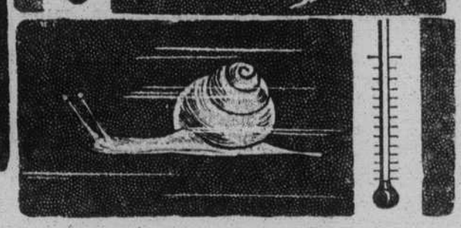
Latest Facts from Science, Mechanics and Invention

The Baffling Mystery of Frozen Life

Reviving "Dead" Creatures with Radio Waves to Find a New Way of Killing the Germs of All Deadly Diseases.

Digging the Body of a Pre-Historic Monster Out of an Iceberg Where It Has Lain Perfectly Preserved in Its Frigid Tomb for Myriads of Centuries.

Courtesy of Popular Mechanics



Above: Popping Corn by Radio. The Grain Is Placed Between a Pair of Ice Electrodes (Glass Jars) Connected to a High-Frequency Heater. The Ice in the Jars Is Not Melted by the Heat That Pops the Corn.

Left: Three Examples of Frozen Life. A Frog Can Stand 20 Degrees Fahrenheit. Snails Cooled to 140 Degrees Do Not Die, While a Carp Will Die at 10 Degrees Fahrenheit.

HOW much freezing can life stand? Perhaps the most startling answer to this question came out of Germany recently in connection with the proposal that the ice-fields of northern Siberia or of the Arctic islands be explored for a mammoth preserved in the ice. Some authorities are of the opinion that it may not be impossible for extinct creatures to exist in frozen preservation, for some of the ice in the polar regions is of great age. Mammoths have been found imbedded in the soil of Siberia, some of them standing erect, with fleshy parts and hairy covering still adhering to the bones. But to expect that radio waves, oxygen injections, or any other stimulus can recall life to a thousand-year-old carcass is—in the opinion of all the biologists who would discuss so fantastic a subject—"highly improbable."

The fact that cold can be endured by many creatures with a very high degree of immunity is indicated by the following incident which is related in Popular Mechanics: An instance is on record in which a boy found a frozen snake on an icy road. He picked it up, used it as a walking stick, and when he arrived home, set the "cane" in a corner of the kitchen. Half an hour later the warmed serpent was sluggishly dragging itself across the floor.

Quite apart from the ordeal of cold is the ordeal of hunger. The bear, the groundhog, the hedgehog and the dormouse grow exceedingly fat during summer, and it is this surplus food stored up in their body tissues that sustains them during the long winter sleep. When they revive in the spring, they have lost from a third to nearly a half of their weight.

Dr. W. R. Whitney, director of the General Electric research laboratory at Schenectady, put some weevils in a glass tube and turned on a thirty-meter radio wave. In less than a minute they were dead. Then he let some grain fall rapidly through an intense radio field. To the insects the radiation was indeed a death ray. Inspection showed that all were killed, and germination tests showed the wheat had not been injured. But in a few days baby weevils hatched out in the treated grain. While the insects were easy prey to the short waves, the dormant life of their eggs was not seriously affected.

"And so," concluded Doctor Whitney, "the real problem is not solved."

That problem may be summed up in the question: How much can life stand? It is a very practical question to breeders seeking to improve the quality of live stock, to milk producers and fruit and meat packers and medical men fighting bacteria, to farmers and orchardists and foresters fighting destructive pests.

A government bureau was anxious to test the behavior of insects under unusual conditions—in an atmosphere of hydrogen, in a vacuum, and in an intense radio field. It submitted the problem to Doctor Whitney. He put a cockroach in a glass tube, sealed the tube airtight and then pumped it as near a vacuum as possible.

The bug swooned and lay motionless. For a full minute it was left in that airless world, but when the tube was opened and the air gushed in, it quivered, stretched its legs, stood up and ran away.

"I repeated the experiment," related Doctor Whitney, "increasing the time to two minutes, five minutes and finally to a full hour. In each case the cockroach apparently died and came to life.

