

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

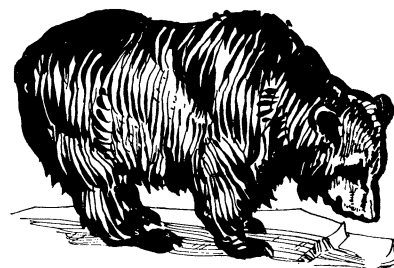
From Page 221

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. (Next Page)

CONVENIENCE COUPON

for New or Renewal Subscription to Science News Letter

Send this coupon to Washington while you are thinking of it.

Science News Letter,
21st and Constitution Avenue,
Washington, D. C.

Please start renew my subscription to SCIENCE NEWS LETTER. I am enclosing remittance as checked: 2 years, \$7 1 year, \$5

Name
Street
Address
City and State

If this subscription is a renewal, check here

This "death-seeming sleep" of hibernation appears to be simply a means of conserving energy, of bridging over a period of food scarcity at a time when food would be most needed if body temperature were to be maintained at its usual level. For a great deal of fuel is needed in winter, as all of us non-hibernating animals are aware, just to keep ourselves warm, not to mention getting our usual work done. But if we could bank our bodily fires, letting them burn low as the bears and chipmunks do, we could live for weeks on our fat that would ordinarily be exhausted in days and leave us starving. Thus the round belly of a bear and the round bulb of a lily are closely parallel in their function, except that the bear uses his reserve supply of food during the winter itself, and the flower waits until spring to eat up its store.

Science News Letter, April 8, 1933

DENTISTRY—PHYSICS

Metals in Teeth May Generate Electricity

WHEN TEETH are repaired or replaced with different kinds of metals, electricity may be generated in the mouth just as in the cell of an electric battery. Cases in which this electricity caused pain and sores in the mouth were reported to the American Medical Association by Dr. Everett S. Lain, professor of dermatology and radiology at the University of Oklahoma School of Medicine.

Human saliva is a good electrolyte, Dr. Lain has found from repeated experiments. Thus every mouth in which there are plates, bridges, crowns or fillings of dissimilar metals becomes a complete galvanic battery.

If all the crowns, amalgam fillings and other dental material in a mouth are made of the same metal, or of metals nearly alike in what the physicists call electromotive force, there is no trouble. Gold and silver and copper, for instance, are not so different in this respect, so that when their ions are dissociated by the saliva, hardly any current is generated.

But the difference between gold and certain other common dental metals, such as aluminum and zinc, or the recently suggested chromium, is quite large. When two such dissimilar metals are used in the same mouth, they may act as the two opposite poles of an electric battery. The current generated is sufficient to cause serious trouble.

Dentists have for many years recognized the possibility of electric shocks and nerve soreness resulting when dissimilar metal dentures happen to come in contact, Dr. Lain pointed out in his report. To avoid such occurrences, they have made a practice of grinding short one of the metallic contacts.

Dr. Lain examined more than 300 mouths which contained dissimilar metallic dentures. Nearly three-fourths of them showed some signs of the electric current action.

Science News Letter, April 8, 1933

METEOROLOGY

Mt. Washington Colder Than the Antarctic

See Front Cover

By DR. CHARLES F. BROOKS, Director of Blue Hill Observatory, Harvard University.

IT WAS COLD in Boston on a recent March day. The temperature was about 10 degrees Fahrenheit and the wind some 20 miles an hour. Autos froze up and people suffered in the biting wind. The "cooling power" of the wind was 72 on a scale having its zero for a condition of calm at a temperature of 98.6 degrees Fahrenheit, and a value of 10 at the "comfortable"

temperature of 68, with a slight breeze. So 72 is a high cooling power.

What was the lowest temperature experienced by the Byrd Expedition at Little America? It was 72 degrees below zero, but the weather was calm, so the cooling power was only 57, or even less than Boston's that cold Saturday. But Little America suffered from blizzards, in the worst of which the temperature fell to 58 degrees below zero with a 43 mile an hour wind. That was cold! The cooling power was 190.

Now consider Mt. Washington at its worst, or rather we should say it was probably not at its worst. The same Saturday morning at 8 a. m. a west-northwest wind at 25 below zero was whistling over the summit at 98 miles an hour! And it had been up to 145 miles an hour, according to the anemometer, which, however, may have registered 10 miles too high. Allowing for the lower air density and therefore lesser cooling power of a wind of a certain velocity on the mountain top, we find that the cooling power was 193, or as bad as Little America's coldest blizzard!

Rigor of winter at the summit of Mt. Washington is graphically pictured on the cover of this week's SCIENCE NEWS LETTER. As early as October 15 of last year, when this picture was taken by Harold Orne of Melrose Highlands, Mass., ice and snow had wrought curious shapes upon the rocks, the houses and cog-railroad trestle of the mountain top. The picture shows observers examining instruments mounted on the end of the trestle.

Science News Letter, April 8, 1933

Announcing the SPRING BOOK NUMBER of Science News Letter, April 22, 1933

NEW BOOKS will be the theme of Science News Letter for April 22, just two weeks hence. By means of quotations, reviews, lists and advertisements, this magazine will inform you of what is new and best among science publications. You will enjoy it and want to keep it. Watch for Science News Letter Spring Book Number.