

## Boil Mercury to Cool

**B**OILING mercury will take the place of electric motors and pumps in home refrigerators if a new method just announced here comes into general use. The new process is the invention of Dr. Daniel F. Comstock, president of Comstock and Westcott, and Lyman F. Whitney, of the firm's technical staff. Dr. Comstock was a former member of the faculty of Massachusetts Institute of Technology and was one of the inventors of the Technicolor process of motion pictures in color.

The machine is called a stator, because all moving machinery has been eliminated. A small boiler contains mercury, and when it is heated and the mercury boils, the vapor is discharged into a venturi tube, sucking water vapor from the cooling unit and compressing it. Under the reduced pressure the remaining water rapidly evaporates, with resultant cooling. The heavy mercury flows back into the boiler and as it does so it pumps the water from the condensed water vapor back to its original height.

Models made so far are operated by gas, but it is stated that an electrically operated unit is contemplated. Besides ordinary uses in home refrigeration, it is stated, the simplicity of the machine will make it available for a home cooling system, to bring low temperatures inexpensively to homes in even the hottest weather.

*Refrigeration*

*Science News-Letter, August 30, 1930*

## Old World Borrows

**I**MMENSE shipments of African corn received in Mexico has called attention that Mexico, the original home of the grain, is producing less, and that tropical America is apparently fatally losing control in the agricultural dominance of its native products.

America gave the Old World corn, potatoes, chocolate and a long string of fruits and vegetables, as well as tobacco, cotton and rubber. The string of at least 50 such products causes one to wonder what the Old World did before.

What it is doing now, is apparent from the fact that while all rubber used to come from tropical America, most of it now comes from the European colonies of the Far East. The African Gold Coast now ships more chocolate than its native America. Chicle and other native American gums are being duplicated in

the Orient, and the Dutch East Indies and the Philippines are stuffing the world's mattresses and cushions with American "kapok." Manila hemp and African sisal are in the meantime rivalling Yucatecan henequen.

What has happened is that the Old World has applied scientific control of these agricultural products, which in many instances have merely been allowed to grow wild in the Americas where they originated.

*Economics*

*Science News-Letter, August 30, 1930*

## Paralysis and Vitamins

**I**S THE type of paralysis that afflicts the person who has pernicious anemia caused by an absence in his diet of vitamin B? During the course of experiments designed to disclose the answer to this question, it was found that lack of vitamin B in the diet does cause paralysis of animals. Drs. Edwin F. Gildea, Egon E. Kattwinkel and William B. Castle, working at the Boston City Hospital and the Harvard Medical School, made the discovery. Some time ago it was observed that a diet lacking in this water soluble vitamin caused neuritis in animals.

In the recent experiment, six dogs were fed with the diet deficient in the antineuritic portion of the vitamin B extract. The dogs were given this diet until symptoms of a paralysis appeared and then they were given a full rich diet containing vitamin B and they immediately got better. Then vitamin B was again removed from the diet and the experiments were repeated several times in the same dogs.

After a while the dogs showed spastic paralysis, very similar to the one which human beings develop after they have pernicious anemia. The pathological examination of the sections of the spinal cord showed that the animals had approximately the same type of involvement of the spinal cord as that found in pernicious anemia.

Apparently a definite relationship exists between the diet poor in vitamin B and the occurrence of a spastic paralysis. What takes place in pernicious anemia is involvement of the spinal cord, either due to a poor diet or else due to the fact that the stomach lacks hydrochloric acid which is necessary to digest and absorb the necessary vitamins.

*Public Health*

*Science News-Letter, August 30, 1930*

# IN VARIOUS S

## Beauty from Castor Oil

**C**ASTOR oil as a thing of joy and beauty is the promise held in recent experiments in the manufacture of dyes from fat, conducted by Rajendra N. Sen and Ashutosh Mukherji, in the chemical laboratory of the Presidency College, Calcutta

From castor oil was obtained a brown powder, which gave an orange tint to wool and silk. Coconut oil was also tried and yielded a brighter orange color, while olive oil made a brown dye for wools and stained silks in various shades of red.

The method used in the manufacture of the new dye was developed by Mr. Sen. It consists in using esters of benzoic, salicylic, and other acids instead of the acids themselves in the process. Chemically, fats are also esters, although they are quite different from the simpler esters of benzoic and salicylic acids.

High yields obtained in the laboratory and the ease with which the dyes may be manufactured from fats suggest that the new process will be of commercial importance. Oil fats have an advantage over coal tar, now widely used in dye making, in that the supply is continually replenished by nature, in the tropics or on farms and plantations. Hence there is no danger of exhausting the supply, even in the remote future. Also many of the oils can be obtained at a much lower price than ordinary dye materials.

*Chemistry*

*Science News-Letter, August 30, 1930*

## Rain Shadow

**S**TUDY OF the early stages of the recent drought as it affected the region of Washington, as well as of previous droughts, shows that there is a "rain shadow" to the east of the Appalachians, Prof. A. J. Henry, of the U. S. Weather Bureau has found.

In the period from April 18 to May 14, this year, no measurable rain fell at Washington, even though several storms passed to the eastward over the St. Lawrence valley. He has found similar effects previously. This leads him to believe that the Appalachians cast a "rain shadow" for storms travelling from the west along the St. Lawrence.