"Then we put the insects in a tube filled with hydrogen at normal pressure. They soon lay down and rested. When they were brought into the air again they woke up and crawled away.

"Nitrogen gas was tried next, and here we found that insects would wander around for two days without suffering any fatal or serious effect."

But how do the insects behave under the influence of radio waves? Doctor Whitney took some fruit flies and put them in a large glass tube. The tube was closed, but so connected that it was possible to circulate a current of air through it. He began to lower the temperature of this air, and the insects huddled on the glass floor, an apparently frozen mass.

When the winter temperature had prevailed for some minutes, the thirty-meter radio generator was started. It is the same powerful vacuum tube that had been found to bring on fever in men working near it.

The question was: Could it recall life to the frozen insects or would it kill them outright?

After the tube had been working about one minute, oscillating at the rate of ten million times a second, the frozen mass gave a feeble stir. In another minute some were crawling, and soon they were flying or buzzing their wings. The freezing breeze was still blowing through the tube, but the radio waves had heated them inside to fever temperature and they felt no cold.

In another experiment corn was popped by ice that did not melt. The corn was popped by radio with a high-frequency heater. The grains were placed between two electrodes consisting of a pair of glass jars filled with ice and connected to the heating device. The heat generated to pop the corn did not melt the ice in the jars.

The results of these experiments, suggest also that radio waves can be used to study the mystery of suspended animation or hibernation as it occurs in nature.

Where Dogs Are Kings

THE dog rules as king of an unknown race of white men four hundred strong who, almost isolated from the rest of the world, live in the farthest north of the frozen land of Siberia, on the shore of the Arctic Ocean.

The full story of these strange people and their wonderful dogs is told for the first time in a book, "The Road to Oblivion," by Vladimir Zenzinov, a Russian political exile who, escaping from imprisonment in Siberia, found his way to the Indigirka River and settled down in this strangely preserved little Russian world of the far North.

These men are possibly descendants of the marooned Arctic navigators of the sixteenth century, who were lost while questing for the northern route to India. They can neither read nor write; have no bread and no means of baking it. The have never tasted milk, butter, vegetables, fruits or beef, for cows and cattle are unknown. They have never seen deer, horses or fowl—not even a cat.

Their one domestic animal is the dog. Nowhere else on earth is the dog more important or held in higher regard. For without the sled-dog, life would be utterly impossible to these men. Dogs and their masters live mainly on frozen fish. Even in summer it has but to be buried a foot deep in the earth to freeze.

In the white wilderness of the tundra of the coats even reindeer cannot live. But the dog can be fed on the fish caught in the Indigirka River, along the course of which the settlement extends.

Every family has a team of three or four dogs, and the better-off have teams of from ten to eighteen. They draw the sleds which carry deadwood for fuel and ice from the river, and without them hunting and trapping would be impossible.

No whip is used in driving, but the driver keeps his team keen by continuous cries: "Norakh-norakh!"—to the left; "Poz-za—poz-zz!"—forward.

The dogs have greater endurance than the reindeer, and can draw a sled fifty miles in a day. Races are sometimes held, and a team will gallop a short distance at twenty-five miles an hour. Once the dogs have been over the ground, they never lose their way.

Origin of Grapefruit

GRAPEFRUIT, which is now such a popular article of diet, was developed by the Chinese some 3,000 years ago from one of the wild citrus trees with which their country abounds, and whose natural fruits are small and hardly edible.

In the eighteenth century it was taken by an Englishman, Captain Shaddock, to the West Indies and grown there with success. Thence it spread to the United States, whose fruit-growers have given it much attention, and have improved it considerably.

Where Women Are Wooed With Human Heads

A "Beauty" of the Paiwan Tribe That Lives on the Island of Formosa. She Is Eligible to Become a Priestess and Is Wearing an Unusual Headdress Designed to Attract Attention. The Price of Her Hand Is a Goodly Number of Human Heads.

