

METEOROLOGY

Fog-Dissipating Chemical Is Calcium Chloride

THE MYSTERIOUS chemical used in the recent fog-dissipating experiments at Massachusetts Institute of Technology was the common substance calcium chloride. Calcium chloride is the well-known material used as a drying agent because of its affinity for water.

When first prepared, each molecule of calcium chloride consists of one atom of calcium combined with two atoms of chlorine. When exposed to water—either in the liquid or vapor form—each calcium chloride molecule is capable of picking up six molecules of water. Calcium chloride in a saturated solution freezes at a temperature of 48 degrees below zero Centigrade, and is much used as brine in refrigeration.

While the actual chemical used in the fog-destroying tests is common enough, the design of the tiny nozzles from which the chemical is sprayed is still a closely guarded secret. Applications have been made for patents on the nozzle design. The principal function of the special nozzles is to release small globules of spray of a uniform and definite size.

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CHEMISTRY

Deuterium Serves as Tracer In Following Reactions

THE technique of substituting atoms of deuterium, the "heavy" kind of hydrogen, for the ordinary hydrogen atoms in a substance has disclosed why ammonia breaks up under the action of ultraviolet light.

Prof. Hugh S. Taylor of Princeton University and Dr. Joseph C. Jungers, exchange research fellow from Louvain University, Belgium, have just described how they solved the breaking down of ammonia by light through the use of heavy hydrogen atoms as "tracers."

When ultraviolet light shines on ammonia, which consists of one atom of nitrogen and three atoms of hydrogen, it breaks up into two things: a free atom of hydrogen and a substance consisting of one nitrogen and two hydrogen atoms in combination.

The Princeton scientists mixed ammonia and deuterium gas in a quartz vessel. This quartz vessel was exposed to ultraviolet light. By passing other light through the vessel and measuring its absorption with a spectrograph. Prof.

Taylor and Dr. Jungers were able to trace the driving out of the ordinary hydrogen by the deuterium.

First they obtained absorption spectra in which one atom of deuterium had replaced one hydrogen atom. Next they found two atoms of deuterium had worked their way into the mixture. Finally the third deuterium atom replaced the last hydrogen atom in each molecule and they had a substance containing one nitrogen atom and three deuterium atoms. Each step in the process was traced through with the spectrograph.

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BACTERIOLOGY

Parchment-Like Membranes Made by Micro-Organisms

SLIME-producing micro-organisms that are a harmful factor in the pulp and paper industry have been turned to practical account by Dr. J. R. Sanborn of the International Paper Company, Glens Falls, N. Y.

These organisms, Dr. Sanborn reported to the Society of American Bacteriologists, will form, under the special methods of cultivation, doughy or rubbery slime clots. The clots are converted by agitation in water into a cellulose-like suspension. This is deposited in a thin layer and the water is withdrawn. The slime particles merge or coalesce, forming a continuous membrane. The completed sheet is semi-transparent and parchment-like.

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FISHERIES

Poacher "Pantslegs" Fish Stolen From Hatchery

MANY "fish-stories" arise from the efforts of U. S. Bureau of Fisheries officials to prevent poachers from making off with Uncle Sam's large family of trout.

The most recent classic of this nature is offered by the Bureau at its face value.

Among other visitors at a hatchery one visitor in particular was seen to sit day after day at the water's edge, apparently in rapt admiration of the scenery. Through one of the legs of a large pair of overalls he lowered a baited line. On striking, the fish was unceremoniously hauled in through a pocket and the visitor nonchalantly walked away.

Science News Letter, August 18, 1934

IN SCIEN

ANTHROPOLOGY

Mediterranean, Not Nordic, Real Maker of Civilization

THE IDEA of Nordic supremacy being urged so strongly in present-day Germany was repudiated by Sir G. Elliot Smith, British authority in anthropology, who told the International Congress of Anthropological and Ethnological Sciences, in London, that civilization is essentially a creation of southern or Mediterranean peoples.

"Whether civilization originated in Egypt, Sumer (a part of Babylonia), India or elsewhere," said Prof. Smith, "there is now evidence it was the work of the Mediterranean race. It is important to emphasize this fact at this time when distinctive qualities of mind and character are being attributed to the Nordic race and the so-called Aryan people."

Science News Letter, August 18, 1934

PHYSIOLOGY

Hormone Test For Sex Proves of No Value

HOPE that a real sex determination test had been developed at last has been dashed by investigations of Drs. Douglas P. Murphy and George S. De Rényi of the University of Pennsylvania School of Medicine.

The test, developed by Dr. John H. Dorn and Edward I. Sugarman of San Francisco, depended on their reported discovery that the kidney excretion of the expectant mother contains one kind of hormone if the baby will be a girl and another if it will be a boy. When the baby is to be a girl, this hormone would stimulate precocious sexual development in immature male rabbits. The test was said to be successful in 80 out of 85 cases.

