



GENERAL SCIENCE

War Brings a Multitude Of Incidental Problems

Physicians and Surgeons Must Learn to Work Under New Difficulties; Nutrition Problems Mount

MEDICAL aspects of war: Doctors in England, Switzerland, and elsewhere are practicing performing operations while encased in gas masks in addition to their other paraphernalia. The war-time surgeon should learn to carry out his duties in a gas mask, is the warning, just as a machine gunner learns to do so. Happy thought—the patient being given gas-and-oxygen anesthesia will be easily protected; his face is covered and any air given can be passed through the canister of respirator.

Deep pits were being dug for precious (and deadly) radium where it will be buried at the first danger of aerial bombardment. One direct hit would scatter the precious stuff so diffusely that it would be dangerous for human beings to live there for thousands of years to come. Such civilized luxuries as cancer treatments would become superfluous anyway in case of aerial attack.

Thousands upon thousands of men and women are having their blood typed in England, so that when bombs smash arteries and veins they can act as blood donors.

WITH food ration cards in effect for Germans, limiting rigorously the amounts of meat, sugar, marmalade, cereals, coffee, milk and cheese, oil or fats that can be bought, nutrition experts throughout the world are probably figuring out calories, vitamins, etc., to see how the Germans will fare.

U. S. Department of Agriculture experts, in our depression years, to help those on relief or those who face poor nutrition through not knowing what to eat, have figured out diets to fit the family income.

Very similar are the quantities allowed the Germans and in the U. S. A. "restricted diet for emergency use" when comparison is made on basis of articles rationed in Germany. The U. S. A. emergency diet goes lighter on meat and heavier on cereals. It does contain an egg every other day. This lowest level diet is intended for emergency use only, because it is deficient in protective foods—milk, eggs, tomatoes, green vegetables, etc. The U. S. D. A. also has a minimum-cost adequate diet that contains as much meat, double the milk, four times the cereal, as the Nazi rations. The specified food on the German ration card to-

tals about 7500 calories per week; not nearly enough because 2000-2500 calories are needed daily. But the restricted foods would be supplemented by other unrestricted foods, vegetables, potatoes, etc. The Germans won't get fat, but they will live.

PAWNS in the European game of human checkers are the peasants—millions of them in many countries. The League of Nations, not so successful in solving political problems, digs out information, facts, about what the farmers, rural workers, peasants eat.

The main characteristic of rural dietaries is monotony. The peasant obtains the energy he requires from cereals because he wants to get it at the cheapest price. Often grains provide 80% to 90% of the calories. Consumption of protective foods—milk, fruit, green vegetables, eggs, meat—is markedly deficient, especially in winter.

Peasants sell their produce, often consume absolutely none of it themselves as when Danish farmers sell all their butter and eat margarine. Reminiscent of stories from certain sections of the U. S. A.

TWO agricultural inventions, barbed wire and tanks which are tractors under their armor skin, are of prime importance in war. Miles upon miles of the spiky wire hedges are in European frontiers today.

Barbed wire is a U. S. A. invention, in 1874, created to keep cattle at home. Now about 200,000 tons are produced a year, about seven miles to the ton.

Tanks evolved from tractors during the World War. Since then tractors and trucks have mechanized armies putting artillery and cavalry horses out of jobs just as do tractors on the farms. Showing how one invention stalemates another—tanks are the one good weapon for smashing down barbed wire entanglements so infantry can get through.

FARTHEST-BROUGHT of overseas resources cut off from Germany by war is whale oil from the Antarctic, an important industrial lubricant and soap material, particularly in textile manufacturing. Germany has also been using it, after a taste-removing refining process, as a food oil.

At present Germany probably has on hand a reserve of about 150,000 metric tons, less than a year's supply, according to Dr. Remington Kellogg of the U. S. National Museum, who represents American interests (*Turn to page 170*)

AERONAUTICS

War May Answer Question Can Airplane Win War?

Airmen Who Support View of Plane's Supremacy Base Opinion on Theory of the "Lightning Attack"

EUROPE'S war is expected by authorities to answer the biggest question in military science today:

Can the airplane win a war?

Air enthusiasts, whose loyal support is in no small part responsible for aviation's enormous strides, insist that it can. Orthodox military experts contend that the airplane has never settled a conflict and will not settle the next one. No new weapon, they claim, whether it be David's sling or "flying fortress," has ever revolutionized warfare.

