

## MEDICINE

## Oriental Plague Flea Found in Midwest U. S.

THE oriental rat flea, which is the chief carrier of bubonic plague to man, has been found in four states in the interior of the nation, Iowa, Minnesota, Illinois and Ohio.

Dr. H. E. Ewing of the U. S. Department of Agriculture and Dr. Irving Fox of Iowa State College, point out (*Science*, Nov. 4) that this upsets the generally held opinion that this tropical rat flea cannot flourish in temperate climates. Large numbers have long been present in the warmer port cities of the United States.

Existence of this flea in the interior of the country does not mean any danger to health unless plague-infected rats or ground squirrels are found in the same section of the country. Ground squirrel plague exists in California and is a health menace that public health officials are constantly fighting. Plague-infected squirrels have been found only as far east as Wyoming.

Last human case of plague in the United States was reported from Fresno County, Calif., in 1937.

*Science News Letter, November 19, 1938*

## ENGINEERING

## Samuel Pepys Pioneer In Use of Slide Rule

SAMUEL PEPYS, of 17th century diary fame, is now taking on new stature as it becomes evident that he was one of the first men in the world to use a pioneer equivalent of an engineer's slide rule for practical computation.

In the earlier pages of the famous Pepys' diary in the years 1662-63 there are numerous references to a "measuring Ruler" which enabled Pepys to calculate the volumetric content of a beam of lumber. In Pepys' life measuring lumber was no small task for the navy of Great Britain was in those days made of wood, and Pepys was helping to build it.

By studying Pepys' diary, Jerome Fee, engineer of San Francisco's Water Department, finds evidence that Pepys' "ruler" was a plot of logarithms which had been discovered by Napier in 1614. Pepys' ruler corresponded to the main logarithmic scale of a modern slide rule, Mr. Fee declares in the current issue of *Civil Engineering*.

By using this rule, with a pair of compasses to measure off distances, it was possible to multiply and divide eas-

ily. The development of the sliding rules, of modern form, had not yet come into being but quickly did so. It is possible that Pepys, himself, was instrumental in this achievement for he states that he had a slide rule made to order that was "certainly the best and most commodious for carrying in one's pocket, and most useful that ever was made, and myself have the honour of being as it were the inventor of this form of it." To Pepys also must go credit for first using the term slide rule.

Pepys' comments on slide rules end in 1664 when he acquired one of silver and they were no longer new to him. However, 30 years later Pepys suffered losses by highway robbers and in his listing of his vanished possessions cited "A silver Ruler."

*Science News Letter, November 19, 1938*

## PUBLIC HEALTH

## Training of Technicians Next Step Against Syphilis

THE NEXT step in the nation-wide drive to wipe out syphilis will be the training, with financial aid by the federal government, of laboratory technicians to make accurate blood tests for detecting the disease.

This was clearly indicated by Surgeon General Thomas Parran, U. S. Public Health Service, when he opened the Assembly of Laboratory Directors and Serologists at the Hot Springs National Park, Ark.

The blood test holds the "key position in the present syphilis control program," he declared. He told the members of the assembly that it is their "duty" to draw plans for performance of these tests in sufficient numbers and of the best quality.

"To a great extent the success of the syphilis control campaign during the next few years is dependent upon the course of action recommended in this assembly," he said.

American scientists have developed several syphilis tests that are "superior to those of any country of the world," Dr. Parran said. These tests, however, need to be revised or improved so that any technician in any laboratory can perform them accurately.

The country's best experts on blood tests have agreed, Dr. Parran announced, to give special training courses to laboratory technicians. Additional funds have been made available for this purpose. State health officers may obtain them under either the Venereal Disease Control Act or the Social Security Act.

*Science News Letter, November 19, 1938*

# IN SCIENCE

## PHYSICS

## Charged Ring Around Earth During Sunspot Activity

A RING of charged atomic fragments surrounding the earth 20,000 miles above its surface during a period of high sunspot activity was reported by Prof. Robert A. Millikan, Nobel Laureate of the California Institute of Technology.

Detected through measurements of cosmic rays, this ring has been built up gradually since 1932, when sunspot activity was low, until today, when it is at a maximum, Dr. Millikan declared in a lecture believed to be the first announcement of the find.

Sudden changes in this ring of charged particles also take place when the sun is having a particularly violent eruption, the well-known physicist, who is director of the Norman Bridge Laboratory of the Institute, stated on the basis of observations by his colleagues and himself.

The effect of solar activity is to cut down the magnetic field surrounding the earth and thereby to permit more cosmic rays to reach us than before. It is these cosmic rays that Dr. Millikan and his associates measured in detecting the ring.

The intensity of cosmic rays thus becomes a way of measuring the magnetism of the earth, especially that part of the magnetism which is due to currents outside of the earth itself, he concluded.

*Science News Letter, November 19, 1938*

## OCEANOGRAPHY

## Sea Swells To Be Observed During Current Week

SEA swells, which are mysterious high heaves in the water, bigger and longer than any wave, are being watched during the six days, Nov. 14 to 19 inclusive, which have been designated as an international week for reporting these phenomena. The U. S. Hydrographic Office and the U. S. Weather Bureau are cooperating in this work. The Hydrographic Office has distributed to ships' officers blanks on which the data can be entered.

