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**SPEED—
AND ITS SIGNIFICANCE
IN CHEMISTRY**

by
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istry, Yale University

This address will be given
Friday, April 14, at 11:45
A. M. over stations of the
Columbia Broadcasting Sys-
tem. Each week a promi-
nent scientist speaks over the
Columbia System under the
auspices of Science Service.

BACTERIOLOGY

Bacteria Replace Yeast To Make Ancient Sacred Drink

BEEER made by the fermentive action of a special bacterial culture instead of the customary yeast, and drunk bacteria and all, is an excellent remedy for disorders of the digestive organs as well as a palatable drink. So states Prof. Paul Lindner of the Berlin Agricultural College, who made the discovery in the course of an endeavor to determine the identity of "soma," the sacred drink of the ancient Persians and Indians. Prof. Lindner's preliminary report is given in the German scientific weekly, *Forschungen und Fortschritte*.

"Soma" had long been supposed to be merely ordinary beer, with the addition of some kind of plant, not now identifiable with any certainty. But the health-giving properties of the brew are so lauded in the ancient literature that Prof. Lindner suspected that the well-being induced by it was more than the ordinary pleasant delusion of a successful *Bierabend*.

He had for many years been familiar with the Mexican drink "aguamiel," made from the juice of the century plant, and sometimes called "milk of the green cow" because it was drunk by the Mexicans while it was still white with its active fermentation. He had discovered that the fermentive organism in this drink is not a wild yeast but a bacterium, which he called *Termobacterium mobile*, or for convenience simply Tm. The same organism has been found in other fermented drinks produced in the tropics, and where it is present it predominates to the exclusion of yeasts.

Prof. Lindner suspected that it was the bacteria rather than the beverages they produced that brought about the excellent digestive and assimilative health of the drinkers. To test this theory, he centrifuged out about a tablespoonful of the organisms from some fermented liquid and swallowed them "straight." They did have a most beneficial effect, he reports.

He then undertook scientifically controlled brewing, using Tm bacteria instead of yeast. He found that the products of such fermentation were pure ethyl alcohol with a very little lactic acid, but no fusel oil, supposed to be the prime cause of the "Katzenjammer"

following indiscreet indulgence in yeast-fermented beverages. For one thing, the bacteria apparently cannot ferment malt sugar, but only glucose, and hence produce a beer of quite low alcoholic content, but high food value.

He induced a commercial brewery in Sweden and one in Vienna to produce bacteria-fermented beer on a moderately large scale, and with the cooperation of Dr. Leo Kaps of the Wilhelmina Hospital in Vienna tried it on a large number of patients. When given with the bacterial cloudiness still in it, the beer induced excellent conditions in the digestive tract. The same beer filtered, however, was merely an agreeable drink and had no therapeutic value.

According to the ancient Oriental literature, "soma" was so good that even the gods eagerly drank it out of the bowl of the moon, which was regularly refilled for them every month. The god of "soma" was the father of all the other gods.

Science News Letter, April 8, 1933

ASTRONOMY

Meteor Observed By Scientist on Train

FROM A SPEEDING railroad train, Dr. John Strong of the California Institute of Technology recorded observations of the unusual meteor of Friday, March 24, that lighted three states just before sunrise.

"The meteor appeared like a rocket," Dr. Strong told Science Service, "and it seemed to come up from the earth. Its trajectory was slightly arched and it was visible about five seconds. The first light was more intense than daylight and it lighted up three states.

"The meteor seemed to wobble, leaving a luminous tail about two degrees long. The meteor and tail appeared like a rocket of burning magnesium with red streamers of granular material. At the end of the trajectory overhead the meteor forked and turned red and then was no longer visible.

"The cloud of smoke about a fourth of a degree wide was luminous as if a searchlight were (*Turn to Page 222*)

and animal material drifting down from the sunnier water strata above. Because the water is so cold in the depths, putrefaction goes on very slowly; the dead bodies are in permanent cold storage, waiting for submarine scavenger-beasts to come and eat.

Among the beasts that prey upon living things, down there in the everlasting dark, is a species of shrimp with folding razors for claws. It probably uses them for traps. Then there is a very thin eel with a dagger-like beak, and mollusks with shells like cork-screws.

The expedition which brought back this collection of strange abyssal animal life was sent out by the Smithsonian Institution under the leadership of Dr. Paul Bartsch, curator of mollusks. It had the use of the motor yacht *Caroline*, owned by Eldridge R. Johnson of Philadelphia, and specially equipped with apparatus for deep-sea work. It is the intention of Mr. Johnson and the Institution to cooperate in future expeditions for the complete study of physical and chemical conditions of the water and of plant and animal life of all the deep places of the North Atlantic.

