

## METEOROLOGY

**1933 Tornadoes Proving Unusually Destructive**

**P**LENTIFUL, short-lived and frightfully fatal. That's how incomplete reports at the U. S. Weather Bureau describe 1933's tornadoes.

The recent storm that took heavy toll of life and property at Minden, La., was pointed out as a typical twister of the current year. Had this tornado occurred over open country of Texas or Oklahoma where they often spend themselves, a Weather Bureau representative said, it would scarcely have been heard of. Instead, it chanced to strike a populous town.

Similarly, a March storm plowed a five-mile furrow through Nashville, Tenn., killing many; and a group of 14 tornadoes took 54 lives in Mississippi during the last two days of the same month. An incomplete estimate places the dead from tornadoes so far this year at well over 200. Since these storms occur most often during spring and summer, it is that the death total will be more than doubled before this year's tornado season ends.

The tornadoes of the past few months spent themselves quickly, seldom cutting paths more than one or two score miles long.

Though tornadoes of 1933 seem to have set standards of quantity, length of life and fatality, Weather Bureau officials carefully point out that these factors are matters of pure chance. The next tornado is just as apt to leave a long path over open plain as to cut a short swath through a city.

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## HEREDITY

**Resistance to Diseases May Be Inherited**

**R**ESISTANCE to disease is an hereditary trait like color of eyes, hair or skin, studies with mice at the Rockefeller Institute, New York, show. Strains of mice highly susceptible to or highly resistant to a given disease may be segregated by selective breeding, Dr. Leslie T. Webster reported at the meeting of the American Association of Pathologists and Bacteriologists.

Starting with a strain of mice 37 per cent. susceptible to mouse typhoid, he selected lines 85 per cent. and 15 per cent. susceptible respectively.

The 85 per cent. susceptible lines were descendants of mice highly susceptible to mouse typhoid, while the 15 per cent. susceptibles descended from relatively resistant mice.

Resistance factors are dominant, and not sex-linked, Dr. Webster found.

Mice from strains resistant to disease were heavier but not more fertile than the susceptible mice. The tissues throughout the bodies of these resistant mice seemed less sensitive to the organism causing mice typhoid than did the body tissues of susceptible mice. This suggested to Dr. Webster that the hereditary factors giving resistance to disease exercise general rather than local influence in the animal body.

These hereditary factors concerned with resistance or susceptibility to disease can operate against a number of but not necessarily all harmful agents, Dr. Webster found.

*Science News Letter, May 13, 1933*

## CHEMISTRY

**Safe Method Replaces Poison in Copper-Plating**

**T**HE CYANIDE bath now widely used for copper plating of steel can be replaced by a new non-poisonous electroplating solution developed by Dr. Colin G. Fink and Chaak Y. Wong of Columbia University, New York, and reported to the Electrochemical Society.

A complex copper salt, chemically known as disodium diaquodioxalato-cupriate, is used in the new bath, along with sodium sulphate and boric acid.

The new method will be available for use in large automatic plating installations where strip steel, standard steel parts, etc., are coated with copper as the first step to other coatings. A satisfactory copper deposit is obtained in only one minute with a low electrical current density with the new bath.

The copper cyanide bath is used in electroplating copper upon the more electronegative steel because from it the copper is not deposited by replacement in a loose, non-adherent film as it is from a copper sulphate solution, for example. But there are serious drawbacks to the commercial cyanide bath. It is very poisonous and the hydrocyanic acid formed when acid acts upon the metal cyanide is still more poisonous. Very careful operators must be employed. The cyanide bath is also unstable and deteriorates with use.

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**IN SCIENCE**

## PUBLIC HEALTH

**Cancer Less Prevalent In Far Eastern Lands**

**C**ANCER is much less prevalent in the Far East than in European or American countries, statistical studies of Dr. Frederick L. Hoffman of the Prudential Insurance Company show.

This disease at present is probably about half as prevalent in the Far East as in the large cities of Europe and America, Dr. Hoffman told members of the American Association for Cancer Research.

Conclusions of far-reaching value are promised by further study of the facts and factors partially revealed by his investigations, he pointed out.

Most impressive is the frequency of cancer of the mouth and cheeks among both men and women of Malaya and the Philippines. This is unquestionably due to the habit of chewing betel nut.

Another significant finding is the relatively low incidence of cancer of the breast in native women.

Cancers of the intestinal tract are much less common in the Malay States than in other parts of the world. Cancer of the skin is relatively uncommon. Cancer of the leg, probably mostly bone tumors, is rather frequent.

Dr. Hoffman reported figures that contradict current ideas to the effect that cancer of the oesophagus or gullet is common among Chinese.

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## SEISMOLOGY

**Severe Earthquake Reported In Mexico**

**A** SEVERE earthquake occurred somewhere near Acapulco, Mexico, at 5:33.7 a. m., eastern standard time, on Monday, May 8, scientists of the U. S. Coast and Geodetic Survey stated after examining records gathered by Science Service from a number of seismological observatories. The epicenter of the shock was given as approximately 16 degrees north latitude, 100 degrees west longitude.

