

WEAPONS OF THE NEXT WAR

By Howe Martyn

The flu! Grim and recurrent reminder of the War. The epidemic of flu that followed the War is reckoned to have killed more people than died fighting during the War itself.

Military scientists took this as a lesson, a challenge. They have studied the possibilities of deliberately inducing epidemics, using germs to fight in another war. Wickham Steed, former editor of the 'London Times', quotes from copies he has obtained of reports on secret experiments with bacteria made right in London and Paris by a foreign power. These tests concerned germs dropped from planes flying high over Leicester Square and Picadilly Circus in the one case and the Place de la Concorde in the other, the germs being drawn with the ventilating air into the Underground railway stations to infect the throngs that pass through them. The test germs were harmless to people, of course, but the tests proved that malignant germs handled in the same way would serve their purpose as a dreadful weapon of a future war.

Epidemics of typhoid have practically ceased in civilized countries in peace time owing to the development of great systems of reservoirs for the supply of water controlled for purity. The reservoirs for the great cities of England are like lakes. Broad and open to the sky, they are beautiful features of the landscape; they could not be missed by hostile airmen dropping packages of typhoid culture so as to strike the people of England when they innocently turn a tap for a thirsty child.

These weapons of the next war are horrible. But Captain Liddell Hart, outstanding British military writer, states the obvious truth this way: "If the peoples of the world are to save themselves, they must see for themselves the real factors in modern war."

Fire would strike the great cities of the world along with disease in another war. Incendiary bombs have been made of thermite, the great heat-producing chemical. They are so powerful they will burn through a solid inch of steel. They cannot be quenched by water. Each one landed in the buildings of a crowded part of a city means a three-alarm fire. A squadron of raiding planes should be able to start a dozen fires in different parts of a city. This would be enough to disorganize the best fire department, especially if also the water-mains were broken.

The resemblance between what Nature did to San Francisco in the earthquake, and the destructive forces that man has made to loose from the air on cities, is completed by high explosive. In San Francisco the earth shook and cracked. People were killed under crashing buildings. Water and gas mains were broken. Electrical connections on which cities are now so dependent would be broken by shocks of this kind too. Fires started all over the city. The general disorganization led to an epidemic of disease.

High explosive dropped from planes a ton per bomb, has blasting power sufficient to destroy individual buildings and to rip impassable holes in streets. However these bombs would not cause a very large number of casualties directly. The casualty list of Madrid is comparatively small in spite of frequent bombing. High explosive would achieve its greatest devastation by destroying the services on the day-to-day regularity of which people crowded in cities depend for health and even life. In a planned war, explosive bombs from the air would be aimed at power stations, railway stations, bridges, water supply (reservoirs, pumps and mains), food warehouses, government offices, even at hospitals deliberately, so as to complete the chaos. If these objectives were reached, another war would indeed bring chaos—earthquake, fire, plague, famine—and the survivors crudely fighting one another as they looted for food, or crowding the roads and carrying their diseases from the city to the countryside as refugees.

To these evils add still another—gas—which has no parallel in Nature but which man has conceived and brought to a terrible efficiency. Mustard gas is now the standard type. Other earlier gases attacked the throat and lungs, choking the victim, or attacking his eyes. But mustard gas does its work by blistering the skin. The United States' Lewisite poisons the blisters. It works at any exposed point, so that face masks are no protection. Furthermore mustard penetrates ordinary clothing so only special complete suits provide protection. For full effectiveness, gas needs to be concentrated, so the weapon is used from the air not haphazardly but like high explosive to cause disorganization. Gas bombs can block roads, railway and street-car junctions, can keep unprotected firemen away from fires and can

prevent the repair of power stations damaged by explosives. Streets have to be hosed down with water to clear them of mustard gas. But explosive bombs to break water mains and gas bombs to keep men from repairing them, can be dropped together, thus greatly prolonging the agony of a city under air attack.