Science News Letter, April 8, 1933

About 10,000,000 trees were planted last year, in connection with George Washington bicentennial celebrations.

Half a million ounces of gold used by American dentists through the year can be diverted into currency reserves, the dentists using platinum alloys instead, says a professor of dentistry at New York University.

AERONAUTICS—METEOROLOGY

Weather Apparently Cause Of Destruction of the Akron

UNUSUALLY violent vertical currents of air, such as are commonly found along the "wind shift line" of a storm at sea, are suspected of having caused the "Akron" disaster by scientists of the U. S. Weather Bureau. C. L. Mitchell, principal meteorologist, informed Science Service that such a line did extend out over the sea near Barnegat at the time of the "Akron's" last voyage, and that thunderstorms, the usual accompaniment of a "line storm," had been observed late Monday night.

Dr. J. W. Humphreys, the Weather Bureau's leading physicist, explained that these vertical air currents are caused by the encounter of masses of warm and cold air. Since there is a marked difference in the specific gravity of such air masses, the warmer air tends to rise and the cold to flow to the bottom, thereby setting up "boiling" currents very similar to those which can be seen in a kettle of water being heated on a stove.

Such vertical currents, he said, may leap upward or plunge downward as much as twenty thousand feet, so that even if the "Akron" had been flying at an apparently safe height when one of them caught her, she might have been whirled upward and demoralized, or forced downward and caught by the waves. While a modern rigid airship can defy ordinary vertical gusts with impunity, these vertical winds are so powerful that propellers and rudders are of no avail against them.

Vertical winds often have very sharp

boundaries, and a pair of them, one blowing up and the other down, may exist within a few feet of each other. The "line storm" that destroyed the "Akron's" ill-fated predecessor, the "Shenandoah," apparently caught that airship in such a pair of oppositely flowing vertical air currents.

Science News Letter, April 8, 1933

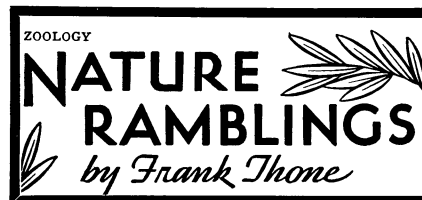
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trained on it. The smoke column broke into four or five segments which rotated ten degrees and coalesced to form a striated cloud. The highest segment remained isolated. The cloud was brightly illuminated with fringes appearing alternately rich blue, then white. The isolated segment emitted brown light. The meteor was first noticed at 5:05 a. m., when the train was at Springer, New Mexico. The sun rose at about 6 a. m., when the train I was on was at Wagon Mound. At 6:15 a. m., the cloud was still visible."

Science News Letter, April 8, 1933

On the lofty ice cap of Greenland the temperature may fall as low as 130 degrees below zero.

The Peruvian congress has taken steps to make Cuzco, capital of the ancient Incas, the archaeological capital of South America, and has transferred the Peruvian National Museum from Lima to Cuzco.



Sleepers Awaken

WHEN BEARS come out of their caves and hollow trees in the mountains, and ground squirrels, woodchucks and frogs emerge from their underground hiding-places in our own more prosaic fields and waysides, they are like the plants in responding to the sun as both alarm clock and ultimate source of energy for the new season.

Animals that hibernate are sent into their long winter sleep by the warning of the retreating sun and frosty nights in the fall. And when they come out in spring it is largely a result of their being warmed up again.

For it is a curious fact that hibernating mammals become temporarily cold-blooded. They become almost as cold-blooded as snakes and frogs, their body temperature dropping far below that of the normal bodily heat of warm-blooded animals, to a few degrees above freezing-point. In that state they become limp lumps of fur, breathing only a few times a minute, and are nearly insensible to stimuli that would ordinarily awaken them from a sound normal sleep.

Dr. George E. Johnson of the Kansas State Agricultural College made experiments on hibernating striped ground squirrels. They could be handled, even shaken or pricked with pins, but beyond breathing a trifle more rapidly made no response. Taken into a warm room the breathing rate increased, and the heartbeat, which had been imperceptible even with a stethoscope, asserted itself and gradually reached normal rate. At the same time the body temperature went up, and when it approached normal mammalian warmth a typical animal roused, stood on its feet, and even showed some signs of fight.

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