

METEOROLOGY

Wind Vortex Explains Wrecking of Akron

NOT STRUCTURAL failure, but a wind vortex, wrecked the airship Akron. A reconstruction of the recent disaster made by Prof. T. von Karmán and reported at a California Institute of Technology conference gives a picture that is in agreement with known facts.

The Akron was caught in a vortex. The wind above the ship was moving more slowly than the wind below the ship. This generated a force which could reach a magnitude of more than seventy tons; as the lift or buoyancy was at most 20 tons, the Akron was very suddenly forced down until one end struck the water, which caused shock enough to stop the ship and to tear it apart. The mechanical features and the handling of the ship were not at fault.

The Graf Zeppelin once had a quite similar experience when it suddenly lost a thousand feet in altitude and found itself about 200 feet above the ocean, Prof. von Karmán said. It was sheer luck that they came out of it at this height because they had absolutely no control of the situation.

Prof. von Karmán had given this problem of forces due to vortex to his students over a year ago when he did not anticipate that it would have the unhappy application provided by the Akron disaster.

A scientific analysis of the atmospheric conditions in the 12 hours just preceding the loss of the Akron was made and reported by Irving T. Krick, meteorologist to the Western Air Express. If the officers of the Akron had had the information contained in these charts, it is believed that they would not have dared to begin the fatal flight.

Science News Letter, June 17, 1933

ASTRONOMY

Weather Unusually Hot But Summer Hasn't Started

DESPITE the hot weather that most of the country has experienced in recent weeks, summer has not yet made its debut. That event will take place on Wednesday, June 21, at 4:12 p. m., eastern standard time.

At that moment the sun, which has been moving northward in the sky since last December, reaches its farthest north position and starts moving southward again. Astronomical convention has

taken this event, called the summer solstice, as the beginning of summer.

Because the sun is so far north in the sky it now rises much earlier, and sets much later, than at any other time of year. As a result countries in the northern hemisphere get much more sunshine than during other seasons, and this is part of the reason that we now have warm weather.

The other reason is that with the sun rising so much higher in the sky during the day, the sunshine, with its heat rays, is much more concentrated than in winter, when the rays strike the earth's surface at a more glancing angle.

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PHYSICS

Do Not Try to Visualize Atomic Heart, is Advice

THE NUCLEUS of the atom has been described at various times as analogous to a solid or crystal, or to a liquid or droplet, or as a complicated molecule. Recently a further analogy has depicted the nucleus as a system resembling an atom which, instead of having electrons moving about a center, had protons and neutrons whirling about.

All of these models have had successes which were discussed by Dr. R. M. Langer of the California Institute of Technology in a recent symposium. Dr. Langer emphasized the fact that there must be some general principles underlying the various successes of these points of view, and that no success of this type could be taken as an indication that the model which it used was the correct one.

In fact, Prof. Niels Bohr, the Danish physicist now at Pasadena, feels that for the time being we should try to get along as much as possible without a model of the nucleus. Some features cannot be described in terms of notions with which we are familiar. The nucleus has masses and charges in it, says Prof. Bohr. We know something about the total values of these components and we had better admit ignorance about the details of structure.

Dr. Langer showed how he and R. W. Raitt were led to expect that beryllium alone of all the known light weight elements is unstable. This expectation was verified experimentally. Further investigations are planned with volatile organic compounds containing beryllium. If such compounds can be prepared the whole subject could be clarified in a short time.

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IN SCIENCE

PLANT PATHOLOGY

New Grain Disease Stumps Australian Wheat Breeders

BOTANISTS at the Fifth Pacific Science Congress in Vancouver heard from Dr. W. L. Waterhouse of the University of Sydney, Australia, of the quandary into which the wheat breeders of his country have been thrust by the mysterious behavior of a parasitic fungus, the rust disease of grains. They had been used to fighting several well-known, almost standardized forms of this disease. Suddenly there appeared an entirely new form of grain rust, which has quite displaced the enemies they had become used to and could deal with fairly effectually. This new foe is the more troublesome since all Australian grain varieties are extremely susceptible to it. Nobody knows where it came from.

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CHEMISTRY

Distillation Now Separates Light From Heavy Water

DISTILLATION and adsorption can now be used to concentrate heavy weight water out of ordinary water, Drs. Edward W. Washburn and Edgar R. Smith of the U. S. Bureau of Standards have determined.

Electrolysis was the earlier method used by Dr. Washburn and his associates to manufacture water heavier than normal. The common sorts of hydrogen and oxygen, masses 1 and 16, are given off first as gases in electrolysis, leaving the remaining water rich in the double weight hydrogen and the heavier oxygen isotopes 17 and 18.

Because the heavy water so made was found to have a higher boiling point, Dr. Washburn realized that it should be possible to fractionate water by distillation. He distilled ten quarts and the two portions were found to differ in density by 65 parts per million.

Water was also fractionated by allowing a mass of activated charcoal to stand for three weeks in water. The adsorbed water was denser than that unadsorbed.

