

War Pilots Learn to Fear Ground Fire

Anti-Aircraft Guns in Spain and China Bring Down Planes

THE wars in Spain and China are teaching military flyers the world over a new respect for anti-aircraft fire from the ground. In Spain, it is said, five ships are shot down from the ground for every one brought down in air combats with other planes. In China the reports are that virtually the only Japanese air casualties have been those resulting from ground fire.

By WAYNE THOMIS

dred yards of a battery of four of these new German guns when they opened up on a French airplane flown by nationalist pilots. The guns fired twelve shots in four seconds, which is at the rate of 180 rounds a minute for each gun, a speed about 50 per cent greater than any other known anti-aircraft cannon now fire.

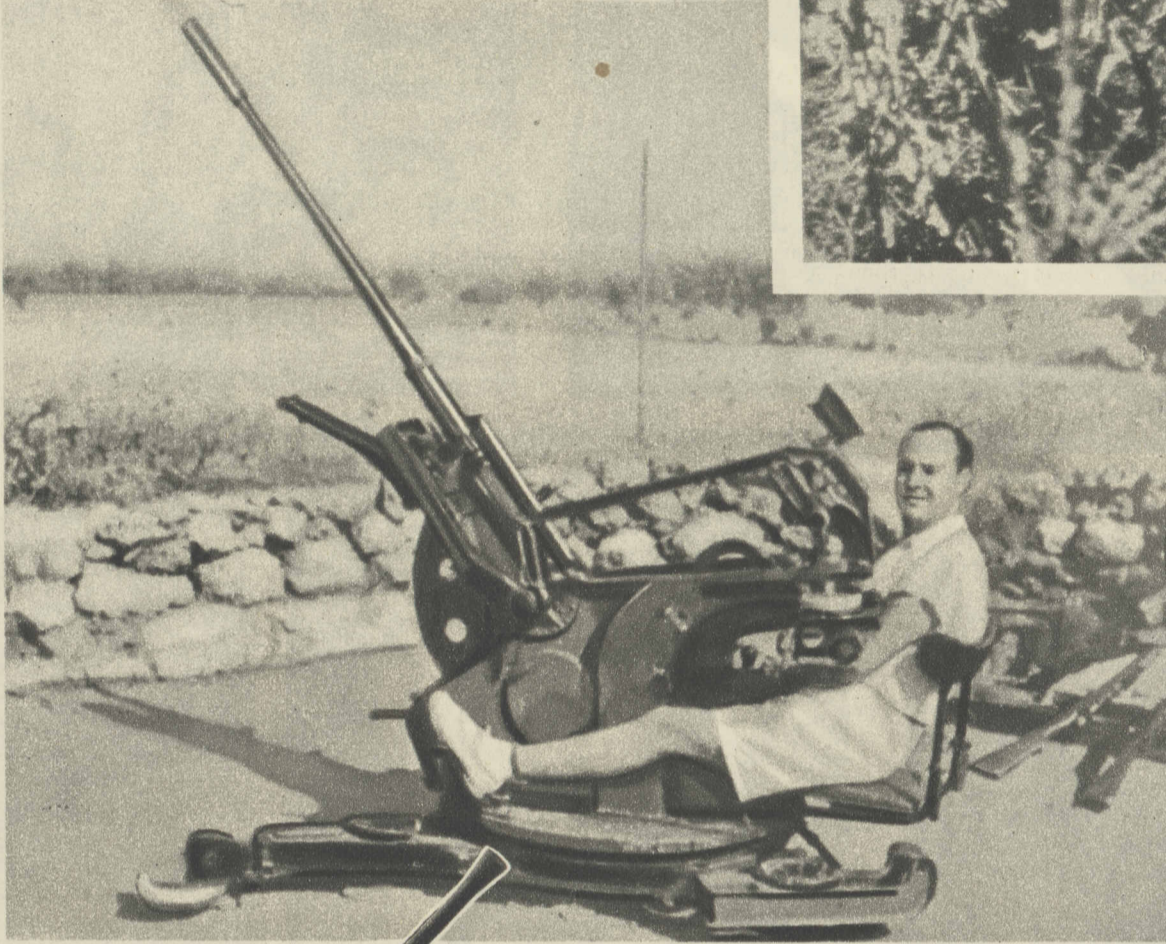
The machine was at a height of 2,000 feet when the battery opened fire.

