

METEOROLOGY

Air Currents of North Atlantic to Be Studied

UNKNOWN air currents over the Grand Banks, which seal the fate of many unsuccessful transatlantic flyers, will be explored for the first time by scientists aboard the U. S. Coast Guard Ice Patrol boat Pontchartrain.

While relieving the Tampa of the duty of watching for and reporting icebergs near the shipping lanes, the Pontchartrain carries a representative of the U. S. Weather Bureau, a theodolite and a supply of upper atmosphere balloons. Wind direction thousands of feet above the ocean are to be observed by releasing the balloons and charting their courses with the instrument. Information obtained in this way is expected to increase the usefulness of air pilot charts of the North Atlantic.

The Weather Bureau scientist will train members of the Pontchartrain crew to make the observations and these men will replace him in future work.

Science News Letter, April 23, 1932

BOTANY

"One in Ten" Rule Urged For Picking Wild Flowers

"TAKE ONE, leave nine," was suggested as a good rule for wild flower pickers to follow, by P. L. Ricker of the U. S. Department of Agriculture, speaking on behalf of the Wild Flower Preservation Society over the network of the Columbia Broadcasting System. The talk was arranged under the auspices of Science Service.

"A safe rule to follow," said Mr. Ricker, "is that no attractive wild flower, except the well-known weedy ones, should be picked for bouquets, unless there are at least one or two hundred of them, and then pick not more than one out of ten flowers. The spring flowers that grow in the woods are also the ones most in need of protection. A much larger proportion of the summer and fall flowers grow in open fields and along roadsides, have more aggressive root and seed habits, and as a general rule, where abundant, may be picked freely with little danger of extermination."

In parts of the country still forested, fires of human origin were blamed by Mr. Ricker for much of the scarcity of wild flowers. In the West, these fires are the result of carelessness with cigarettes and campfires, but in the East and

South they are started by the woodland owners in the belief that such fires are "good for the woods" or pastures, in spite of the contrary pronouncements of practically all foresters. In other parts of the country, plowland has replaced forest to such an extent that one country-bred girl informed Mr. Ricker that she "did not believe there were any wild flowers left in Pennsylvania."

Some states have passed protective laws for wild flowers, Mr. Ricker said, but nowhere are these laws at all well enforced. He is more inclined to trust to the working of public opinion, if it is sufficiently aroused by well-planned and persistent educational campaigns through radio, press, schools and other agencies.

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PHYSICS

Atoms Measure Duration Of Own Excited State

AN ATOM which acts as its own stop-watch was used to measure a time interval of a hundred-millionth of a second by Dr. Louis R. Maxwell, working at the Bartol Research Foundation of the Franklin Institute.

An atom which is emitting light is in an "excited" or high-energy state. How long on the average the atom's excitement continues has been measured by this ingenious new microscopic timer.

The light-emitting helium atom itself acts as the moving hand of the watch in these experiments. Electrons moving with properly chosen speeds strike the helium atoms and make them "excited." At the same time, however, they knock an electron off the atom and thus give it an electric charge.

An electric force applied to the group of excited atoms therefore pulls the charged atoms away from the place in which they had been struck by the electrons. As the atom is still emitting light this electric deflection of the light-emitting atom can be accurately recorded on a photographic plate.

Measurement of the lengths of track left by the atom in the absence and in the presence of the electric field gave Dr. Maxwell his way of measuring the "life" of the atom in the excited state. The value obtained, a hundred-millionth of a second, agrees well with the predictions of the new quantum theory for the helium atoms employed.

Dr. Maxwell is now associate physicist of the U. S. Bureau of Chemistry and Soils at Washington.

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IN SCIENCE

RADIO

Greater Power in New Two-in-One Radio Tube

TWO radio tubes have been made in one in a new development introduced to the technical world at the meeting of the Institute of Radio Engineers at Pittsburgh recently.

"Triple-twin" is the descriptive name given the new device by Charles F. Stromeier of Brooklyn, N. Y., who described it. He claimed that a special circuit and the new tube will give twice the power and many times the sensitivity of the now widely-used pentode at the same plate voltage.

The internal parts of two ordinary vacuum tubes are built into the same glass casing in the new device. The first set of the usual three elements of a radio tube handles the input and the second the output.

In spite of the fact that the number of elements is doubled, there are only five terminals. Interconnection of elements within the tube reduces the number of terminals needed.

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ASTRONOMY

Delporte Object May Be Comet Seen Years Ago

THE HEAVENLY object discovered in March by Prof. E. Delporte, Belgian astronomer, may be the return to the solar system of the Tuttle-Giacobini comet seen in 1858 and 1907. This is suggested by Dr. A. C. D. Crommelin now that the orbit of the Delporte object has been computed. Comets known as 1858 III and 1907 III were not immediately recognized as identical.

If the Delporte object proves to be the same comet, it must have lost most of its gaseous envelopes since 1907, because it looked more like a star than a comet when first found. It was bright when first found but faded shortly thereafter, although approaching the earth and sun. It is suggested that there must have been some kind of outburst to explain its temporary brightness.

