

AERONAUTICS

Instrument Warns Pilot If Too Close to Lightning

See Front Cover

A NEW airplane instrument that allows the pilot to detect dangerous intensities of electricity in a nearby thunder cloud has been developed by the General Electric Company's general engineering laboratory.

It is a delicate device consisting of a neon tube and micrometer connected to a pointed tungsten rod that looks like a lead pencil protruding 14 inches from the plane. The rod picks up the electrical discharge from the cloud and sends it through the instrument. The neon tube flashes and the needle deflects. If the intensity of the disturbance is too great the pilot changes his course.

The instrument, as it was set up in the General Electric High Voltage Laboratory for testing, is shown on the front cover of this week's SCIENCE NEWS LETTER. The large sphere above represents the cloud. The plate below represents the earth.

The new instrument has been christened "Cloud Charge Indicator." C. M. Foust, who headed the group of high-voltage and lightning experts that developed it, is shown inspecting the instrument.

Airplane accidents in the past that seem to have been due to lightning are believed to have spurred the invention of the instrument.

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NUTRITION

Vitamins to Remember In Planning Meals

IF YOU are bewildered by the large number of vitamins now known, the following list may help you to keep them straight. A complete list would show 26 or more vitamins. Many of these have not yet been proved essential for human nutrition. Those you need to remember in planning your daily meals are:

Vitamin A, found in cod liver oil and other fish liver oils, green leafy vegetables, yellow vegetables, liver, milk, butter, apricots, peaches and dried prunes; needed for normal growth and health and specifically to prevent night blindness.

Vitamin B₁ (thiamin), found in yeast, whole grains and whole grain flour and breakfast cereals and enriched flour and bread, pork, liver, organs and

muscles (lean meat) of many animals, nuts, eggs, and most vegetables; prevents beriberi and other nerve disorders; promotes appetite, morale, and intestinal function; essential for proper nerve function and utilization of starches and sugar.

Nicotinic acid, found in yeast, liver, wheat germ (this means whole wheat bread and flour and enriched bread are good sources), milk, lean meat and some leafy green vegetables; prevents and cures pellagra.

Riboflavin, found in yeast, milk, liver, wheat germ, eggs, cheese, leafy green vegetables, peas, lima beans, and organs and muscle or lean meat of many animals; promotes growth and protects against a special skin disorder and certain abnormal changes in the eyes which result in failing vision.

Vitamin C, found in oranges, lemons, tomatoes, grapefruit, fresh strawberries, raw cabbage, green peppers, and other fresh fruits and vegetables; prevents and cures scurvy; needed for proper growth of bones and teeth.

Vitamin D, found in cod liver oil and some other fish liver oils and produced by action of ultraviolet light on the skin; has been added to some kinds of milk; prevents and cures rickets.

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METEOROLOGY

River Flow in East Lowest on Record

RIVER flow in Maine, Vermont, Tennessee, Indiana and North Carolina during the past year was the lowest on record, the U. S. Weather Bureau reported. This has caused a loss of some 3,000,000,000 kilowatt hours of electrical energy. The low output of the Tennessee River has impeded defense.

Continued absence of rain and high temperatures intensified drought conditions in the East during the past week. There has been a remarkable absence of rain in this area for the past two months, the Weather Bureau reported. In many places all vegetation has dried up. Pasture fields are brown and bare, and domestic water conditions serious.

In extraordinary contrast, the Middle States are wet and soggy with excessive rains. Crops have been ruined and field work in general is held up.

Unseasonably warm weather has prevailed all over the country during the past week except in New England where temperatures have been slightly below normal.

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IN SCIEN

MEDICINE

Sexual Deficiency Aided By Synthetic Hormone

TREATMENT of sexual deficiency has been advanced by development of a synthetic male sex hormone, methyl testosterone, which is effective when given by mouth instead of by hypodermic injections or by operation to implant a hormone bank in the patient's body, Dr. Samuel A. Vest and Dr. Bruno Barelare, Jr., of the University of Virginia Hospital, report (*Journal American Medical Association*, Oct. 25).

They report that two grown men, deprived of normal virility by castration or glandular failure, have been given normal vigor by daily doses of this hormone which also speeded to normal the delayed development of a 14-year-old boy.

The entire stomach of one of the men had been removed because of a cancer but he nevertheless was able to absorb the sex hormone doses given by mouth. The size of the hormone dose is three to four times that needed when given by hypodermic injection. The convenience of simply swallowing the medicine, however, and the reduction of necessary visits to the doctor's office, the Virginia scientists point out, makes up for the larger amount needed.

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ENGINEERING

High Power Mercury Lamps Speed Blueprint Making

SPECIAL high power mercury arc lamps that have been developed by optical engineers to speed up the production of blueprints—needed in vast quantities in defense work—were described by Wm. T. Anderson, Jr., of the Hanovia Chemical & Mfg. Company, Newark, at the meeting of the Optical Society of America in New York.

The lamps give a very high intensity of light in the near ultraviolet region to which the sensitized paper is most responsive. By thus shortening the exposure, reproduction is speeded.

