Botanical Garden the extensive botanical collections made by him on Mount Ruwenzori, Mount Kenya, and Kivu Volcano, in central Africa, and in the Lukolela region of Belgian Congo in 1926–27 and 1930–31.

GROUND-BREAKING ceremonies for the Hayden Planetarium of the American Museum of Natural History, which is to be constructed just north of the museum buildings, took place on May 28. Contract for constructing the planetarium building has been awarded to the White Construction Company of New York, whose bid, which was the lowest, was $509,144. All funds for the construction and incidental equipment will be obtained through a $650,000 bond issue purchased by the Reconstruction Finance Corporation and to run for a period of twenty years. The Zeiss projection planetarium apparatus and the Copernican Planetarium will be acquired through the gift of $150,000 of Charles Hayden, after whom the planetarium has been named. Mr. Davison presided at the ground-breaking ceremonies. The speakers were Mr. Hayden, who turned the first spadeful of soil; Park Commissioner Robert Moses, representing the city, and Dr. Clyde Fisher, curator of astronomy at the museum. It is expected that about a year will be taken to complete the planetarium. An admission charge will be made until the money borrowed from the federal government has been paid, but public school children attending classes are to be admitted free at special periods.

THE voices of Dr. William L. Bragg and Sir Arthur Stanley Eddington, visiting lecturers at Cornell University, have been recorded as part of an arrangement to preserve for future generations the voices of distinguished persons connected with Cornell. Professor Vladimir Karapetoff, of the school of electrical engineering at Cornell, has volunteered to make the records on his high-fidelity voice recording equipment perfected after several years of experimenting. Dr. Bragg's statement opened as follows: "This is W. L. Bragg speaking, of Manchester University, England, on May 3, 1934. I am often confused with my father, Sir William Bragg, greatly to my own advantage, since we are both professors of physics and have worked together at the same branch of research in the investigation of crystal structure by means of x-rays. We started this research in 1913 and were awarded the Nobel Prize for it jointly two years later." Sir Arthur introduced himself in these words: "This is Sir Arthur Eddington speaking on May 1, 1934. I have been visiting Cornell University to give the Messenger lectures for this year. I have been for twenty years professor of astronomy in the University of Cambridge, England, and am director of the observatory there. When I am not occupied with the stars, I am generally occupied with Einstein's theory or with some of the developments of theoretical physics that have arisen out of it."

FOR the first time in a century there are new-born musk-oxen in Alaska, according to a report to the Bureau of Biological Survey, U. S. Department of Agriculture. Two young animals were born April 29 in the herd transplanted to the territory in 1930. Musk-oxen, according to statements by natives, practically disappeared from Alaska about one hundred years ago, and there seem to be no authentic records of their existence there until the fall of 1930. In April, 1927, the Territorial Legislature in a memorial to Congress urged an appropriation for re-establishing musk-oxen in Alaska, and the Bureau of Biological Survey undertook the task. Thirty-four young musk-oxen were transplanted from northeastern Greenland to the territory in the summer and fall of 1930. These were captured by a Norwegian collector, and after transshipment in Norway traveled on an ocean liner to New York. They were subsequently placed on a suitable range, and although there have been a few casualties, the herd has prospered.

DISCUSSION

THE "SINKING" OF LAKE AND RIVER ICE

IN the spring, as Tennyson puts it, some of us are prone to obsessions. One of these obsessions is that of the boatman, fisherman and lots of others, who swear that at this season surface ice becomes rotten or honeycombed, and sinks. They know it sinks, because in the evening the lake, for instance, may be covered with a sheet of old ice from end to end and shore to shore, and by the next morning no trace of the ice left, save little patches here and there along the water's edge. "Of course it sank," they say, "how else could it have disappeared so rapidly?" And river men tell us not to worry about the ice coming down stream from a broken jam above, for before getting very far it will go to the bottom like a rock. Evidently it can be sunk, and sometimes is, just as a boat may be, by overloading with a substance denser than water, such as sand, gravel or mud. But as this requires one pound of sand, for example, to every 7 pounds of ice, a proportion hundreds of times greater than that of the suspended matter to the water in even a muddy river, it is obvious that such sinking can not occur on lakes, except rarely at the mouths of flooded streams, nor at all commonly anywhere else.