All these weapons for delivering death from above of course have to be carried into range above their target. But the flying range of the airplane has been tremendously extended. The exact mileage possibilities vary according to the load of bombs a plane is made to carry, and the speed it must fly at to get through safely. They depend also on whether or not the generals want their men and planes back badly enough to make their flying range cover a return trip. A United States' seaplane has made a non-stop flight of 3,300 miles, which is about the distance from the Great War raiding base, Zeebrugge to Halifax, Nova Scotia. Other nations will have planes as good. Great Britain has high-speed long-range bombers which can carry a four ton load. Two hundred miles per hour is rapidly becoming the minimum speed for the planes in service of all nations, bombers as well as pursuit planes, although speed is not so important and loads may be heavier for night bombing raids than for daylight work. Germany's Zeppelins have crossed the North and South Atlantic with ease, on regular schedules, and their flying range is so great, it has never been tested to the limit. This advantage is offset, however by their comparative slowness and their bulk offering too good a target for anti-aircraft guns. It is not entirely practical for long distances yet, but the British have a bombing plane, the 'Queen Bee', which can be flown by radio.

The foregoing weapons of the next war, so nightmarish that people often pretend they do not exist, are yet not so wild and inhuman as the intention that has developed them. Their aim is to destroy the peace-life of peoples, not as with previous weapons and wars, their fighting forces. In fact, it is part of tactics in the use of these weapons to avoid contact with opposing fighters, to get secretly past them and strike at the peace-life behind—the orderly going of children to school, women to market, men to factories and offices.

These tactics have been planned because armies, well-equipped, alert to defend themselves, have a fair chance to withstand even the newest destructive devices, whereas the peace-occupied people at home can probably be overwhelmed. Whole nations or even whole cities will not be wiped out in a few hours by gas and high explosive, as is sometimes said; there is not enough gas made to cover thickly, such large areas. But war from the air on peoples instead of on armies, can and will be carried on in the next war by disorganizing attacks doing most harm through their after-effects. The air-raids will kill the country's leadership and interrupt its communications with the purpose of destroying its morale and causing chaos and total defeat. The air bombers, the biggest fleets of them in the world, cannot defeat armies, which offer too small, mobile and dangerous a target. The most vulnerable part of an army is its supply service, the trains with their necessary tracks and bridges, the trucks with their necessary roads, that bring food and ammunition. The most efficient modern armies are well-organized small forces.

The air bombers cannot kill more than a few thousand of the most innocent peaceable people in one raid. What they can do is deliver a terrific shock to a nation, such a shock as might even cause surrender. Germany has an Air Force which is one of the biggest parts of its defences. Control of this is centralized very efficiently in a wonderful new Air Ministry Building of 2,000 rooms in Berlin. The present Minister of War, General Goering, has his office there. If that single building were destroyed in an air raid, Germany might conceivably have to surrender, because the scattered air bases would get no weather reports, no secret service reports on enemy defences, no radio signals about approaching enemy attackers, not even any orders as to how to co-operate with other German forces. Without its "brain" the German air force could not continue to fight.

The shock that some nations are able to give to their enemies today is so great that besides causing surrender it might release saving revolutionary forces which would change the world much more than the aggressors intended. The Russians, great believers in revolution, have in their armory for the next war weapons for invasion of other coun-

tries by air. They have two-seater planes with rows of coffin-like boxes fastened to the wings enabling them to carry two dozen men. They have glider "trailers" that can be uncoupled from the towing planes and can glide down safely with a large landing party of men. They have squads of men trained to jump and land with parachutes from large cabin planes. The plan is obviously to send troops to aid revolutionary outbreaks behind an enemy's lines.

The problem of defence against the new weapons of shock attack is unlike and more difficult than the defence problems of any previous war. There was war in the air, planes fighting planes, in the Great War, but this is war from the air, and the attack can be spread over entirely new distances.

Anti-aircraft weapons of sorts have been invented. Anti-aircraft guns, which are effective to 10,000 foot heights in the day and 5,000 feet in the dark, are organized in batteries so that their fire can cover considerable areas. They are now given their range by automatic machinery which finds the height of approaching planes and calculates their speed so as to work out accurately the position they will be in by the time the shrapnel gets that high in the air. Sound detectors can locate enemy planes before they come in sight. Searchlights for showing up night raiders are much improved. Most of the batteries of anti-aircraft guns are mobile, some light guns being mounted on old-style two-wheel auto trailers so they can be speeded to attacked points. Marconi invented an electric ray to stop planes by cutting off the ignition of their engines. But this has already been simply counteracted by casing the magnetos in lead.