Three sanguinary wars have been fought in the last four years, with one of them still going on. The airplane did not win by destroying cities in Ethiopia because there were no cities to bomb. Artillery and not the airplane was the major factor in General Franco's triumph in Spain. Japan has had overwhelming air superiority in her invasion of China, but the war has not been won yet and may never be. None of the three wars is conclusive either way, in expert opinion.

Not all air-men support the view of the plane's surpassing power, but those who do base their opinion on the theory of the "lightning war," by which a nation is brought to its knees in a short time by the destruction of its cities, industries and key centers by continuing waves of bombing planes. They claim the bomber will always get through and that there is no defense against its deadly thrusts. Anti-aircraft artillery is ineffective, they assert: interceptor fighters cannot be warned in time to head the invaders off.

Orthodox military experts tend to minimize the damage which airplanes can do to cities. It seems apparent that they cannot turn them into mere rubble piles. But damage that extensive may not be necessary. On March 16-18, 1938, the city of Barcelona was subjected to frequently repeated waves of attacks by Italian planes from Majorca. The city was quite demoralized.

Airplanes cannot capture ground, it is also pointed out; only infantry can do that and in classical military theory, a

prerequisite of victory is capturing ground. The air enthusiasts say this theory nay. Orthodox military experts also tend to insist that destructive effects of gas, incendiary and shattering bombs are exaggerated.

Hence, general staffs of ground forces believe generally that the airplane's greatest usefulness is in spotting the enemy for guiding artillery fire and in bombing specific military objectives. They see for the plane an auxiliary role rather than a dominating one.

Casualty rates for planes, according to most estimates, will range between 25% and 100% in the war just begun. Casualty rates for pilots will be nearly as high. This means that the complete air force will have to be replaced several times a year. The effort to do so will be too great and air war will in time be cut down to its proper size, it is further argued by the more conservative military men.

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in the international whaling conferences.

Germany has a fleet of five whaling vessels, with a total gross tonnage of approximately 70,000. Individual ships range in size from about 8,000 to 20,000 gross tons. In addition, two Norwegian whaling ships are under charter.

This fleet is in no danger of capture or destruction at the hands of British cruisers, for it is all safely tied up in Hamburg harbor. The Antarctic whaling season does not begin until early in October, so that even if conditions in Europe were normal the ships would not be due to sail south for another week or so.

Most of the world's whaling is done by the Norwegians. Conceivably, a blockaded Germany might get some whale oil from Norway by more or less round-about means. However, the greatly stepped-up wartime demands in Britain and France, not to mention the United States and other neutral industrial countries, will compete heavily for Norwegian oil—and these nations will have the very

considerable advantage of being able to offer the Norse whalers real money for their wares.

TO KEEP our orientation in a war-like world: Guns can be very, very useful to science and industry.

There is the deep-sea gun which shoots samples out of the bottom of the ocean to find radium perhaps but, more important by far, to determine the constitution of seven-tenths of the earth's crust—that land that lies beneath water about which we are abysmally ignorant.

There is the gun that shoots holes in the casings of oil wells being drilled thousands of feet in the ground when it is desired to tap the liquid gold that is petroleum.

And the gun that shoots open a clogged blast furnace outlet plugged with frozen slag.

And the gun that shoots aloft distress signals from ships in distress or the gun that flings the first rescuing line to wrecked ships.

UNCLE SAM'S little colonies in Antarctic, to be established this winter, may prove to be the safest place on earth. Greatest danger may be that in the excitement of a smashing civilization ships to bring them back to a battered world may forget to call.

BOMBS and poison gas may play important roles in the war. For background on European war developments involving bombs see SNL, March 25, 1939. For a list and descriptions of the principal war gases, see SNL, Jan. 28, 1939.

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STATISTICS

Fewer Catastrophic Deaths This Year Than in Last

DESPITE the tornadoes, fires, mine explosions, floods, and railroad accidents we've been reading about, statisticians are pleased that the first half of 1939 has fewer catastrophic deaths than the same period last year. The U. S. A. record as compiled by the Metropolitan Life Insurance Company from the daily press for the first six months of 1939 is 29 accidents killing 5 or more. The total loss of life was 266. For the first six months of 1938, 57 major accidents killing 771.

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Rubber trees are no more limber than the average tree.