

MILITARY SCIENCE

Preview of Armageddon

Group of representative writers, on long tour of Southeastern camps and airfields, view Army displays of weapons and tactics that will smash the Axis.

By DR. FRANK THONE

► RECENTLY a group of newspaper and magazine writers took off from the National Airport in Washington, D. C., in four Army transport planes. One week later they landed there again, a company of very tired men. They had spent the seven days among camps and airfields in the Southeastern states, in a strenuous program of seeing what the Army has and what the Army can do—the weapons and tactics that will be used in Europe this summer and against the Japs, until American, British and Chinese troops march together through the ruins of Tokyo.

These men had been invited to a preview of Armageddon, as the eyes and ears of the American public. They have reported in part already. More will follow. It is impossible to pour out at one sitting all that was packed in during that week of concentrated information-getting. In limited space, only a few highlights can be set forth.

One thing that could not fail to impress was the scientific exactness with which our forces go about the business of smashing the Axis. Take, as a first random sample, the job of the Field Artillery. It has become an application of precision chemistry.

Precision Time Firing

On one hillside in Louisiana, tanks and carrier-borne infantry had been assigned the task of capturing an assumed enemy position, while battalions of 105-millimeter howitzers gave cover to their advance.

After firing for a time with impact and delay-action shell, which get bursts close to the ground or slightly above it, the artillery went into the type of fire that involves the greatest technical difficulty and hence demands greatest skill—time fire. This involves setting a powder-train fuse in the nose of each shell so that it will burst at an exact hundredth-of-a-split second before it touches the ground.

This demands not only great skill on

the part of the cannoneer who operates the fuse-setting mechanism, but has to take for granted absolute uniformity in the burning rate of the powder train.

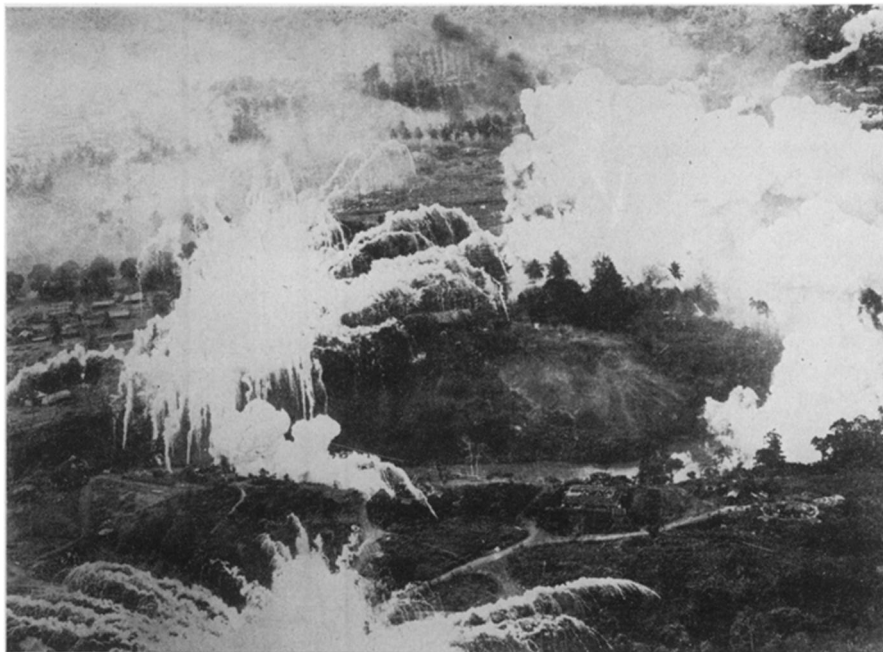
Here is where the chemistry comes in. If the powder had been of the slightly irregular composition that had to be tolerated in 1918, simply because nothing better could be had then, the height of burst of the shells would have been uneven, and more of the enemy, lying doggo in slit trenches and fox holes, would have survived to jump up and fight when the tanks and infantry came up and closed with them. As it was, all bursts were exactly where the battery commanders wanted them, just about treetop height. This sends down whir-

ring, deadly splinters of hot steel, striking obliquely into dug-in shelters.

One feature of coordination between artillery and advancing attack forces was disclosed, when it was explained that the shells would continue with this deadly time fire even when the tanks were breaking into the enemy area, and the fragments were ringing down on their metal backs like the proverbial hail on a tin roof. With the tanks well buttoned up, their crews were safe enough, while the enemy troops, in the open, would be catching literal hell.

Attack With Flame

Flame, oldest of man's weapons and still one of the most terrible, was shown. Two of the fastest of fighter planes, that take a turn at being light bombers on occasion, tore at almost grass-skimming low altitude across the Florida scrub. Above the ground targets they let go the streamlined (Turn to page 316)



FLAME IS A DREADFUL WEAPON—Japs are said to have a special dread of American flame-weapons—burning oil and searing fragments of white phosphorus. Here in this Signal Corps picture is shown a phosphorus-bomb attack on the oft-battered Jap Lakunai airfield at Rabaul. At the end of each of those soft-looking streamers of white smoke is a bit of chemical hellfire. The importance of flame-weapons has increased so that supplying incendiary material now constitutes more than 50% of the work of the Chemical Warfare Service.