TWO heads are better than one, according to an old maxim. This adage is especially applicable to the young men of the Paiwan tribe, which is one of the many tribes that dwell on the island of Formosa.

When a Paiwan youth goes a-wooing he needs more heads than his own, if he is to have any success in winning the affections of his adored one. In fact, he must present to his lady love a goodly number of human heads, as evidence of his bravery and ability to vanquish his foes.

The women of the Paiwan tribe are held in very high esteem, as they can become members of the priesthood and are reverenced accordingly. These women wear a headdress like that shown in the accompanying illustration of a Paiwan "beauty." It is sure to attract attention and the sight of its wearer never fails to send many a Paiwan wooer in quest of heads with which to win his bride.

Testing the Breath With a "Football"

A RUBBER football, together with a water heater and a half a dozen glass tubes containing chemical liquids of various colors, are combined to form a novel means of testing the breath of a drinker.

When the driver of a motor car, for example, is suspected of having had just a drop too much and thereby is a menace to lives, he is asked to blow up a rubber football. Then the air from the inflated football is transferred by a rubber tube to a glass tube in which there is a reagent in the form of dichromatic-sulphuric acid. When a sufficient amount of air has entered the tube to determine the degree of alcoholism of the "patient," by the intensity of concentration of the alcohol, the glass tube is placed in a small water heater for several minutes.

Right here is where the magic begins, for—presto! The contents of the tube becomes colored and thereby hangs a tale—or possible a fine and a jail sentence.

The color of the contents of this tube is compared with the colors of the contents of the other six tubes, which results in the correct diagnosis of the subject's breath and indicates the degree of drunkenness.

Demonstrating the Use of the Football Device Designed to Test a Drinker's Breath for Alcoholic Content. It Consists of a Rubber Football, a Water Heater and Half a Dozen Glass Tubes Containing Chemicals of Different Colors to Show Six Reactions When Inflated. The Breath Is Passed Through a Chemical Solution Which Changes Color According to the Degree of Drunkenness.

The Wave-Lengths of Vitamins

WAVES very much like those of radio have been found by two British scientists, Dr. F. B. Bowden and Dr. C. P. Snow, working in the laboratory of Physical Chemistry at Cambridge, England, to be the means by which any of the four vitamins can be built up in the body, while substances harmful to health can be eliminated.

Just as every broadcasting station has its wave-length, these scientists explain, so vitamins A, B, C and D have theirs. The wave-lengths of vitamins A, B and D have already been found, and that of C may follow shortly. Vitamin B keeps the nerves in good condition, C prevents scurvy, while D is Nature's safeguard against rickets and other diseases of the bones and teeth.

When substances containing these vitamins are subjected to waves of the correct length, the vitamins at once become lively and increase rapidly. Two important results may follow. One is that it will be possible to produce foods containing the exact amount of the particular vitamins required by the patient; the other, that he may be made to produce the vitamins in his own body by treatment with the special waves.

Some years ago a great stir was made over what was called Abram's Box. This was an appliance for treating patients with rays of certain wave-lengths, and the inventor claimed that wonderful cures had been accomplished. After something like a battle-royal between the doctors, only a few remained who believed in the contrivance, but it now seems that the inventor had been working on the right lines.

The way in which vitamins do their work in the body is perhaps best seen from the story of vitamin D. Rickets, bad teeth, and weak bones are caused by a deficiency of two substances—calcium and phosphorus. Without a sufficient supply of these the bony parts of the body become soft or brittle. In a healthy person these substances are taken from the food and carried by the blood stream to the bones. When disease sets in, the blood stream drains away the calcium and phosphorus.

Scientists have not yet been able to find out exactly what vitamins are, although it is certain they are essential to health. A wonderful "health milk" has been produced by treating ordinary milk with ultra-violet rays. These were found to cause an immense increase in the vitamin known as A, which is responsible for general health.