This sinking by overloading every one admits. The argument, and need for explanation, comes when it is

insisted that honeycombed ice, wherever it may be, sinks like water-logged wood, and perhaps for the same reason.

This is too much for the physicist to take "lying down," for he refuses to believe that anything 10 per cent. lighter than water, as ice is, actually does or can sink in that water, whatever it may seem to do in the eyes of no matter how many witnesses. However, the ice does disappear. If it doesn't sink it must melt, but then how can it all melt in a few hours in the same water in which it had remained for weeks without melting?

To simplify the problem consider the behavior of ice on a lake of moderate size in a region where the water remains frozen over through the winter. The matters of importance are:

(1) When winter approaches the surface water cools, becomes denser and sinks until from bottom to top the water has the temperature appropriate to its maximum density, that is, 39° F., very nearly.

(2) As the surface water is further cooled it becomes lighter and remains at the top where, presently, it freezes to ice, and in so doing expands by about one tenth its original volume, and thus becomes approximately 10 per cent. lighter in the solid form than it was while in the liquid state. Hence it floats.

(3) In the process of freezing the dissolved substances in the water (in lake and stream water there always are such substances) are at first expelled by the forming ice, and later entrapped, in part, in the water between the crystal faces or in crevices of whatever kind.

(4) With a little further cooling this interfacial and cavity concentrate, which always has a more or less lower freezing point than pure water, also is frozen and the sheet of ice thus rendered continuous and solid throughout, save for such air bubbles as may be present.

(5) Under the influence of moderating weather and increasing sunshine as the spring days lengthen, the ice slowly warms up until its least pure portions, that is, those in the crystal cavities and over the crystal faces, melt—melt at a small fraction of a degree, often as little as one thousandth of a degree, perhaps, below the freezing point of the purer ice. When this happens the bricks (crystals) still are solid, but the mortar that bound them together is fluid, and the whole structure weak. The ice has become rotten, as generally expressed, and soon more or less cracked, honeycombed and water-logged. This last condition is partly, at least, caused by top-surface melting, and rain, perhaps.

(6) Even yet there has been very little melting at the under surface of the ice because there the water, being in contact with ice, is at the freezing (or melting) temperature, 32° F. And because, owing to protection from winds by the sheet of ice, there is no wave action to bring up the denser, *warmer* water from below.

(7) Comes a storm. The weak ice starts to break and soon is extensively broken. Then the churning action of the waves brings up an abundance of water of several degrees higher temperature than the melting point, and in the course of a few hours, or a day, at most, much of the ice, if not all of it, has melted away—gone so rapidly as to force the belief on most of us that it just must have sunk.

And this is how the ice sinks, "sinks" by melting quickly, on lake and on river, and the only possible way reasonably clean ice can sink. In short, while ice can be sunk by an overload of sand, or other dense material, all moderately clean ice, such as that on lakes, that has "sunk" hasn't sunk at all. It has just melted in a hurry.

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THE OCCURRENCE OF TRUE SPORANGIA IN THE PHYSODERMA DISEASE OF CORN

INCIDENTAL to a series of studies on the morphology and taxonomy of various chytridiaceous fungi, observations were recently made on *Physoderma zeae-madyis,* the causal agent of the serious and widespread "brown-spot" disease of corn prevalent throughout the southeastern states. The immediate concern of the writer was to determine whether the thick-walled, brownish, often elliptical or flattened intramatrical structures, termed by practically all pathologists and mycologists "sporangia," were in reality comparable to the sporangia found in other members of the order.

In addition to the aforementioned spores, which in nearly all species produce at maturity on the host the brownish, powdery pustules or lesions so characteristic of Physoderma infection, at least two species of the genus (*P. butomi* and *P. maculare*) have been found to form also thin-walled, somewhat irregularly shaped, extramatrical sporangia provided with an intramatrical rhizoidal system. These have been referred to as "ephemeral" or "temporary" sporangia. In contrast to the thick-walled, durable resting bodies which are seemingly formed from enlargements of an extensive intramatrical rhizoidal system, the "ephemeral" sporangia are formed from the body of the zoospore itself in the same manner as that found in species of *Chytridium* and *Rhizophidium.*

The purpose of this note is to point out that *Physoderma zeae-madyis* has been found by the writer to produce such extramatrical sporangia in abundance, and from their method of development, he regards them as the true sporangia of the fungus. If zoo-