping the jaws of the giant stamping machine pictured on the front cover of this week's SCIENCE NEWS LETTER every time the workman reaches his hand into danger.

In the home, the same instrument can be made to open the dining room door for the housewife with her hands full of dishes, to open the garage at the approach of your car, or to turn on the light for you when you go down cellar.

The new convenient instrument is known by the trade name of Photroller.

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# CE FIELDS

## MEDICINE

### Anti-Stomach-Ulcer Vitamin Is Discovered in Milk

**D**ISCOVERY of a new vitamin which prevents stomach ulcers in guinea pigs was announced by Dr. S. B. Randle, Dr. H. A. Sober, Dr. C. A. Elvehjem, and Dr. E. B. Hart, of the University of Wisconsin.

Milk is a good source of the new vitamin, a point of interest to human stomach ulcer sufferers whose treatment usually starts with a milk and cream diet, although the University of Wisconsin announcement does not state whether or not the new vitamin will protect humans as well as guinea pigs from ulcers.

Guinea pigs on a diet lacking the new vitamin not only developed stomach ulcers but also suffered damage to liver and kidneys, further studies, in which Dr. J. Shaw and Dr. Paul Phillips cooperated, indicated.

A seasonal variation in the tendency to develop stomach ulcers was noted in the guinea pigs. At certain times of the year even some of the animals kept on milk rations developed ulcers.

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## ICHTHYOLOGY

### Sailors Take Walks On Backs of Big Sharks

**W**HALE SHARKS, biggest of all fish, are also apparently the laziest and most easy-going. So indifferent to human proximity are they that in at least two well-authenticated instances sailors from fishing boats have stepped out and walked around on their broad backs as they floated at the surface, reports Capt. R. W. Mindte of the motor vessel *Invasion*, to the *Hydrographic Bulletin* of the U. S. Navy.

Capt. Mindte has had ample opportunity to observe these gigantic sharks, which reach a length of as much as 40 feet, during his years of tuna fishing out of San Diego, into the waters off the southern end of Lower California. Presence of whale sharks is even used as an indicator of good tuna fishing, for long experience has taught fishermen that one of these giants will usually be surrounded by a school of desirable yellow-fin tuna.

A whale shark does not seem to mind having a fishing vessel lay alongside, or even bump into it, reports Capt. Mindte:

"I have often struck these sharks with the boat while coming alongside and struck them hard enough to feel the blow all over the boat, but this never seemed to bother them. The sharks seem to enjoy laying alongside a boat. I have poked them on the head and on the body with my fishing pole many times without any reaction from the shark.

"One time, however, a fisherman on my boat struck one of the sharks with a fishing pole just forward of the vertical rudder-like tail fin. The results were almost disastrous, for the shark threshed his tail violently, barely missing other fishermen in the fishing racks, and then sounded deeply.

"I know of two authentic occasions when fishermen have stepped off the fishing racks on to the backs of these sharks and walked and jumped on them, the shark apparently taking no heed of this action."

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## PHYSICS

### Sealed Beam Infra-Red Lamp Speeds Curing of Rubber

**W**ITH sealed beam units similar to those on modern automobiles, giving off invisible infra-red heating rays instead of the visible lights for illumination of highways, sheet rubber can be cured in two minutes instead of the two hours formerly required. Baking of enamel on automobiles, refrigerators, washing machines and furniture is speeded. It is even possible to bake cookies and crackers with this radiant heat, Paul H. Goodell, of the C. M. Hall Lamp Company of Detroit, said at a meeting at The Franklin Institute.

Previous infra-red lamps gave off a great deal of visible light too, he explained. In use, they were often fogged by the fumes from the paint. In the new Hall Thermalamp, which he demonstrated, these difficulties are eliminated.

The lamp consists of a double glass envelope, the inner one more of the usual type. Sealed around this is a shell with a gold reflector, which is highly efficient for the long infra-red waves. The front of this shell is opaque to visible light, but the heat rays pass freely.

The device was originally developed and patented by the Ford Motor Company, and the Hall Company has continued the development under a license from them.

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## PHYSICS

### Eclipse Affects Cosmic Rays Bombarding Earth

**A**N EFFECT of total solar eclipse upon the powerful cosmic rays that incessantly bombard the earth from outer space has been discovered by a team of scientists from the University of Sao Paulo, Brazil.

This effect, hitherto sought without success, was reported by Prof. G. Wataghin in a cable to Prof. Arthur H. Compton, University of Chicago Nobel-ist, who relayed the information to the *Physical Review* (Nov. 1).

Observations of the penetrating cosmic rays made underground show that their behavior was different from that of the total radiation.

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## ASTRONOMY

### Solar Observation Station Moved to Blue Hill

**S**OLAR observation headquarters of the United States Weather Bureau have been moved from Washington, D. C. to the Blue Hill Meteorological Observatory of Harvard University, in Milton, Mass. Henceforth the government's solar observing equipment will be calibrated at Harvard. And routine solar reports of other government observatories will be received and edited there. Two government technicians, Irving F. Hand and Mrs. Helen Cullinana, of the Washington bureau, will operate government equipment at Harvard.

Prof. Charles F. Brooks, director of the Harvard station, said that the government weather officials, in making the change, considered the advantageous observing conditions on Blue Hill, which is relatively free from smoke; and also the intensive solar radiation work being conducted there by both Harvard University and the Massachusetts Institute of Technology, under grants from Dr. Godfrey L. Cabot, of Boston. Harvard has been studying the intensity of solar radiation for eight years at Blue Hill, in a program initiated by Dr. Herbert H. Kimball, who retired from the government weather service in 1932, and from Harvard last year.

The solar observations include measurement of the intensity of radiation on a horizontal plane and on a plane perpendicular to the sun's rays; and also of the dust and moisture content of the atmosphere.

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