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# CE FIELDS

## GENETICS

## "Blue Babies" Who Grow Up May Bear Children

**W**OMEN who suffer from congenital heart disease, some of whom may have been "blue babies," are not barred from motherhood if they grow up, Drs. Robert Sterling Palmer and Burton E. Hamilton of Boston reported at the meeting of the American Society for Clinical Investigation in Washington.

This condition is due to improper development of the heart. It will be found in only about one out of three thousand expectant mothers, the Boston physicians told their colleagues. They described eleven cases in which the heart condition of the mothers was no bar to successful child-bearing. Some of the women had several children.

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## PHYSIOLOGY

## Germs Obstruct Their Own Invasion of Body Tissues

**T**HE EXTENT to which disease germs can invade the body depends on the amount of inflammation they cause at the site of their entry, it appears from investigations reported by Dr. Valy Menkin of Harvard University Medical School at the meeting in Washington this week of the American Association of Pathologists and Bacteriologists.

By injecting a dye into the body at a place where bacteria had previously been injected, Dr. Menkin found that staphylococci, the organisms that are found in boils, limit the extent of their invasion to a very small area. They do this by causing a rapid inflammation which results in mechanical obstruction of the draining lymphatics, the avenues by which the disease germs, or other foreign matter, might continue their invasion of the body.

The pneumococcus and the fearsome streptococcus, on the other hand, do not cause such rapid obstruction of these avenues. In the case of the streptococcus, Dr. Menkin found the avenues are open for as long as two days. This

gives the disease germs a chance to get far in their invasion of the body and probably accounts for the serious effects on the whole system of infection with these organisms.

Dr. Menkin was able to determine the speed with which the germs could invade the body by watching the rate of progress of the dye which invaded the body just after the organisms had been introduced. When the dye could not proceed any further, he concluded that sufficient inflammation had occurred to obstruct the path for the organisms also.

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## ASTRONOMY

## Infra-Red Light Invades Eclipsed Portion of Moon

**W**HEN THE MOON partly entered the earth's shadow last September, as seen from Europe, the shaded part reflected less than a thousandth as much violet light as the ordinary full moon, but it sent back to us about one six-hundredth as much infra-red light as the unobscured portion. This was determined by photographs taken by Dr. R. L. Waterfield, and just announced to the British Astronomical Association.

The earth's atmosphere bends some of the sun's light around into its shadow, and for that reason the shadow, when it falls on the moon and produces a lunar eclipse, is not entirely dark. Because the longer waves of the red and infra-red light pass through the earth's atmosphere more readily than the shorter blue and violet waves, the eclipsed moon usually has a ruddy color. Dr. Waterfield's data show how much of this light is so refracted into the shadow.

A double camera was used, attached to one of the telescopes at the private observatory of the Rev. T. E. R. Phillips at Headley. This was equipped with two lenses, both forming their images on the same plate, side by side. One lens was covered with a filter passing only infra-red light, the other with a violet filter. A partition in the center of the camera separated the two parts, and a series of pictures was made as the moon entered more deeply into the earth's shadow. Thus the density of the images on the plates could be measured, and the brightness of the part of the moon represented determined. These density measurements were made at the Royal Observatory by Dr. W. M. H. Greaves.

*Science News Letter, May 13, 1933*

## CHEMISTRY

## Dust May Replace Water For Fighting Fires

**W**ATER may soon be a thing of the past in fighting fires if fire-fighting dust invented by Prof. Frederick K. Kirsten, aeronautical engineer at the University of Washington, and soon to be placed on the market, is accepted.

Prof. Kirsten has invented a device by which this dust may be played on a fire in an aerated mass through a hose and nozzle. The dust smothers the fire by developing a large quantity of carbon dioxide gas under heat.

In a test directed by the Seattle Fire Department, the dust extinguished in three seconds a roaring blaze in a garage filled with oily rags, crumpled newspapers, cedar shingles, oil and gasoline.

The dust does not absorb water, Prof. Kirsten explained. It looks like coarse flour and flows like water under treatment. A pressure of 200 pounds can be put behind it.

A specially designed fire engine provided with the new fire-fighting dust has been in operation for three months at the Washington State Hospital located at Medical Lake, Washington. Dozens of small fires have been successfully extinguished during that period. Prof. Kirsten's latest application of his new principle is the development of a small hand extinguisher.

It has been estimated that 80 per cent. of the damage incurred at the time of fire is attributable to the water used in putting out the fire.

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## BACTERIOLOGY

## Undulant Fever Bacteria In Vertebrae of Swine

**D**ISCOVERY of bacteria belonging to the Brucella group, which cause undulant fever, in diseased vertebrae of swine was reported by Drs. William H. Feldman and Carl Olson, Jr., of the Mayo Clinic at the meeting in Washington this week of the American Association of Pathologists and Bacteriologists. The animals did not show any signs of disease at the time of slaughter and the organs were healthy-looking. This discovery gives further evidence that swine are a dangerous source of undulant fever infection for farmers, packing house employees, retail butchers, housewives and others who handle uncooked pork.

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