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CE FIELDS

ARCHAEOLOGY

Buildings Found Within Largest Mexican Pyramid

THE ANCIENT Toltec pyramid of Cholula in the state of Puebla, a tremendous structure of adobe brick and earth, is built over and around still older structures, a Mexican government archaeologist has just discovered. Exploratory tunnels now being driven into it have already revealed stone stairways and walls of stone, with mural paintings inside them. There is as yet, however, no indication of the date of their construction, or of the race who built them.

The Pyramid of Cholula has been known to Europeans ever since the Conquest of Mexico, since Cortez passed through the city on his way to the Aztec capital. Like most Mexican pyramids, it served as the foundation for a temple. This temple the Spaniards destroyed, building in its stead a chapel dedicated to Our Lady of Help. Now the pyramid is discovered to resemble other Mexican pyramids in another respect: in being built around an earlier edifice.

The Pyramid of Cholula is noteworthy among its neighbors for its great size. It is 177 feet high and covers an area of nearly 45 acres. The Pyramid of Cheops, in Egypt, is much higher—461 feet—but its basal area is only one-third as extensive.

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MEDICINE

Chemical Cure of Cancer Foreseen by Researcher

"A CHEMICAL cure of cancer seems only a matter of time, trouble and intelligent effort," declares Dr. Ellice McDonald of the University of Pennsylvania Cancer Research Laboratories in a report to the *Journal of Chemical Education*.

The problem of cancer should be attacked from the chemical angle, Dr. McDonald says. The cancer cell has a different set of chemical reactions from normal cells. It produces from 5 to 20 times as much lactic acid as normal cells, and it is defective in oxidative

processes, that is, in the use it makes of oxygen in its production of heat and energy. Hope of changing the chemical reactions of the cancer cell back to normal lies in the ability of scientists to find a way to repair this injury to its oxidative processes. This is the line of attack which Dr. McDonald believes will eventually bring a solution of the cancer problem.

In his report, Dr. McDonald calls attention to the enormous annual mortality from cancer. In the United States about 130,000 people die of cancer every year. In Canada during the four years of the war the cancer deaths among men and women at home were almost exactly equal to war casualties.

X-rays, radium and surgery are the only successful means at present of treating cancer. Even with them under the best conditions, only one-third of the cases, as they come to the physician or surgeon, can be cured. Actually, the total proportion of cancer cures is estimated at between 5 and 10 per cent. in this country. There is great need of active research as the total number of deaths is constantly increasing.

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ENGINEERING

Welding Offers Camera Striking Field of Beauty

See Front Cover

BY NO MEANS a trivial by-product of electric welding is the field of beauty the new art is opening up for photographers.

While electricity eliminates the irritating staccato of noisy riveting, the photographer focuses his camera on a glowing scene of shadow and light, man and steel. Such a picture is that reproduced on the front cover of this week's NEWS LETTER from the shops of the Westinghouse Company. The ends of a ring of steel, to be used as a "skirt" for an oil circuit breaker, are being welded.

The use of welding in erecting buildings and in making ships, bridges and machinery has been extended by the discovery of a method of increasing the strength of a welded joint. The order or sequence in which metal is applied to a joint greatly affects its security, C. H. Jennings, research engineer of the Westinghouse Company, has found. Of a number of sequences, Mr. Jennings was able to specify one 28 per cent. superior to a sequence commonly used. He also found that this advantage could be increased still more through suitable treatment with a hand tool.

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MENTAL HYGIENE

Nation's Mental Health Unaffected by Depression

THE ECONOMIC depression has so far had very little effect on the mental health of the nation as seen in a survey of mental disease hospitals, results of which have been made public by the National Committee for Mental Hygiene.

A questionnaire study of over a hundred of the 173 state hospitals in the country showed no marked increase in new cases. Reports from hospital superintendents varied as to the effect the depression was having, but on the whole it seems to have been very slight so far. The chief effect seems to be on paroles and discharges. In all parts of the country patients who would normally be discharged or paroled cannot be because their families are unable to care for them.

Financial worries may precipitate a mental breakdown but psychiatrists realize that there is a tendency to overemphasize the last factor that appeared before the onset of the mental disturbance. After a study of many thousands of cases they are more than ever convinced that the mental disturbances are the results of an accumulation of strains, rather than a condition produced by one particular factor, such as financial worry or unemployment.

The National Committee for Mental Hygiene takes a hopeful view of the future, pointing out that the depression has been notable for the absence of violent mass behavior and that the average man and the average family have borne up heroically under the terrific pressure.

"This is a tribute to the essential sanity of America," declared Dr. C. M. Hincks, general director of the organization. "Fundamentally and ultimately the mind of America is sound."

Science News Letter, April 23, 1932

MANUFACTURING

New Use of Soy Bean Oil May Save Millions Yearly

RAW soy bean oil can be used in making foundry cores, allowing a saving of half of the cost of oils now used, Prof. C. H. Casberg and Carl E. Schubert of the University of Illinois have announced after months of research. This opens a potential market of ten to fifteen million gallons of soy bean oil and a saving of \$4,000,000 or more a year to manufacturers of castings.

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