

ORDNANCE

## Pill-Sized Primers

Weighing only 2.8 grains, they were used in the famous "goop" bombs which rained destructive blows on Japan before the atomic bomb fell.

► JAPAN'S cities flamed and smoldered to ashes for weeks before the two atomic bombs delivered their "hay-maker" punches, under a rain of the most destructive incendiary missiles that war has ever known. Each of these "goop" bombs, as the GI's called them, was roused to demoniac life as it struck, by the tiniest detonating primer with which any bomb was armed. It was literally pill-sized, weighing less than half as much as an ordinary aspirin tablet.

Details of this primer have been released from military security restrictions by the War Department. The pinch of detonating chemical was contained in a copper-alloy cup only  $\frac{3}{32}$  of an inch high and  $\frac{3}{16}$  of an inch in diameter. Complete, it weighed 2.8 grains; a pound of the new primers sufficed to arm 2,500 fire bombs.

To make its action most sensitive, the primer was arranged so as to fire "backwards." Most primers, for example those in the bases of ordinary cartridges, are struck hard on their metal bottoms, and the flame of the detonating compound within bursts out of the open top to fire the main charge. In the "goop" bomb primer, the open top, covered only with

a very thin brass foil, faced the firing pin, and when the pin struck into the touchy chemical within it exploded through the metal bottom, igniting the incendiary mixture in the body of the bomb.

The new primers were filled under conditions of extreme safety precautions, with the loading-machine operators working from behind steel barricades by remote control. Accident figures stayed at a gratifying "low" throughout the period of manufacture.

The Western Cartridge Company, at East Alton, Ill., produced them for the Chemical Warfare Service, and large quantities were also manufactured by the Army's own Picatinny Arsenal, in Pennsylvania.

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GEOGRAPHY

## Canadian Leads Expedition Across Little-Known Land

► A CANADIAN missionary-botanist, Péré Arthème Dutilly, has returned after leading an expedition across an almost unknown corner of Arctic America. With two other scientists and three Indian

guides, he made the traverse across the northern tip of the Labrador peninsula, from the Gulf of Richmond on its western coast to Ungava bay on the Atlantic side. It was his twelfth successive trip to the Far North.

Péré Dutilly brought out more than 4000 sheets of pressed plants, together with many other specimens of scientific value. These will be taken to the Catholic University of America in Washington, D. C., where he conducts his researches in the winter.

The journey of 400 miles took 22 days to complete, going by canoe up the Stillwater river, over the Divide, and down the Larch and Koksook rivers to Fort Chimo on Ungava bay. He describes the rivers as "very intriguing" — in one stretch of 54 miles there were 70 rapids, where the voyageurs had to choose between shooting and portaging. At Fort Chimo, after a wait of six days, he was able to find a seat on a plane which took him to Moncton, N. B., where he transferred to another plane to complete his journey to Montreal.

Péré Dutilly's companions on his journey were the Abbé Ernest Lepage, director of studies at the Rimouski College of Agriculture, and Prof. Pierre Dagenais, geographer at the Jacques Cartier Normal School.

This is only the second time that this difficult traverse has been made. It was first made by Dr. E. A. Low, a geologist, in 1896.

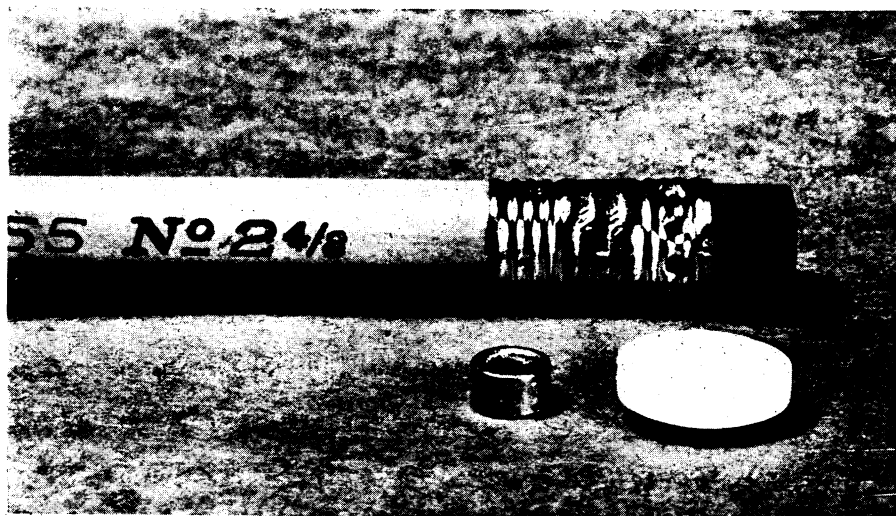
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ENGINEERING

## Electric Wires Insulated With Sodium Silicate

► THREE chemists employed by the Chicago plant of Western Electric Company, Dr. H. F. Fruth, Dr. W. O. Haas, Jr., and Dr. E. G. Walters, have assigned to that firm their rights in patent 2,384,542, on a method for insulating electric wires with sodium silicate, long familiar as a cheap adhesive and as a preservative for eggs. This compound is known to be a good insulator, but it has suffered from a double drawback. If applied to the wire in melted condition it becomes too brittle on hardening; if put on in a water solution it tends to take up water out of the atmosphere after it has dried. The three chemists have found that if the silicate is applied in solution and the coated wire then heated, the silicate remains as a good and flexible insulation, but is not hygroscopic. Best results are obtained with a sodium silicate in which the ratio of silicon to soda is relatively high.

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**COMPARISON**—Here is a 5-grain aspirin tablet, a pencil and the tiny primer used to detonate Uncle Sam's famous "goop" fire bombs. The primer weighs only 2.8 grains.