ENGINEERING

High Heat Damages Tanks

➤ EXTREME HEAT, delivered inside an enemy armored tank on the battle field, is responsible for perhaps the principal damage from the discharge of America's Big Bazooka, according to Walter H. Ramsey, Army Aberdeen Proving Ground, in an article in ORDNANCE magazine (May-June).

The Big Bazooka is a 3.5-inch version of the device found effective against enemy tanks during World War II. However, it is a much more powerful weapon than its predecessor, more power being needed to penetrate the heavier armor plate now used on Soviet tanks. It has been in constant use in Korea since July, 1950. The missile of the Big Bazooka can penetrate the armor of a modern tank, pass through the air space within, and then penetrate an additional several inches of armor.

The bazooka is a rocket-firing tube which in use passes over the shoulder of the user, projecting to the rear and well to the front. The tube is aimed on a target by the soldier using a telescopic sight on its side. Squeezing a trigger starts the rocket on its way. Its penetrating power does not come from its speed but from a funnel-shaped explosive charge at its forward tip.

The Big Bazooka is fired electrically by the current generated when the gunner squeezes the trigger of the small magneto firing mechanism, Mr. Ramsey states. Ignition of the propellant charge is accomplished by an electric squib which ignites a small charge of black powder which, in turn, ignites the propellent charge.

When the rocket strikes a tank, the fuze plunger, located at the base of the warhead, flies forward and drives the firing pin into a small detonator, exploding the booster, which, in turn, detonates the explosive charge in the head.

The explosive charge is cone- or funnel-shaped by a metal liner. When it detonates, a small jet about one-tenth of an inch in diameter forms at the apex of the cone and travels forward at a velocity of approximately 25,000 feet a second, he states. It is this jet of gas and particles that penetrates the armor.

In passing through the insides of a tank, the extremely-hot jet can cause much damage to the mechanisms within and also to fuel tanks and ammunition. It is extremely difficult to protect fuel and ammunition from the heat of the jet, he declares.

Science News Letter, May 12, 1951

TECHNOLOGY

Bottled Gas For Bus Fuel

➤ BOTTLED GAS, now being used in millions of rural homes, is destined to replace in large measure gasoline as fuel for city buses and trucks, it was predicted at the meeting of the American Petroleum Institute, Tulsa, Okla. Its use for the purpose has already passed the experimental stage.

Scientists call this fuel liquid petroleum gas, LPG for short. These petroleum gases are taken from the ground along with the crude oil, and are also produced as a by-product of gasoline manufacture. They were formerly burned in the open because no uses for them had been found.

With the passing of the years, however, a multitude of uses have been found, the meeting was told by Eugene S. Corner, Standard Oil Development Co., and E. H. Berg, Esso Standard Oil Co., New York. Certain constituents of petroleum gas can be liquefied by pressure and shipped and used from portable tanks with safety.

Chemically LPG is composed of propane and butane. If produced at a refinery it often contains propylene and butylenes as well. It is less expensive than gasoline and gives better mileage per gallon of fuel, they stated. It is a very clean burning fuel, permitting operations with an absence of disagreeable exhaust odors.

It is estimated that there is 0.9 gallon of LPG available from our current petroleum reserves for every gallon of gasoline, the scientists were told by R. C. Alden, Forrest E. Gilmore and Paul Tucker, Phillips Petroleum Company, Bartlesville, Okla. Recovery today is only one-fourth the amount available. Full recovery and use would increase the life of our petroleum reserves by more than 50%, they indicated.

Internal-combustion engine designers have long recognized the need for a fuel which possesses high-octane rating, resistance to detonation, and ideal combustion characteristics, Robert S. Lee, Twin Coach Company, Kent, Ohio, stated. Propane, a common liquefied petroleum gas, possesses these advantages.

The propane fuel system is not complex, he said. The use of propane as an engine fuel promises the commercial fleet operator lower fuel costs, maintenance savings, the widest possible safety in handling, plus public acceptance.

Science News Letter, May 12, 1951

● RADIO

Saturday, May 19, 1951, 3:15-3:30 p. m., EDT

"Adventures in Science," with Watson Davis, director of Science Service, over Columbia Broadcasting System.

Mr. Kenneth C. Spengler, executive secretary of the American Meteorological Society, will discuss "Doing Something About the Weather."

ELECTRIC HELMSMAN — Lieut. Comdr. W. M. M. Fowden, Jr., demonstrates one of the units by which ships can be steered from widely-separated positions on board.

MILITARY SCIENCE

Remote Control Steers Vessel From Many Positions on Ship

➤ A WAR vessel in action with its normal steering station disabled by enemy fire, can now be steered from many positions in the ship. For the purpose, an electric remote control is used. The device is worn on the chest of the user and is plugged into outlets which provide connections to a special steering power unit in the steering engine room.

It is a development of the General Electric Company, Schenectady, N. Y., and is now being fitted on a destroyer for Navy use. An earlier model has been successfully tested on a similar Navy vessel during the past two years.

This "electric helmsman" can be used at various times for various uses. It can be utilized for effective "close-in" direction of intricate maneuvers such as docking, breeches buoy transfers and other normal or emergency movements.

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VETERINARY MEDICINE

One-Shot Vaccine Protects Dogs Against Distemper

➤ A ONE-SHOT vaccine to protect dogs against distemper is now available. It is a live virus vaccine, but through passage on embryonated chick eggs, it has been modified so it will not cause distemper. It is capable of giving lasting immunity against this common, very contagious and often fatal disease of dogs. Previous distemper vaccines have been produced mainly from ferrets. The new one is also recommended for ferrets and mink, Lederle Laboratories, manufacturers, state.

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