While accurate information as to caliber, muzzle velocities, and the weight of the shells thrown by the German guns is lacking, it is known that they resemble to a large degree the light automatic cannon built by the Bofors company of Sweden, which fire 25-millimeter and 40-millimeter

Even discounting the accuracy of these reports, which are not confirmed by actual figures from any of the combatants, it is apparent that the armament manufacturers of the world have not been idle during the twenty years which have elapsed since the World war. They very evidently have produced some deadly and extraordinarily accurate weapons with which to deal with air raiders.

Both in China and Spain the greatest success has been enjoyed by anti-aircraft crews using light semi-automatic cannon which fire explosive shells at relatively high rates of speed. These weapons have an extreme range of about two miles but are unusually accurate within their limits. Chiefly they are used against low-flying planes, machines which raid at altitudes between 500 and 3,000 feet—and since most of the flying both in Spain and China is low flying, the anti-aircraft gunners are reaping a harvest.

All these precision arms are, of course, of European manufacture. The Skoda company of



(Acme photo.)

One of the new German anti-aircraft cannons which are being tested in the Spanish war. This is a quick-firing gun, able to throw three shells a second and built so that instantaneous corrections of aim can be made by the gun pointer. This is one of the light 20-mm. type cannons, firing a shell weighing just under one pound.

be followed by the gun pointer. This fact, coupled with the new and highly accurate range-finding devices now available for ground crews, accounts for the accurate shooting possible with these weapons.

The shells for these guns weigh from two to four pounds each and consequently can carry quite an explosive charge. They are of a type which explodes on contact, but they also can be set so that they will explode within a given time limit if no target is struck.

This is done to eliminate the possibility of their causing damage among troops from which they are fired. Unless they explode in the air they might fall back into a city from which they are fired by ground defenders and cause as much damage as aerial bombs of the enemy toward which they have been fired.

These automatic cannons are far more efficient than machine guns. Many machine gun bullets might pass through an airplane's wing or fuselage without causing



(Associated Press photo.)

The gun manned here by a Chinese crew is one of the latest type Bofors automatic cannons, used chiefly as anti-aircraft weapons. It is of 25-mm. caliber, capable of firing from 150 to 180 times a minute.



The result of anti-aircraft fire—flaming destruction of a Japanese bombing plane over Nanking. The photograph was taken from the roof of the Yangtze hotel during an air raid in the last week of September.

any serious or disabling damage. But one shot from the heavier explosive shell usually is sufficient to bring down an airplane. While a machine gun bullet drills a minute hole through a wing, the shell smashes a gaping hole and destroys structural members.

Ordnance officers say the new light automatic cannon are unusually rugged, to withstand hard usage in the field, and extremely simple in construction, which means that their maintenance is easy. They are capable of long-sustained rapid firing without overheating, and the barrels are of special steel which, with the powders used in their shells, allows them great freedom from fouling.

They also are light enough to be transported rapidly and easily from one point to another on small motor trucks or even by hand if this becomes necessary. Their mobility means that they can quickly be concentrated at danger points.

The Bofors guns are used almost exclusively by the Chinese for their ground defenses, especially at Nanking. The Bofors gun is small enough to be easily

concealed, and civilian observers say that rooftops, small open parks, fields of grain and hay, and even open road crossings are used as gun emplacements.

The Chinese crews were slow to learn the technique needed for serving the gun rapidly, but gradually are picking up this knowledge as the Japanese air raiders continue their periodical bombardments. A number of the slower, more obsolete Japanese airplanes engaged in bombing Nanking have been knocked down by the anti-aircraft cannon.

lighter quick-firing guns. And the still heavier guns on permanent beds have been missing altogether. Immobility, great cost, slow rate of fire, and slow speed of correction of these heavier weapons probably are other reasons for their passage from popularity.

Automatic rifles and machine guns of the .303, .30, and .50 calibers have become increasingly employed as additions to the anti-aircraft batteries both in China and Spain. The chief difficulty with these weapons, which fire solid slugs, lies in the limitation of range. They are not accurate against airplanes flying much above 2,000 feet.

Nevertheless the nationalist forces in Spain have placed their entire dependence upon such guns and have scored some success with them. The machine guns, however, are not effective against the bombers, which seldom fly below 3,000 feet. They are at their best against ground-strafting planes.

In Spain most of the machine guns are of German construc-



The same plane (top of photograph) near the ground on its fatal plunge. Below it can be seen the smoke spout of a bomb dropped from another Japanese bomber high overhead.

Photographs reproduced on this page show how one of the Japanese raiders was shot down in flames by a gun crew on the ground during one of the early raids on the capital.