*Meteorology*

*Science News-Letter, August 30, 1930*

## CIENCE FIELDS

### *Maize, Not Pig*

CHARLES LAMB'S delightfully told story that roast pork was discovered in China when fire destroyed a house and cooked some baby pigs to a turn inside it has a parallel in American Indian lore, cited by Mrs. Zelia Nuttall in the *Journal of Heredity*.

The Indian legend has it that the ancient founders of Mexican civilization were so troubled by wild beasts in the forests that they set fire to the trees and cleared the land. They noticed that grains of maize and other plants which the fire had roasted were very delicious to the palate. They collected some burnt grains and planted them in the same soil and awaited the harvest.

This legend tracing the dawn of American farming and cookery was obtained by an Italian historian in Mexico some 40 years before Charles Lamb was born.

*Ethnology*

*Science News-Letter, August 30, 1930*

### *Another Dust Explosion*

ALMOST all kinds of dust, even powdered metals, like aluminum or iron, are explosive when floating in the air, so the explosion that wrecked a grain elevator in Baltimore recently was not a very unusual occurrence. It was due to grain dust, floating in the air, and might have been started by an electric spark, though the cause cannot definitely be stated at present, and perhaps never will be ascertained.

The Chemical Engineering Division of the U. S. Department of Agriculture is investigating the explosion, under the direction of David J. Price, in charge of the division. He is being assisted by H. R. Brown and B. J. Culp, two of the division's engineers.

Speaking to Science Service before the investigation, Mr. Price expressed surprise that the explosion occurred in the Western Maryland elevator, however. He said that it was a modern plant, of reinforced concrete construction, with modern machinery and was well managed. In fact, Mr. Price said, it was considered one of the best elevators in the country. In view of this, he thinks, the explosion may have been caused in some way that his investigations have never before encountered.

Though a pile of dust will not burn if a match is touched to it, and the match may even be extinguished, this is only because the grain does not have a supply of oxygen to keep it burning. When the same dust is floating in the air, each single grain has a supply of oxygen in the air around it. The result is that when it starts it burns so rapidly as to make a real explosion.

*Chemical Engineering*

*Science News-Letter, August 30, 1930*

### *Mayan Ceremonial Room*

PAINTINGS on the walls of ceremonial rooms, where prehistoric Indians held their important secret rites, have been brought to light by the Field Museum Archaeological Exhibit on the ruins of the earlier one. This he believes to be a unique procedure, nothing of the sort having been reported to the Southwest, it is announced in a report received here from Dr. Paul S. Martin, leader of the expedition.

Two of these ceremonial rooms, of the type known as an Indian kiva, have been discovered at the Lowry Ruin, in southwestern Colorado, Dr. Martin reported. The later kiva was been found heretofore.

"Great was the surprise," Dr. Martin wrote, "when we found that still adhering to the walls of the upper room were fragments of paintings which had not seen the light of day for probably well over a thousand years. These paintings are entirely geometrical and had been executed in black and white.

"Even greater was our surprise in penetrating into the lower kiva to find that the paintings on its walls also were preserved, more perfectly than in the room above. Here the design is one that is frequently seen on prehistoric pottery, representing rain, lightning, and clouds. So far as is known at present this is the first example of such a design on a kiva wall."

Many of the old, original roof beams of the structure are still in place, Dr. Martin found. It is expected that when the tree rings are examined it will be possible to set the date of the ruin.

The Lowry Ruin is one of the largest ruins of its kind in the region, and has been previously untouched by archaeologists' spades.

*Archæology*

*Science News-Letter, August 30, 1930*

### *Tellurium, a Medicine*

IF THE patient can stand the smell of tellurium, which has an intense garlic odor, it may prove useful in the treatment of syphilis in cases that do not respond to more usual medication.

Dr. A. D. Frazer, a health officer of the County Borough of Dudley, treated with tellurium or its salts, seven individuals who contracted the disease, most of them more than twenty years ago. Four cases out of the seven were favorably influenced by this new drug, though the standard cures were ineffective. Tellurium has the advantages over many other drugs in that it produces improvement when the disease is of long duration and firmly entrenched and the patient becomes resistant to treatment.

Since tellurium in the amounts given to patients is not poisonous, its only disadvantage seems to be the offensive smell. In countries where the aroma of garlic is tolerated or even liked, tellurium will, according to Dr. Frazer, prove of great value.

*Medicine*

*Science News-Letter, August 30, 1930*

### *Average Number Meteors*

THE AUGUST meteors, or shooting stars, that are especially numerous every year on the nights of August 11 and 12, came in average numbers this year. The return was not distinguished by any particularly brilliant meteors. This announcement is made through Science Service by Dr. Charles P. Olivier, director of the Flower Observatory of the University of Pennsylvania and a leading authority on meteors. Dr. Olivier has received a large number of reports of the meteors from lay observers throughout the country. This he attributes largely to a recent article in the *SCIENCE NEWS-LETTER* and to other publicity given the matter by Science Service.

Dr. Olivier himself watched on the night of August 11 for five and a half hours from a point in the country well away from the city lights. In this period he saw 66 meteors, a rate of 12 an hour. By comparing his observations with those of others who watched at the same time from other points, he will be able to calculate the heights of a number of the shooting stars.

*Astronomy*

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