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CE FIELDS

MEDICINE

\$21 Per Year Provides Good Medical Care

GOOD medical care at \$21 per year per person can be provided for industrial workers and their families, Dr. Franz Goldman, of Yale University School of Medicine, reports in the current issue of *Medical Care*, published by the Committee on Research in Medical Economics.

Dr. Goldman surveyed four industrial health plans, two in eastern and two in southern states. Two are wholly financed by the employer, one costing slightly more than \$1,000,000 a year.

The other two are jointly financed by employer and employee. The four plans have been functioning from 17 to 28 years and cover groups, including dependents, numbering from 5,000 to 100,000.

Services include those of general practitioner, surgeon, other specialists, home nursing, hospital care, maternity care, periodic health examinations and other preventive measures, physical therapy, X-ray, laboratory and usually medicines. Dental care of varying scope is included in three of the plans.

Dr. Goldman attributes the low cost to four factors: Full use of preventive medicine; even spread of risks over a large group; economies resulting from group practice; and the integration of curative and preventive services.

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ENGINEERING

Future Movie Screens May Be Full Size of Stage

LOOKING into the future of the motion picture, the next great novelty will perhaps be a "dynamic screen" as wide and as high as the entire theater proscenium.

This prediction was made by Robert W. Russell of Army's Training Film Production Laboratory at Fort Monmouth, N. J., before the Society of Motion Picture Engineers.

The projector will have the power, he said, to throw any size picture on any part of the screen or to cover the

whole of it as desired, thus to produce a great variety of effects.

As an example, he described how Alice in Wonderland would look on a dynamic screen.

"Alice would be reduced to a mite. She looks upward and sees the table. She finds the bottle and she drinks the potent liquid. Now she begins to grow, rising across the screen until she truly is enormous, when her head bumps the ceiling. The element of realism would be injected to a startling degree."

The familiar rectangular screen shape is too rigid—like viewing everything through a window. "Grandeur" wide-film, square frame, the circular "iris-in," are but feeble attempts to get away from it, he declared. The picture industry needs another "sudden impact of novelty," a wider latitude for artistic and dramatic expression.

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ANTHROPOLOGY

America's Cave Men, 25,000 B.C., Wore Clothes

TRACING human occupation of North America back into the Ice Age, more than 25,000 years ago, scientists now report evidence that earliest Americans who reached New Mexico were cave men and hunters, knew how to build fires, apparently wore clothes, and probably cooked their food.

Results of five seasons of digging into Sandia Cave, New Mexico, where revelations of "Sandia Man's" ancient style of living have been unearthed, are reported by Dr. Frank C. Hibben of the University of New Mexico in a bulletin just issued by the Smithsonian Institution.

Out-ranking the famous Folsom Man type of American in remote antiquity, Sandia Man's traces of housekeeping lie in this cave buried far beneath debris left by Folsom occupants. That the earliest known people of this continent made clothing is inferred by finding Sandia Man's (or his wife's) snub-nosed scrapers, the kind of tool that Europe's Old Stone Age people used to scrape animal skins for garment making.

Some of Sandia Man's spearheads or other projectile points are pronounced remarkably like those made in Europe about the same time during the Solutrean stage of the Old Stone Age. It is possible, Dr. Hibben says, that a general pattern of workmanship spread over much of Europe and Asia and thence into the New World.

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MEDICINE

Sulfathiazole Ointment Heals Skin Infections

SULFATHIAZOLE, potent remedy for pneumonia and other serious infections, when made into an ointment and rubbed on the skin appears to be an effective remedy for such common skin diseases as acne, impetigo, infected eczema and boils, Dr. Edmund L. Keeney, Dr. Richard H. Pembroke, Dr. Ferdinand E. Chatard and Dr. James M. Ziegler, of the Johns Hopkins and Union Memorial Hospitals, Baltimore, report (*Journal, American Medical Association*, Oct. 25).

Use of the sulfathiazole ointment to treat 69 children and grown-ups with various skin infections showed it was also effective in seborrheic dermatitis and bacterial folliculitis.

In each of 35 poison ivy patients given the ointment, the condition healed without infection. This seems important, the Baltimore doctors point out, because physicians generally refrain from prescribing an ointment for acute blistering skin disorders because of the danger of promoting secondary infection.

In 33 patients with cuts and 4 patients with second degree burns the sulfathiazole ointment brought about healing without infection in every case.

The 5% sulfathiazole ointment is made by suspending finely powdered sulfathiazole, which had been sifted through bolting cloth to remove large crystals, into equal parts of hydrous wool fat and vanishing cream.

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BIOLOGY

Food-to-Energy Link Extracted From Yeast

EXTRACTION from baker's yeast of a vital link in a chemical chain by which the body gets energy from food is announced by Prof. T. R. Hogness and associates, A. M. Altschul and H. Persky, of the University of Chicago (*Science*, Oct. 10).

The link is an enzyme, one of many which pass along hydrogen from a molecule of sugar, for example, until at the end of the chain it is combined with oxygen to form water to the accompaniment of energy needed for body growth and function. This particular enzyme is the link between two other links known to chemists as dihydrodiphosphopyridine nucleotide and cytochrome C.

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