MILITARY SCIENCE

More Facts About V-2

Unlike the V-1 it is a true rocket, of the type known to designers and engineers as a spinner; it carries enough fuel for about seven to nine minutes of flight.

➤ AMERICAN ROCKET experts agree that the V-2 is still in an experimental and developmental state. At present the V-2 penetrates as much as 30 feet into the soil when it hits, leaving the tail sticking up about 20 feet like the end of a telephone pole. This limits the area of the blast, causing only a local earthquake.

Unlike the V-1, the stratosphere V-2 is a true rocket, of the type known to designers and engineers as a spinner. It carries enough fuel for about seven to nine minutes of flight, using about a ton of fuel a minute, and enough bottled gas, either compressed air or possibly compressed nitrogen, to force the fuel into the nozzle where the hot gases that thrust the rocket up 60 miles into the air are formed. These gases leave the combustion chamber through a series of special jets which form a ring on the back plate of the rocket. The jets are bored into the back plate at an angle of about 45 degrees, so that when the flaming gases rush out into the air they cause it to spin and literally chew its way through the air as a screw bites into a piece of wood. This spinning motion stabilizes the rocket in flight, so that it needs no fins. Some British rocket authorities believe that the V-2 has a gyroscopic or servo-stabilizer. On most spinner rockets such mechanical devices are not necessary, though Nazi engineers may have found that the V-2 works better with them than without.

The various reports that have been received estimating the speed of the V-2 up to 3,500 miles an hour, are almost certainly exaggerated. At speeds of 3,500 miles an hour the V-2, like a falling meteorite, would probably destroy itself in space from the intense heat that friction of air on the metal jacket produces. Even at 1,000 miles an hour (300 miles an hour faster than sound) some sort of cooling device would be necessary to prevent it from getting so hot that it would detonate its explosive warhead long before it reaches the earth. This cooling device may resemble the equipment used on high-speed liquid-cooled aviation engines, that is, a coolant liquid circulated by a pump through a jacket around the one-ton warhead containing the explosive.

Since the V-2 strikes the earth with the terrific speed of 700 miles an hour, more than one detonator seems likely, as well as a time fuse. This system of multiple detonators practically eliminates the possibility of duds. Few, if any, of the stratosphere rockets reaching England have been duds.

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CHEMISTRY

Chemical Method for De-Salting Sea Water

➤ A CHEMICAL method for getting salt and other dissolved minerals out of sea water, leaving it fit to drink, is among the 511 new U. S. patents issued last week. It was developed by Lt. C. R. Spealman of the Navy's medical research center at Bethesda, Md. Rights on the patent, No. 2,363,020, are assigned royalty-free to the government.

The injurious concentrations of minerals in the sea water are reduced to harmlessness by first adding basic silver oxide. This takes out the chlorine atoms in the form of insoluble silver chloride; at the same time the calcium and magnesium precipitate out as insoluble carbonates.

Sodium, the other half of common salt, presents the greater chemical difficulty, since most compounds of sodium are water-soluble. However, some organic sodium compounds are not; and by adding uric acid after the silver oxide has had time to act, the sodium is brought down also as an insoluble precipitate.

Use of this method, Lt. Spealman states, should make it possible to dispense with the bulky, weight-adding kegs of water hitherto necessary in all lifeboats.

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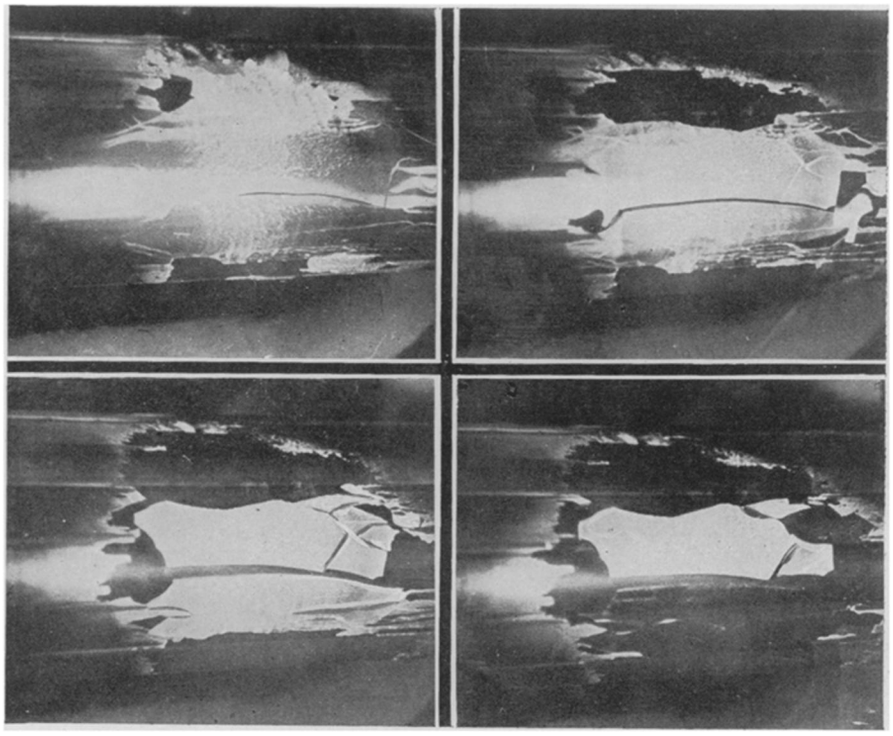

TWO-WAY STRETCH—This four-picture sequence shows stages in the breaking up and whisking away of ice on a section of airplane wing protected by the new "Type 11" De-Icer, developed by the B. F. Goodrich Co. In the upper left photo, the crack in the middle of the leading edge is hardly perceptible. A few seconds later (upper right), a big top section has blown away and the main surface shows several new fissures. At lower left, the central crack has widened markedly, and an instant later (lower right), the whole bottom half of the encrustation has been whisked away.