

PHYSICS

Rare, Liquid Helium Is Easily Made by New Discovery

RARE liquid helium—the coldest substance in the world—is now being prepared easily and cheaply in the Clarendon Laboratory, Oxford University, by a new method, it is announced in *Nature*. (May 6)

In the new process, developed by Drs. A. H. Cooke and R. A. Hull, liquid helium is pumped off through a tiny hole in a membrane and thus cooled by evaporation.

The new technique minimizes the strange behavior of liquid helium II known as “creep” and prevents it from occurring almost completely because the creeping helium has difficulty in getting through the tiny orifice. The scientists claim that any laboratory with inexpensive pumping equipment can now make the rare liquid helium whose production formerly has been limited only to laboratories possessing elaborate, costly pumping systems of large capacity.

To make liquid helium scientists compress helium gas to pressures of 400 pounds to the square inch. Then they cool it with liquid air and then with liquid hydrogen. By this process a temperature of 14 degrees absolute is reached.

To attain lower temperatures the li-

quid helium is then pumped off. By evaporation further cooling is attained. However, the large pumping openings prevent a lowering of the temperature much below 4 degrees absolute by this method.

It seems that the strange (and yet-unexplained) ability of helium II to creep rapidly over surfaces make most of the pumping effort useless for real cooling. The helium, it appears, creeps around the walls of the pumping outlet tube until it finds a warm spot. There it evaporates and the gas is what is really pumped off. Actually, to get cooling it is necessary to pump off helium gas from the cold spot of the chamber.

The new Cooke-Hull method places in the cold chamber a membrane in which a tiny hole (.15 millimeters) has been bored. This prevents creeping and keeps the helium in the really cold part of the chamber where further pumping will produce cooling. By this means temperatures only .73 degrees above absolute zero have now been attained with only small laboratory diffusion pumps of a capacity of 10 liters per second. The technique is a real advance in the low temperature art.

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of drying out. The foresters and timber workers know that their rainy luck cannot last forever, and they are taking advantage of every possible working day. Even after the fire season starts, they will keep up the battle.

Elsewhere in the country, the forest fire situation is beginning to shape itself—in some regions quite critically. The Pacific Coast forests are already acutely menaced by fire, in a region where the “normal” fire season does not open until July. Long and severe drought on the Coast, especially toward the north, is responsible.

High danger of forest fire also exists in the Southwest, in Arizona, though New Mexico forests are not in a dangerous state at present. Other danger spots reported by the U. S. Forest Service are Alabama and the Southern Appalachians. Foresters in other parts of the Southeast, the East and the North Central areas report only “low to moderate” fire hazard.

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MEDICINE

Men And Technicians Needed in Army Medicine

THE U. S. Army Medical Department needs additional enlisted men even more than it needs new doctors, the *Army and Navy Journal* (May 6) states editorially. Everybody can see the need of doctors when men are getting wounded and sick in war time, but Buck Private, M. D., needed for thousands of routine jobs, has been neglected.

Even with recently authorized increases in enlisted strength in the Corps, the needs of peace time service will barely be met: “Less than 1,000 enlisted men are in purely military work, yet in time of war at least ten per cent. of the enlisted strength of the Army is required for the Medical Department.”

Two other needs, now being met at least in part, are stated to be a reasonable number of registered pharmacists and of chemists, bacteriologists and other laboratory technicians.

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METEOROLOGY

Long Wet Spell Has Been Boon to Forests of East

THIS spring's long wet spell in the eastern half of the United States, which has driven farmers to despair because it made their fields too wet to plow, has been hailed as a blessing by foresters because it made the woods too wet to burn.

Especially in New England has this been the case. Late snows, followed by persistent rains, have kept the vast tinderbox of down trees left by last fall's hurricane well blanketed against the fire that the whole region rightly dreads. Meanwhile thousands of axes and saws are working against time, to salvage the timber for use and remove as much as possible of the fire hazard.

Congress provided a \$5,000,000 appropriation for the salvaging of the wind-felled trees. Already about \$3,000,000 worth of logs and sawed lumber have been bought and are in storage, the logs in ponds and the lumber in guarded piles. The logs amount to some 255,000,000 board feet, the sawed lumber to 30,000,000 board feet. There are 200 sawmills under contract for the work, of which 125 are now operating.

In the woods 1,200 men, mostly former CCC enrollees, are doing the front-line work. They constitute 25 fifty-man camps, which are kept on a mobile basis.

It is only during the past few days that the woods have begun to show signs

● Earth Trembles

Information collected by Science Service from seismological observatories and relayed to the U. S. Coast and Geodetic Survey resulted in the location of the following earthquakes:

Saturday, May 13, 9:01.6 p. m., EST

In vicinity of Honolulu, small local shock.

For stations cooperating with Science Service in reporting earthquakes recorded on their seismographs see SNL August 13, 1938.