Do You Know?

Lanolin used in cosmetics is refined wool grease.

Peanuts yield more *oil* per acre than cottonseed.

Wisconsin and Minnesota run a neck-and-neck race for honor as the "*hay-makingest*" state.

The adult clothes *moth* lives only a few weeks, but during that time lays from 100 to 300 eggs.

One-eleventh of the total amount of *food* grown in the United States last year came from Victory Gardens.

Old females—not males—are usually the leaders among all herds of African *antelopes*; the females also stand guard when a herd is resting or feeding.

When the war is over *camouflage in reverse* will be used to make factory and other roofs conspicuous and attractive to the airplane-travelling public.

Sunflower seed, now one of Argentina's principal crops, will yield some 1,200,000 tons this year, which will produce a large surplus of edible oil for export.

Wheat *cereal* is reported used in Mexico in a sand-blasting machine to clean airplane engine parts; the starch is removed by boiling and the residue ground with steel cutters which leave sharp corners on the particles.

During 1943, in industries in the United States, 18,400 *workers* were killed, 1,700 totally and permanently disabled, 108,000 permanently crippled, and 2,225,000 others temporarily laid up an average of 15 days each.

The *population* of Russia was reported as about 170,000,000 in 1939, an increase of 55% since 1900 in spite of wars and revolutions; it may reach 250,000,000 by 1970, according to a new study of the League of Nations.

Nearly 5,000 workers from the *Bahama islands* helped on American farms in 12 states last year; about three-fourths of them remained for winter work on Florida truck farms, and additional workers are now arriving.

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belly tanks in which they ordinarily carry extra gasoline for long-range missions. As they struck the ground, a patch of red flame, about as long as a small cargo ship or a big warehouse, leaped up to treetop height, and burned away furiously for several minutes.

This particular flame weapon represents an improvisation that has been turned into a regular means of attack. At first, pilots would simply jettison their detachable belly tanks on any target that seemed worth the attention, then circle round and ignite it with incendiary bullets or small-caliber cannon shell. Now, each tank carries a detonator to ignite it, making the return trip unnecessary.

Another new trick with flame was demonstrated that would have earned an approving nod from Callinicus, who used Greek fire to stop the Moslems at the walls of Byzantium. One form of fuel used in flame-throwers now includes some kind of solid incendiary particles, which make denser snowflakes of fire within the general sheet of flame. These persist in their burning after the rest of the flame has gone out.

Still another fire-weapon, repeatedly demonstrated, has been white phosphorus. This is used in artillery shells, airplane bombs, mortar missiles and hand grenades. The bursting charge is not very large, so that fragments of the flaming stuff fall in an arcing shower, dropping vertically into slit trenches and foxholes. A man with a phosphorus burn in his flesh is as thoroughly disabled as if he had been hit with a shell fragment.

With Breath of Evil

Tales of birds with breath of evil that slew men by merely flying over them would be dismissed nowadays as fables belonging to the Arabian Nights. Added stories of cloaks that can protect against the peril would only increase the feeling of fantasy.

Yet this is one thing that the touring group of writers saw with twentieth century eyes when a plane roared low over a body of troops on a roadside. From the rear of the plane issued a cloud of brown mist that settled quickly towards the ground.

Each of the soldiers did what looked like a brief dervish dance. At the end of about five seconds they all stopped abruptly, crouching partly down to the ground.

Closer inspection showed that each



FOILS BLISTER-MAKERS—Every American soldier in the fighting zones carries, along with his gas mask, two of these covers, which are built exactly like enormous waxed-paper envelopes with transparent ends to see through. A properly trained man can whip his envelope out, expand it, and cover himself with it in five seconds.

man had whipped out of his gas-mask carrier a kind of personal envelope, spread it open with two swift swings of his arms, and then slipped it over himself. The top part consisted of transparent plastic sheeting and the rest of the garment of an impervious brown paper. Having served its purpose in warding off one cloud of blister-gas spray the whole thing is cast aside. It is cheap and easily replaced.

While crouching under the shelter of this protecting envelope the soldier adjusts his gas mask.

Of course the spray used in the demonstration was not mustard gas or any of the war blisters. It was just a convincing-looking imitation. But the protection would have worked as well had the game been "for keeps."

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ENGINEERING

"Dream" Refrigerator Has Almost Everything

► ONE OF THOSE "dream" gadgets for the post-war household seems to be embodied in patent 2,347,985, granted to C. G. Beersman of Evanston, Ill., It has just about everything. The door is