Probably because of the fact that most of the air bombing and fighting in Spain and in China has been confined to the air levels close to the earth—reports are that seldom do any of the ships fly above 10,000 feet, with most of the flying down below 3,000—the ground defenders have ignored the larger caliber anti-aircraft weapons.

The three, four, and five inch cannon of the World war are almost entirely discarded for the



This picture was snapped less than a second after photo No. 2. The plane is almost into the ground.

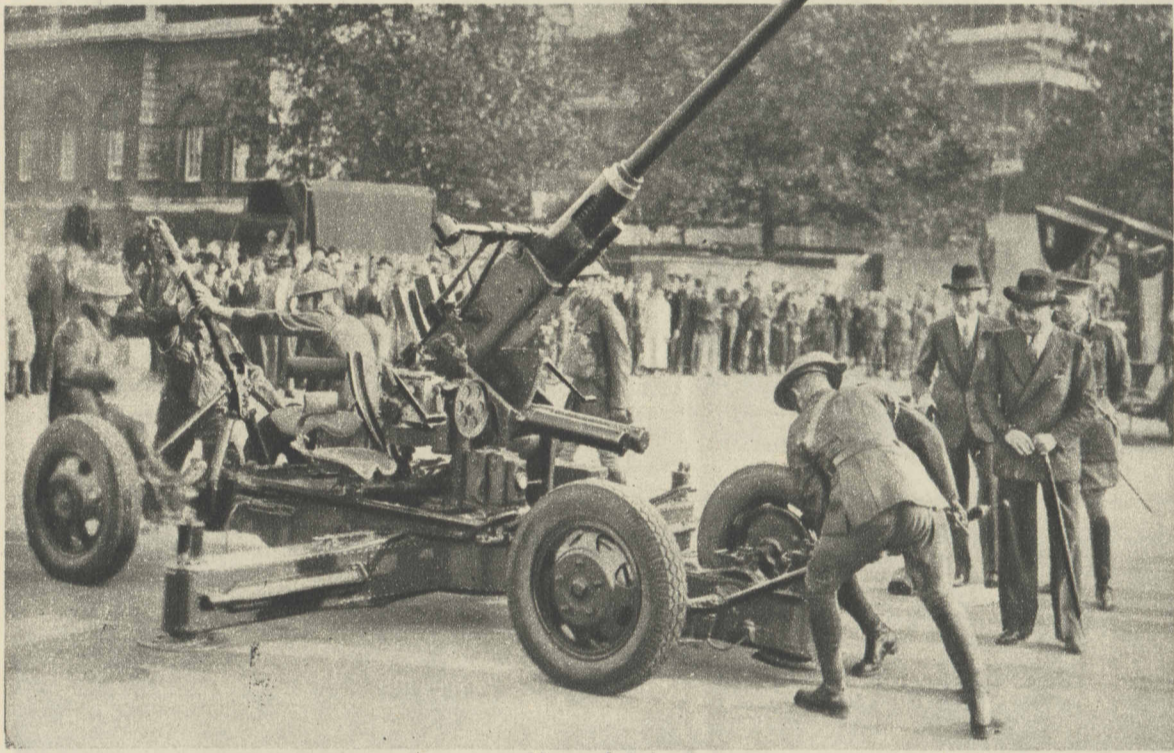
(Associated Press-Paramount News photos.)

tion, with a few Bren guns from Czechoslovakia. The weapons used against air raiders are specially speeded up to fire up to 1,000 bullets a minute. The firing of these weapons is usually confined to bursts of twenty or thirty, however, because they tend to become overheated with sustained firing.

The Franco forces are using the German guns, and the nationalists have been equipped with the Bren and with a few Russian-built machine guns of inferior performance.

In China the Japanese have used German machine guns almost throughout, but the Chinese forces have used a conglomerate mixture of British, German, American, Swedish, and Italian automatic arms. These have been purchased wherever and whenever it was possible. Lewis and Browning guns seem to predominate.

Exigencies of warfare, which was forced upon them at a time somewhat earlier than they had hoped for, have driven the Chinese to the use of these machine guns as auxiliary batteries because their efficient automatic cannon are relatively few. The machine guns were used in defending Shanghai from air attack as well as ground attack, and in many instances the same gun would be used in a dual rôle within an hour.



(Acme photo.)

One of the 1,700 Bofors guns ordered from the Swedish armament works by the British for the air defense of the great manufacturing and commercial centers of England. This is one of the 25-mm. guns mounted on rubber-tired carriage for quick movement from one threatened point to another. Leslie Hoare-Belisha, war minister for England, is inspecting this gun.