The Philadelphia scientists tried the test, but were unable to get the same results. Consequently Drs. Murphy and De Rényi conclude that the test does not give a means of predicting sex in the human race.

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CE FIELDS

CHEMISTRY

New "Element 93" May be Isotope of Element 91

ELEMENT 93, discovered by Dr. Enrico Fermi of the Royal University in Rome, may not be a new element after all but merely a different form of the already known element 91.

This is the verdict of Drs. A. V. Grosse and M. Agruss of the chemistry department of the University of Chicago, who report that Fermi's super-heavy element 93 may very well be an isotope of element 91 and not, therefore, a completely new element as supposed.

Announcing their results in a letter to the editor of the *Physical Review*, the Chicago investigators disclose that by using the chemical tests which the Italian scientist employed to prove the nature of his element 93, they obtained the same set of reactions by working with element 91. They found, for example, that element 91 is precipitated by the use of manganese from acid solution.

The similar results raise the natural question about the reality of Dr. Fermi's element 93 and force the Chicago scientists to report, "We are forced to conclude (unless evidence to the contrary is provided) that the product of uranium with a half period of 13 minutes [referring to Fermi's element] is an isotope of element 91."

Science News Letter, August 18, 1934

CHEMISTRY

Civil War Papers Better Preserved Than Later Ones

THE YEAR 1868 seems to have been the nineteenth century's deadline for printing newspapers that would resist the damaging effects of time.

Papers printed before that time are in excellent condition; those printed later are probably doomed to extinction through decay of the paper. In fact, Civil War editions are found to be in more readable condition than the Spanish War records of 1898, and in a few cases this superiority exists over World War accounts.

A recent study of old copies made by B. W. Scribner of the National Bureau of Standards determined that the rag fiber paper on which news was printed before 1868 was more resistant. The older newspapers were found to be still in excellent condition, and, Bureau scientists state, should endure indefinitely if preserved from outside influences.

Most of the editions appearing after that date, however, contained a crude ground-wood fiber. They were generally found to be in an advanced state of decay.

The resumption in 1927 of printing permanent library editions on paper composed of high-grade fibers will probably preserve some of the later records. Tests showed that satisfactory papers have been developed for this purpose.

In 1931 the Bureau devised a test to determine if news print paper would withstand the effects of age. This was to bake a sample copy for 72 hours at the temperature of boiling water, 212 degrees Fahrenheit. If it stands up under that it is suitable for permanent library editions.

Copies of the oldest American newspaper, *The Boston News Letter*, printed in 1704, were found by the National Bureau of Standards several years ago to have retained their strength and pliability for the 227 years since publication.

Science News Letter, August 18, 1934

CHEMISTRY

Light Weakens Silk By "Burning" It

IF WOMEN could wear their silk dresses in a vacuum they should be able to wear them much longer than they do now without loss of the original strength of the silk fibers.

This is one way of saying that the loss of strength of silk when exposed to light occurs not so much because the light shines on it as because the presence of oxygen makes the silk slowly "burn up" or oxidize.

Studies at the National Bureau of Standards by Dr. Milton Harris indicate that samples of silk fabric, exposed to daylight for four months while enclosed in an evacuated container, have as much tensile strength as they had at the start.

Similar samples of silk exposed to the same light but in moist oxygen showed a 10 per cent. loss of strength in the same time.

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MEDICINE

Raw Apple Diet Used to Treat "Summer Complaint"

CHILDREN who do not like bitter medicine will be pleased to hear that a raw apple diet is now being used to treat that childhood ill known as "summer complaint."

Dr. Harry Beckman, professor of pharmacology at Marquette University School of Medicine, Milwaukee, describes it in a new book.

Some inquisitive person was recently searching through an old "Volksmittel" or German remedy book and found that at one time apples were used as a cure for the dreaded "summer complaint" or diarrhea in infants and children.

Medical men saw its possibilities. They began to experiment and found that children did get well on the diet.

Ripe, mellow apples are peeled and cored and grated into a paste, fed to the patient for two days. No other food is given and there is no limit to the amount that can be eaten. At the end of two days the patient is put on a normal diet, consisting of food rich in proteins and poor in milk and fats. If the cure is not completed another two days of apples seems to be sufficient.

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ZOOLOGY

Howler Monkeys Have "Social State" in Jungle

LIFE in the jungle tree-tops is not necessarily the remorseless struggle for existence that it is commonly depicted as being. Howler monkeys, among the most interesting and certainly the noisiest of our long-tailed zoological cousins, live in a decently considerate social state, Dr. C. R. Carpenter of Yale University has discovered, in the course of long and patient observations of their ways.

Howlers, Dr. Carpenter says, live in groups without apparent "bosses" or leaders. They do not fight each other over food or territory. They do not desert the old or disabled members of their clan. And when a common danger threatens, they take common action against it.

Howler monkeys seem to have a kind of language. Dr. Carpenter distinguished nine kinds of voice-sounds, each with a distinctive response on the part of other members of the group.

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