ELECTRONICS

Deadly Bombers

Radio-radar robot planes, with world-spanning flight ranges will send humanity back to cave-dwelling, unless we learn how to keep the peace.

➤ THE radio-radar robot bombers described by Gen. H. H. Arnold will turn men into moles if we insist on settling international arguments by war. No city or fortress or factory on land, no convoy or even single ships at sea, can count on safety if unmanned planes or rockets can now or in the near future be guided by radio to the vicinity of the target, and then finish in Kamikaze dives, pinpointed into their targets by "heat, light and metal reactions."

Camouflage will do no good, for radar ignores such flimsy concealments as nets and painted rags as completely as it does smoke screens or natural fog. It "sees" the hard surfaces beneath the concealment and reports their whereabouts with the ruthless accuracy of the machine that it is.

If vital military installations are to be concealed from the radar's pitiless eye they must be given a "soft" covering, deep enough to give the same effect as natural soil and the vegetation growing on it. And the most practicable way to do this is to use soil and vegetation themselves rather than strain after facsimile effects.

This would mean putting underground industrial plants and warehouses, hangars and railway stations, barracks and hospitals, in brief the whole enormous complex of a civilization's material basis. Some advantage might be taken of natural caves and abandoned mines, as the Germans are reported to have done to some extent in the war that ended last spring. But most of the caves would have to be dug by the men who would later take up their troglodyte existence in them.

Deep burial would probably be the safest in the end, no matter how much more it might cost. For plenty of earth overhead would be the only chance of safety against the atomic explosives which the future far-ranging robot bombers would doubtless carry. In the end, even hundreds of feet of self-burial might not suffice for protection against a foe really determined to dig out and destroy the new race of human moles.

Even vainer than seeking safety from the terrors of the newer warfare by digging in the bowels of the earth are the proposals to "forbid" the use of such weapons in war. Historical records abound in such efforts—all ending in failure. One needs only recall the well-intentioned proposals put forward at earlier peace conferences at the Hague, to ban the use of poison gas and of aircraft in war—to neither of which the American delegates would agree.

Duelling in civilized communities was stopped not by forbidding the use of pistols in duels but by the pressure of public opinion against the practice itself and by the use of police force against bellicose gentlemen who insisted on waging little private wars. If nations are to be similarly restrained from mutual slaughter, it must be by the larger-scale application of one or both of these principles.

Science News Letter, September 1, 1945

ZOOLOGY

Worm Is Both Father And Mother to Offspring

➤ WORMS that live in sea-bottom mud have been shown capable of producing offspring sexually yet without the necessity of mating, the same individual being both father and mother. A brief report on this curious phenomenon is given in *Science* (Aug. 17) by Dr. William C. Purdy, retired biologist of the U. S. Public Health Service, now living in Cincinnati.

Many of the lower animals are both male and female, functioning as mothers at one time, as fathers at another; oysters and earthworms are common examples. There are others, also, that can produce offspring through many generations of unmated females; a much-too-common example of this is furnished by the ordinary aphid or plant louse. But a "male-female" animal that is both sexes at once, or in such quick alternation that it can be both father and mother to the same offspring, seems to be something of a rarity.

Dr. Purdy placed solitary individuals of his worms in small glass vials, each with enough mud to give it shelter and a chance to build the hard tubes the worms use for protection. The mud had been carefully searched with a microscope, to make sure it sheltered no other worms and contained no worm eggs. Then each worm was left to its own devices, except for weekly feedings.

Presently young worms began to appear. Six of the one-worm cultures, at the end of about seven months, had produced a total of 208 young. Another, kept for two years, produced 19 young during the first year and 148 during the second.

Dr. Purdy's worms represented two genera, known to zoologists as *Tubifex* and *Limnodrilus*.

Science News Letter, September 1, 1945

AERONAUTICS

Transport Helicopter Has Two Rotors in Tandem

➤ A PASSENGER or cargo helicopter with two rotors, one mounted at the front and the other at the rear on the body, has passed successful tests in the air. It is claimed to be the first successful design using two rotors in tandem, and the first helicopter for air transport operations. Its capacity is 10 passengers. It was built for the U. S. Navy, and additional craft of the same type are under construction.

This largest of helicopters so far constructed was designed and constructed by P-V Engineering Forum, Inc., and was given its first test in the air during March this year. In the air, it resembles somewhat a gigantic center-sagging flat-bottomed row-boat, suspended from two knobs, one at each end. In reality these knobs house the rotor mechanisms, and turn the rotors which are above them.

The streamlined fuselage of the craft is 48 feet long and 13 feet high. Its Continental-Wright R-975 engine is completely enclosed aft of the cabin. Flight tests prove that the craft has unusual stability and control characteristics, and is one of the fastest helicopters flying. Its high efficiency represents, it is claimed, the biggest step forward in helicopter design since the original Sikorsky.

This new helicopter, designated the PV-3, can land in a 100-foot-diameter clearing on land or water. Because of this, it is pronounced ideal for picking up wounded men from inaccessible areas. Equipped with either an external or internal hoist, it can perform rescues while hovering in the air close to ground or water surfaces.

Science News Letter, September 1, 1945

Spain's principal agricultural crop is *grapes*, with olives second.