CHEMISTRY

Dinitrophenol-Sulfanilamide Kills Tuberculosis Germ

Explosive Penetrates Bacillus To Make Entry for Drug; Chemists Also Hear of Explosives Without Glycerine

A COMBINATION of a chemical used during the World War as a high explosive, dinitrophenol, and the drug sulfanilamide is prolonging the lives, with possibilities of permanent cure, of guinea pigs having tuberculosis.

These animal experiments, not yet applied to humans but indicative of a possible method of treating human tuberculosis, were reported in Cincinnati to the American Chemical Society by N. L. Howell and E. C. Link of Memphis, Tenn., who said:

"While the experimental work is only preliminary, it is extremely significant that of the experimental animals treated, all, with the exception of one animal, lived from five to 15 months after date of infection. This is a ripe old age for tuberculous guinea pigs."

The use of the dinitrophenol is based on the idea that some chemical is needed to penetrate the bacillus causing tuberculosis so that entry can be made for the sulfanilamide. This idea, they added, is not new and is frequently necessary to stain certain micro-organisms in the laboratory. Carbolic acid, they said, is often used for this purpose.

Dinitrophenol, used by Howell and Link, is a derivative of carbolic acid, or phenol.

Science News Letter, April 20, 1940

New German Explosive

A NEW explosive, known as P.E.T.N., is believed to be aiding Germany greatly in the present war, according to American explosives experts who attended the American Chemical Society meeting.

P.E.T.N. is a new explosive known only as a laboratory curiosity during the first World War. During the last five years, it has come into commercial production in Germany and to a smaller extent in England, France and the United States. The technical name of P.E.T.N. is pentaerythritol tetranitrate.

In Germany, even before fighting started, P.E.T.N. was used in blasting caps and it is believed that now it is being used as a constituent in the primers for military explosives. Primers act to set off the nitrocellulose materials in a shell which give the explosive effect.

Moreover, it is believed that P.E.T.N. could be used as a commercial explosive in Germany and so free nitroglycerine explosives for military use. During the first World War Germany developed liquid oxygen explosives for this purpose.

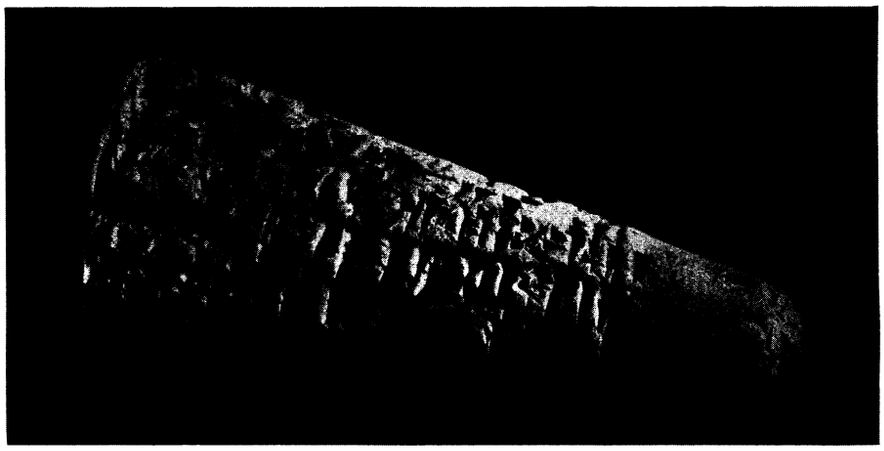
The main virtue of P.E.T.N. for Germany is that it does not require glycerine in its production. Glycerine is best obtained as a by-product of soap making and its production is closely tied to fats available for this purpose. Fats are very scarce in Germany. P.E.T.N. is made from formaldehyde, acetaldehyde and nitric acid.

Italy, too, has a new explosive known as T_4, which has many of the virtues of Germany's P.E.T.N. T_4 requires no glycerine in its fabrication. It is made from formaldehyde, ammonia and nitric acid but in commercial production the starting point is a material known as urotropin, sold medicinally in the United States as a remedy to aid kidney infections.

The technical name of T_4 is the jawbreaking 26-letter word cyclotrimethyltrinitramine. Like Germany's P.E.T.N., it is used as a primer in military explosives. It probably cannot be used as the main charge in military explosives but it can be used in commercial blasting and demolition work. It is recalled that when Germany blew up French coal mines and industrial plants after the armistice in 1918 they used their secondary explosives of liquid oxygen for this work rather than their military explosives of the nitrate type. In the present war P.E.T.N. and T_4 will probably take over such jobs.

Science News Letter, April 20, 1940

One automobile manufacturer reports finding a way to make some of the larger structural parts of a car from *plastic* at reasonable cost.



PWA REPORT

A Babylonian king's Public Works report is this four-inch buff-colored clay cone now at Princeton University. Removing gypsum crystals and sand without damaging the 4,000-year-old writing beneath was achieved by Dr. Earle R. Caley, Princeton chemist. The report tells of reconstructing the city of Namgarum by King Libit-Ishtar.