

ORDNANCE

Chemicals Used in V-2

Hydrogen peroxide and potassium permanganate prevent the Nazis' new rocket from blowing up in their faces and give it brisance.

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► TWO CHEMICALS, hydrogen peroxide and potassium permanganate, prevent the Nazis' V-2 rocket from blowing up in the launchers' faces and also give it brisance, or extra power and speed. The 15-ton, 46-foot-long rocket is thrust through the air by a highly explosive propellant mixture of alcohol and liquid air. This propellant causes the V-2 to travel faster than sound to altitudes estimated at 60 miles above the earth.

The reaction of liquid air on alcohol produces a highly explosive mixture which ordnance experts call "unstable." Hydrogen peroxide and permanganate are both oxidizers and their use insures the maintenance of uniform combustion, and prevents danger from "flashing" or an explosion of the mixture inside the rocket which might ignite the entire rocket and cause it to be blown to bits. Scientists state that such use of hydrogen peroxide and permanganate makes them catalysts. That is, they are substances which, while apparently taking no part in the combustion of the liquid air and oxygen, nevertheless, by their mere pres-

ence control the speed of the combustion.

A sectional drawing of the V-2 released by official British sources shows that it contains in its body two large tanks, the forward tank holding alcohol and the rear tank holding liquid oxygen. Pipes from these tanks run into a turbine and pump assembly. Also leading into this assembly are pipes from the hydrogen peroxide tank and the permanganate tank. In the turbine, the four components of the combustible mixture are blended and by pressure from bottled air and bottled nitrogen they are released as a fine mixed spray through 18 jets which make up the forward end of the combustion chamber. Here, thanks to hydrogen peroxide and permanganate, the explosion is localized and the rapidly expanding hot gases are expelled through the jets at the rear, forcing the rocket upward.

Alcohol is capable of burning with liquid air, and therefore no oxygen from the outside is needed to insure combustion. This makes it possible for the jet mechanism to operate at stratospheric heights where there is very little air, and

where it is possible to get more power from less fuel. Alcohol is also used as a coolant in the V-2 to keep the jet from getting so hot that it would melt.

Peacetime uses of hydrogen peroxide include applications as a bleaching agent in the textile, felt hat and other industries; as a bleach for hair, making a dark brunette into a platinum blonde; and as a disinfectant. Potassium permanganate, a compound of manganese, the metal used to make tough steel for burglar-proof safes, is also an excellent disinfectant and bleaching agent.

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LANGUAGE

Dictionary for Aleuts Will Be Available Soon

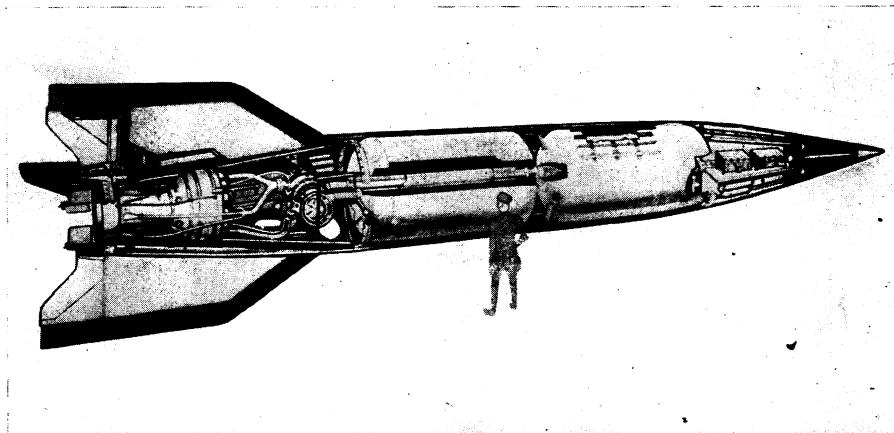
► A DICTIONARY for the Aleuts of the Aleutian islands and Alaska mainland, to be published soon by the U. S. Office of Indian Affairs, will be of assistance to these 6,000 American citizens in translating their strange language into English. At the same time it provides them with a new alphabet of 18 characters, the same kind of characters used in English, but often with different pronunciations.

The language of the Aleuts is difficult. It is one of the Eskimoid dialects, but due to isolation for centuries on these distant islands it is so different as to be almost entirely another language. Scholars familiar with other Eskimo dialects are unable to translate Aleut. Some of the Aleuts are able to talk Russian, which was the official language during the days of Russian control of Alaska, and some can now talk English.

The new dictionary is the work of two men, Ivan Veniaminov, a Russian missionary who later became Innokenti, Metropolitan Archbishop of Moscow, and Richard E. Geoghegan, an Irish scholar and a leading philologist, who for nine years was a linguistic consultant for the Japanese government and later the British vice-consul in Seattle and Tacoma. In 1902 he went to Alaska as an officer of the U. S. District court and remained there until his death in 1943. The final editing of the work was done by Miss Fredericka Martin, an associate of Mr. Geoghegan.

Veniaminov published in 1834 a *Dictionary of the Aleut-Fox Language* and gave the Aleuts an alphabet in Cyrillic characters, and a grammar. It is this dictionary that is now for the first time translated into English.

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INSIDE THE V-2—This cutaway drawing of the V-2 shows the location of the alcohol and liquid oxygen tanks (two large tanks in body) to the left of which, at the bottom, is the small hydrogen peroxide tank. Above the small tank you see the turbine mixing pump. At the left of the mixing pump is another small tank, the container for the permanganate. Pipes from the pump run to the combustion chamber, the unit that looks like an hourglass, where the liquids are exploded and the hot expanding gases released through the venturi jet. Note comparative size of the rocket and the man standing beside it.