*Science News Letter, November 19, 1938*

# E FIELDS

## MEDICINE

### Cure For Black Tongue Found in Animal Studies

**A**CHEMICAL which is curing many cases of black tongue, severe dog ailment that has baffled veterinary scientists for 20 years, was discovered solely through dog experimentation, Dr. Samuel Lepkovsky of the University of California said in a report on black tongue studies being made at the University.

The chemical which is a positive cure for this serious dog sickness is nicotinic acid, and it is also curing many cases of pellagra in humans throughout the south. Pellagra, cause of much suffering and even insanity, is related to black tongue of dogs.

Both ailments are due to a diet deficiency in what used to be called vitamin B<sub>2</sub> until scientists identified this essential diet factor as nicotinic acid.

Discovery of nicotinic acid as preventive and cure for black tongue and pellagra was made by Drs. C. A. Elvehjem and R. J. Madden, University of Wisconsin agricultural chemists.

*Science News Letter, November 19, 1938*

## PUBLIC HEALTH

### \$50,000,000 Annual Eye Accident Bill

**T**HE ANNUAL bill for industrial eye accidents and eye diseases in this country is \$50,000,000. This is the sum which two different authorities—Louis Resnick of the National Society for the Prevention of Blindness and Dr. Louis Schwartz of the U. S. Public Health Service—estimate as the annual cost of eye accidents in a year in the United States.

Industrial accidents and industrial diseases, Mr. Resnick recently declared, constitute one of the principal causes of blindness in the United States. Yet these accidents and diseases are almost entirely preventable. The conditions that cause them, Mr. Resnick pointed out, are now well known. Methods of preventing them or protecting workers against such hazardous conditions have been thoroughly demonstrated and are

commonly known. Devices to protect the worker against almost every type of industrial eye accident are now available.

Proof of the fact that industrial eye accidents can largely be prevented is seen in the experience of some of the large industrial concerns which have made efforts to reduce these eye accidents and where in consequence the blinding of a worker has become a rare occurrence.

Workmen's compensation insurance may protect the employer financially against such accidents, but it does not protect the sight of the worker.

One step in Mr. Resnick's program for prevention of eye injuries is to have the eyes of all workers examined by a competent eye physician at the time of employment and yearly thereafter.

Another step is to provide approved protective devices for the worker and the machine in all hazardous occupations.

Education, supervision and strictly enforced rules are needed to see that the workers use these devices.

Thoroughgoing compliance with and enforcement of state labor laws are the fourth step in the program outlined by Mr. Resnick for preventing industrial blindness.

*Science News Letter, November 19, 1938*

## ENGINEERING

### Deeper Oil Wells Possible With Water Glass and Salt

**P**ETROLEUM experts can now tap deeper oil resources through the discovery of a special "mud" which seals the walls of very deep wells and prevents caving in.

The mud contains a rich mixture of silicate of soda (water glass) and common salt. It has the property of turning to a gelatine very quickly and prevents the earth from being pushed into the drill hole by the extreme pressures encountered at great depths, said Chester L. Baker of the Philadelphia Quartz Company and Allen D. Garrison, assistant professor of chemical engineering at Rice Institute, Texas, in reporting the discovery.

Well cave-in at great depths is a special problem of the great oil-bearing region along the Gulf of Mexico, in a strip one hundred miles wide.

It has recently also been reported in deep oil wells in California. It is not unlikely that as deeper drilling is done throughout the rest of the nation the same problem will arise in other parts also.

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## GENERAL SCIENCE

### Industrialist Pleads For More American Scientists

**A**MERICA, with only 30,000 research scientists as compared with Germany's 70,000 and Soviet Russia's 100,000, needs more scientific workers to assure her future, Clarence Francis, president of the General Foods Corporation, told the Ohio State University Research Foundation conference.

"It is my conviction that we are on the threshold of new frontiers," he declared in urging upon his audience the necessity for increased scientific study of new ways of doing things and of new products.

"In fact, I'd say that you would agree to go along with me this far: that if only the public, business, government, labor and the farmers will get solidly behind our scientists . . . we'll soon discover so many ways to improve our country and to get more of the good things of life to more people—that new jobs will be created until unemployment is just about wiped out," he argued.

"The barriers that prevent us from being better fed, clothed, housed and more generally employed . . . center around man's dislike for change. But there are many signs this inertia is yielding."

*Science News Letter, November 19, 1938*

## ARCHAEOLOGY

### Stone Age Beauty Ran to Great Weight

**L**ONG before gentlemen preferred blondes, they admired fat girls. Beauty evidence from the Old Stone Age, consisting of a reproduction of a rare statuette of a woman, is on display at the Field Museum of Natural History. Far from stream-lined, the Stone Age Miss Europa of 30,000 B.C. is so bulgy as to be all curves.

It is only since the late Stone Age that the Venus de Milo form of woman has been the ideal, says Dr. Henry Field, anthropologist, at the museum. Cro-Magnon cave men in France, where the statuette was found, immortalized their earlier ideal of fat feminine beauty by carvings of ivory. The Venus of Lespugue, as the exhibited figure is called, is one of the most famous of these prehistoric art works. She has no face, Dr. Field says, probably because of superstition, since even today primitive folk believe an evil spell can be cast through an image of a person's face.

*Science News Letter, November 19, 1938*