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CE FIELDS

PSYCHIATRY

Illness of Accused May Not be Sham

THE ILLNESS which overtakes a man who is faced with trial on a criminal charge is not necessarily a sham or pretense trumped up in order to avoid trial. The worry and shock of a criminal law suit may well break the nervous and mental makeup of a man, Dr. Theodor Diller, of Pittsburgh, told the American Medical Association.

Many other kinds of lies are problems which concern physicians. The doctor must be able to handle a case much as a lawyer at times when he is trying to get at the truth about his patient, Dr. Diller pointed out. The physician must hear direct statements and then cross-examine. Leading questions, however, must be avoided. In cases of mental disease it is particularly important to hear both sides, for statements that sound plausible may be misleading.

The lie that denies a charge of an unpleasant nature is not so much a lie as a defensive reflex action, Dr. Diller observed. Nearly anyone on the witness stand, in Dr. Diller's opinion, will lie when the answer to a question will be damaging.

The times when a physician must lie to help his patients and the times when he must tell them the truth were also discussed.

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METEOROLOGY

Mt. Washington Adds Observatory Stations

THE MOUNT Washington Observatory added two meteorological stations to the three which have been in operation throughout the winter. The two special stations are located at an altitude of 3,900 feet on the east slope and 4,600 feet on the opposite side of the mountain. They have been especially equipped by the Blue Hill Observatory with barographs and mercurial and aneroid barometers so that the dynamic influence of the wind on atmospheric pressure may be studied. All the usual

meteorological observations are also being made.

These two stations, as well as the Pinkham Notch camp at 2,000 feet at the eastern base of Mount Washington and the base station at 2,600 feet on the western foot, are in direct communication with the summit observatory, 6,300 feet, by telephone and radio. Thus, observers are able to make simultaneous studies of changing meteorological conditions at the different altitudes and exposures.

So well did the food and fuel supplies at the summit hold out during the winter and spring that no additional supplies had to be transported on the cog railway which ran its first work train to the summit in mid-May.

For more than a week eight hundred pounds of calcium chloride were used on the long snow drift on the fifth mile of the auto road to enable members of the New Hampshire Academy of Science, which met at the Glen House at the foot of the road June 2 to 4, to visit the Observatory.

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ETHNOLOGY

South Sea Life Neither Primitive Nor a Paradise

GLAMOROUS ideas, bred largely in Hollywood studios, about the simple idyllic life of "primitive" South Sea tribes received a jolt at the hands of Prof. R. Thurnwald of Yale University, who spoke before the Fifth Pacific Science Congress in Vancouver.

Their lives are anything but paradisaical and their culture anything but simple, he said. To that extent at least they cannot be said to be primitives.

Neither is it possible to assume a common origin of two groups because one finds a few traits in common between them, like similar language or a similar way of building houses or hunting heads. A group in its history and migrations may borrow customs from many of its neighbors. Prof. Thurnwald told of finding a people on the northern coast of New Guinea who used a Papual vocabulary with a Melanesian grammar. It reminded him, he said, of a community of Negroes in one part of Texas, whose language is a Bavarian dialect. Their one-time German masters have long since moved away and blended with the general American population, but these Aframericans keep the old speech.

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SURGERY

Detached Lining of Eye Replaced by Surgery

HOW SURGEONS can reattach the lining of the eye that has become separated by disease or accidental injury was told by Dr. Peter C. Kronfeld of Chicago at the meeting of the American Medical Association.

In the condition known as "detached retina" the inner coat of the eye, the retina, which receives the optical image, may be partly or completely detached, with disturbance or loss of vision.

In one of Dr. Kronfeld's cases the patient had been struck first by a snowball and later by the horizontal bar in pole vaulting. Another patient was a prize fighter who noticed a disturbance of vision after a blow on the head. An automobile tire blew out in the face of the third patient, injuring his left eye.

The eye can be restored to nearly normal function so that the patient's vision is nearly normal, if the operation is done within a reasonably short time. The age of the patient also has a bearing on recovery, older patients being less fortunate in this respect.

The condition affects color vision as well as vision in general. In the cases in which a color blindness for blue and green was noted, this defect was corrected.

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GEOLOGY

Rocks of Pacific Ocean Unlike Others of World

THE ROCKS underlying the Pacific Ocean are different from those of the other ocean basins of the world as well as from those of the land areas, Dr. B. Gutenberg of the California Institute of Technology told the Fifth Pacific Science Congress at its meeting in Vancouver. The granites and sedimentary rocks that make up the bulk of the continental masses are absent, as are also the basic rocks that underlie them and form the floors of the other oceans.

Instead, the Pacific bottom appears to consist of even more strongly basic rocks, that may continue downward without any sudden change to a depth as great as 1200 kilometers (about 725 miles). Dr. Gutenberg has been led to these conclusions by a study of the rates of earthquake-wave travel through various regions of the earth.

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