

PHYSICS

Bureau of Standards First In This Country to Liquefy Helium

Winner of Friendly Race Finds That Intense Cold Increases Electrical Conductivity of Tin 100,000 Times

AN EXTREMELY cold piece of tin conducts electricity a hundred thousand times better than tin at ordinary temperatures, it was confirmed by physicists of the National Bureau of Standards here when they liquefied helium gas for the first time in the United States.

Helium is the most difficult gas to turn into a liquid. A coil of tin through which electricity was passing was used by the scientists as one method of proving that they had achieved the United States' greatest cold, a temperature within three degrees Fahrenheit of the lowest temperature ever created by man. The greatest cold, called absolute zero, is 459 degrees below zero on the Fahrenheit scale. The lowest temperature reached in the Bureau of Standards experiment was minus 456 degrees Fahrenheit, while helium liquefied at minus 450 degrees.

Dr. H. C. Dickinson, Dr. F. G. Brickwedde, W. Cook, R. B. Scott and J. M. Smoot comprised the group that produced the extremely low temperature. Working in constant danger of their lives, and late at night long after the other scientists had left Uncle Sam's great research laboratory, they won a friendly race with Johns Hopkins University and the University of California for the honor of being the first institution in this country to liquefy helium.

Helium is the rare gas of the air, first discovered in the sun. It is obtained from natural gas in sufficient quantities to float the giant airships of the American Navy.

To turn it from a gas into a liquid, the scientists first make liquid hydrogen by compressing this highly inflammable gas to 2,200 pounds per square inch, cooling it with liquid air, then allowing it to expand in order further to cool itself. Then helium is compressed to 200 pounds per square inch and the liquid hydrogen is used to cool the helium. When the helium, already intensely cold, is allowed to expand it

gets so cold that it becomes liquid, the goal of the experiment.

Helium was first liquefied at Leiden, Holland, where the late Prof. Kamerlingh Onnes pioneered in low temperature research. The Berlin Imperial Institute and the University of Toronto have also made liquid helium.

Science News Letter, April 18, 1931

ARCHAEOLOGY

Stone Age Town Is Found In Delta of the Nile

A STONE AGE settlement, probably the oldest town in Egypt, has been discovered in the West Delta of the Nile by an expedition of the Vienna Academy of Sciences, under the leadership of Prof. Hermann Junker of the University of Vienna.

Near Merimde-Benisalâme the expedition has excavated the ruins of a great collection of huts, grain pits and other evidences of the primitive agricultural civilization of the New Stone

Age. The settlement straggled over an area of approximately eighty acres.

There is no order or organization about the place; houses, shops and working-places are all jumbled together helter-skelter. The construction material is the most primitive form of brick: simply irregular lumps of hardened clay formed by hand and plastered with Nile mud.

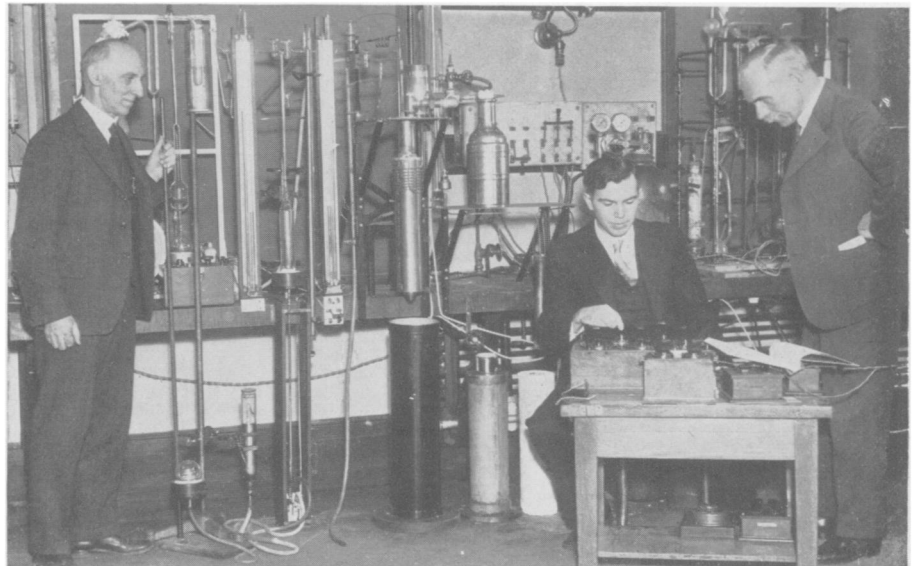
A great deal of space is taken up with grain-storage pits. These consist of huge baskets of river reeds sunk into the ground and covered with mats. Threshing-floors are shallow circular pits about twelve feet in diameter, paved with wicker-work. Baking hearths are made of more evenly-formed bricks than those used in the walls of the buildings.

Great quantities of polished and finely chipped stone tools have been found. These number, among other things, flint sickle-blades, handsaws, knives, borers, scrapers and hammers. Stone weapons include flint spear- and arrow-heads, stone falchions and polished mace-heads of a peculiar pear-shaped pattern not found in Upper Egypt at all.

Other implements have been found made of bone and ivory, but there is no metal of any kind.

There are no special burial places; the excavators came upon skeletons in all sorts of casual places among the houses. Neither were the dead given much in the way of burial gifts.

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APPARATUS THAT LIQUEFIED HELIUM GAS

The extremely low temperature of 456 degrees below zero Fahrenheit, only three degrees above absolute zero, was reached in the vertical glass cylinder in the center of the picture. Left to right—Dr. H. C. Dickinson, R. B. Scott and Dr. F. Henning, the latter of Berlin.