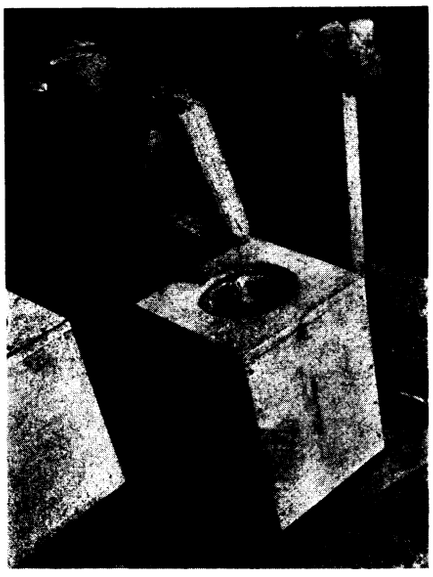
Prime German World War weapon was the discovery of the Haber process to take nitrogen out of the air and make military explosives out of it. L.O.X. came into the picture because it gave Germany a secondary explosive to use in its mines, thus freeing nitrated explosives for military purposes.

Dr. Rice, after the armistice, went to Europe to assist the Peace Commission and report on the military destruction of the north of France and to investigate Germany's use of L.O.X. to destroy French coal mines and industrial plants.

In the evacuated areas Dr. Rice found 136 L.O.X. plants which, during the war, made 5,346,000 pounds of liquid oxygen explosive; the equivalent of 8,000,000 pounds of dynamite containing 40% nitroglycerine. One feature of the German World War practice was the use of little portable liquid oxygen plants producing from 3 to 5 liters per hour.

Unless an impartial test by some government agency proves that Mr. Barlow and his associate, G. B. Holderer, have circumvented the chemical laws governing the release of energy by an explosive it appears improbable that the new Barlow glmite (named after the Glenn L. Martin Co.) is much more than a refinement of L.O.X. which has been used on a wide scale in mining for 20 years.

The scientific literature of L.O.X. is very voluminous. A day spent in the library of the U. S. Bureau of Mines will show hundreds of pages describing experiments which the Bureau itself has carried out to help make L.O.X. the respected explosive it is today in the mining field.



GLMITE

Looking like a frosted sausage is this little half-pound Barlow bomb of liquid oxygen and carbon. The bombs are handled with pliers because of their extreme low temperature.

Thousands of pounds of L.O.X. are used annually in the strip coal mines of Illinois and Indiana where the seams of coal are only 10 to 60 feet beneath the surface of the earth. The seam is exposed by power shovels after explosives have loosened the overlying ground. At these strip coal mines central plants produce liquid oxygen on a large scale and the companies use L.O.X. every day with low cost, good efficiency and with an accident record no worse than that for dynamite and other, more familiar, explosives.

Down in South America at the copper mines of the Chilean Exploration Co., L.O.X. is used successfully in deep mines. The company has turned to L.O.X. because it feared the hazard of handling the vast amounts of explosives it required which formerly were shipped in by the boat load and transported to the mines by whole train loads. As a minor note, too, they experienced theft of dynamite for this explosive served as a makeshift form of money. They saw in L.O.X. a way to obtain an "unnegotiable" explosive and at the same time decrease storage hazards.

Only in open mines, reports of U. S. Bureau of Mines experiments show, is L.O.X. a useful, safe explosive. It has been found that in closed workings it may generate deadly carbon monoxide and is a hazard.

Moreover, there is the possibility in underground coal mines that the liquid oxygen will be spilled on nearby coal dust and generate more L.O.X. These, and other reasons, make the U. S. Bureau of Mines frown on the use of L.O.X. in underground mines. What is done in South America is no concern of the Bureau. The open strip coal mines of the middle west can use L.O.X. without any more risk than in using dynamite.

Here are the advantages and disadvantages of L.O.X. as used commercially, as taken from the authoritative Bulletin 349 of the U. S. Bureau of Mines, published in 1932.

Advantages of L.O.X.

1. No storage hazard because L.O.X. is not suitable for indefinite storage owing to its purely temporary explosive nature.
2. No danger in transport of the separate ingredients; liquid oxygen and carbon.
3. No danger of misfires for if the liquid oxygen is allowed to evaporate, as it quickly does, there is no explosion. This means that there are no unexploded cartridges in the mine.
4. Excellent value in cold climates. L.O.X. has a temperature of 183 degrees below zero Centigrade, so that even Alaska's coldest winters are warm by comparison. In contrast, dynamite sometimes requires thawing by heat for when frozen it is very unstable and liable to accidental explosion by shock.

Disadvantages of L.O.X.

1. Somewhat more sensitive to shock and impact, but no more than certain dynamites.
2. Inflammable nature. Because L.O.X. liberates pure oxygen constantly by evaporation it can turn a nearby glowing coal into a burst of flames.
3. The rapid evaporation of L.O.X. sometimes leads to speedy handling of the explosive; hence carelessness that may lead to disaster.
4. Generation of deadly carbon monoxide in underground operations.
5. Liquid oxygen spilled on coal dust in preparing the L.O.X. cartridges may create more unintentional L.O.X. in the mine.

Science News Letter, April 6, 1940

MEDICINE

Heart Disease Reported From Lack of Vitamin B

DISEASE of the heart muscle and death resulting from a lack of vitamin B and potassium in the diet was reported by Drs. R. M. Thomas, E. Mylon and M. C. Winternitz, Yale University School of Medicine, at the meeting of the American Association of Pathologists and Bacteriologists in Pittsburgh.

Young pigs and rats were the victims in the diet studies reported. Only the heart was damaged by the experimental diet, and the damage depended on the combination of potassium deficiency and vitamin B deficiency. When the animals got an adequate amount of either the potassium or the vitamin, heart damage was prevented. The particular part of the vitamin B complex involved is B_6, the Yale investigators found from experiments with diets lacking in various parts of this vitamin as well as in potassium.

Science News Letter, April 6, 1940

An electric fence will be tried out as a device for keeping *elephants* from getting into rubber plantations, in India.