Fighting planes with planes was successful and the most spectacular part of flying in the Great War. Pursuit planes shot down or drove back the much slower observation and bombing planes of that period. Defence against modern air-raids in the air is more difficult. Big bombers nearly as fast as the fastest small fighter planes are now built. Two hundred miles per hour is very nearly the minimum for bombers, whereas the Thompson Trophy, raced for by the latest designs of plane, was won in 1936 by a French military pursuit type at 264 miles per hour. A margin of only 25% greater speed does not give planes for defence any decided advantage. Fighter planes of the Great War had an advantage in gunfire which also they have now lost. Modern bombers have automatic guns and mountings protecting them from all angles. Coming up under the tail of a plane was a favorite manoeuvre against the old clumsy observation plane which could shoot only forward and back and up. This play is now as dangerous as a meeting head on. The United States has a plane nick-named the air battleship because of the amount of equipment it carries. It includes guns big enough to fire real explosive shells as well as the bullets of machine-guns.

All available defences against air-raids were tested in the London Exercises (British) in 1931. That would not be a test of today's conditions, but it is a good indication because improvements in bombers have been at least as great in the interval as improvements in defence. The judgment of the 'London Times' was that the defence did not succeed in intercepting a sufficient proportion of the raiding bombers to make the attack a failure.

The best defence is attack! This proverb applied to war with the weapons of today calls for counter-attack, not on the enemy's raiding fighters but on the peace-life they have left at home. This strategy contemplates opposing air armadas passing each other on their way to destroy respective capital cities—passing, without engaging, perhaps exchanging a sardonic salute! In this utterly destructive kind of war, the nation that in its peace-life is less vulnerable to destruction from the air is likely to win.

Passive defence is not a good name in itself, but it serves to contrast defence measures designed to decrease vulnerability of peace-life, from defence by anti-aircraft guns, fighter planes and counter-bombing attack. One weapon of passive defence is food stored in dispersed warehouses where it will be safe from destruction in raids on a country's metropolis and on its transportation, and will be available in time to keep the people fed and strong. Another weapon is a duplication of essential services (light, power, water, transport, fire-fighting, radio, first-aid, etc.). This provides a "second line" on which a city can keep alive, organized and free from panic even though the regular services are destroyed. A simple obvious example is a supply

of candles available in every home. Could you get light to carry you through a night of emergency if the electric power station were to be blown up? You may have candles in the house but could you find them in the dark? Have you gauze and antiseptics so that you could do simple first-aid if you daren't go out to the drug-store?

Bomb-proof and gas-proof rooms and gas masks have taken the public fancy more than simple matters of light and food, heat and hygiene, as passive defence measures. This is probably very unfortunate. As already seen, the danger is much less of being hit by bomb or poisoned by gas than of dying sick, hungry, cold, neglected in a panic. Deep, underground shelters arched with steel and concrete are being established in European capitals. They require elaborate ventilation arrangements to keep even a few people supplied with vital air. A crowd would make them more lethal than a bullet-sprayed street. A series of doors and chambers is necessary to keep out gas. Someone in the excitement of a raid would be sure to forget to close the door. Gas masks have similar weaknesses. To be safe, they need to be good, and that means expensive. The masks the British Government is producing by the million are worth only two shillings each: they are good for only fifteen minutes in a high concentration of gas. For protection against mustard gas, in any case, only a complete suit will do. The best weapon of defence for ordinary people is alert common sense which will keep them quiet and off the streets and away from downtown centres, will make them boil their water before they drink it and tend their wounds carefully, will make them wait for the "all-clear" signal from the authorities. Public officers, policemen, firemen, should be equipped with complete gas protection, and they should rush the "clean-up" work, for instance tending the streets with the new street-washer developed in England with an air-spray attachment which will enable them to wash down gas.

Morale, then, is most important in decreasing the vulnerability of the peace-life of a nation to the shock attack tactics planned by the militarists for the next war. The British expert, Captain Liddell Hart, discussing "the preparedness of the people" as a weapon of the first importance, says: "A sturdy individualism based on a regime of reason and freedom may withstand the shocks better than the emotionalism bred by

totalitarianism, with its insistence on mass psychology and incessant appeal to mass sentiment." With no newspapers, no radio to tell them what to do, people in the great cities of all nations fighting in another war will be thrown on their own resources probably in the first day of war. Their individual resourcefulness will decide whether or not they can reorganize to continue defence and prevent defeat and collapse.

Mr. Wm. J. Rolley, well known farmer of South Adjala township has a valuable Ayrshire cow which gave birth to twin calves this year and last year.

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