Czechoslovakia and the Krupp works in Germany are supplying most of the guns in use in Spain. These guns are in the hands of General Franco's rightist troops, and this fact has accounted for the absence of news dispatches telling of nationalist raids over cities held by Franco, while there have been almost daily stories of rebel raids bombing nationalist targets.

The first shots bracketed the target, Sawyer said, and the corrections which followed put the small explosive shells right into the airplane, which was literally blown out of the sky. He declared it was an astounding bit of shooting, particularly since

explosive shells at a rate of about 150 rounds a minute.

Each shell fired from such cannon, both the Bofors and Krupp guns, is a tracer—in other words, it leaves a fiery trail by night and a gray smoke trail by day, so that its trajectory may

Modern Hair Styles Inspired by Art of 200 Years Ago

(Continued from page one.)

and as a young student of art, he painted beautiful ladies. These were not the customary robust goddesses of many of his contemporaries, but slender, fragile, aristocratic creatures with small and finely molded features.

He emphasized the charm and distinction of beautifully arranged hair. He combined simplicity with whimsical fancifulness, the hair drawn away from the face and curling in soft tendrils high on the head, on the neck, or at the sides. In any case the head of the woman he immortalized presented a beautiful picture at any angle.

The man who thus portrayed gorgeous femininity in such a charming manner was none other than Antoine Watteau, who was born in 1684 and who died in 1721, creator of master-

pieces such as "A Lady at Her Toilet," "The Music Party," "La Finette," and "The Dance."

Those captivating coiffures with which he adorned his ladies so deftly with his magic brush more than two centuries ago today have become the inspiration for the very latest in hairdresses. The coiffures pictured upon page one came from Paris, but they have been executed in Chicago. They originated in the mind of a Parisian coiffeur who discerned in the paintings of Watteau a hitherto unexploited field of beauty. Watteau, it should be borne in mind, was particularly partial to the hair arrangement that revealed the rounded line of the nape of the neck, with the hair clustered casually on the crown.

The French stylist who created these newest coiffures, noting the current fashion empha-

sis on the small waist, the firm, high bosom, and the general trend toward greater elegance in dress, predicts that the modern hairdresses will recapture the soft, delightfully feminine quality of those portrayed by Watteau.

It seems a sound prediction. The feminine mood in fashion experienced a sharp decline in the years immediately after the World war. It was a period which produced such ugly and now happily passé phenomena as the flat figure, the knee-length skirt, and the boyish bob. The 1930s became a turning point, and each subsequent season has seen a stronger trend toward clothes, hats, and coiffures of decidedly feminine inspiration. This trend is climaxed this season. In all phases of fashion we witness greater stress on femininity than has been observed for two decades.

The "ladylike" in costumes, conduct, and coiffures is definitely reestablished. The change in hair styles is revolutionary but will hardly be adopted overnight. The coiffures shown on page one are not all extreme. Their creator compromised with some hair arrangements for the woman who wishes to be conservative as well as for the one who dares to skip the transitional stage. All of these hairdresses permit variations. The conservative woman can have the high-swept line modified to suit her taste and her individual needs.

Interesting enough, the high line is becoming both to the mature and the youthful. The delicious line of the nape of the neck is especially charming on the very young. The mature woman will like the high, beautifully executed hairdress for

quite another reason. Her hair, perfectly and not too fancifully groomed, and swept high, attracts the eye. The fine lines and faulty contours of advancing years will seem less noticeable.

Hair must gleam in its own beautiful fashion this year. It must be brushed and burnished until it would put satin to shame. It must be dressed to perfection. It may, if the mood and the fashion suit, be ornamented. An opulent orchid, perhaps; a frou-frou of feathers; a girly-girly hair bow, or maybe a silly but smart whimsy in the way of gilt or glass, or anything gaga.

For the Christmas festivities and the New Year gayeties a new coiffure is an excellent suggestion. Any new, nice hairdress is a spirit lifter. But if it is high, different, and definitely in the feminine tradition, so much the better.

The absence of the anti-aircraft guns in the hands of the defenders of Madrid has left them virtually defenseless to air raids. The nationalists have discovered to their discomfiture and sorrow that squadrons of fighting planes cannot defend the city because they cannot always patrol the skies, no matter how strong they may be. Franco's raiders regularly have appeared when none or very few nationalist ships were aloft to oppose them.

It is said that the very best of Franco's anti-aircraft guns are the Krupp weapons sent in with German crews and observers to watch them in action. An American observer, E. O. Sawyer of Pasadena, Cal., who passed through Chicago a few days ago, reported an eyewitness account of the effectiveness of these weapons.

He said he stood within a hun-