POPULAR AVIATION

FEBRUARY 25c
In Canada 30c

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Bombing in the World War

by ALFRED CELLIER

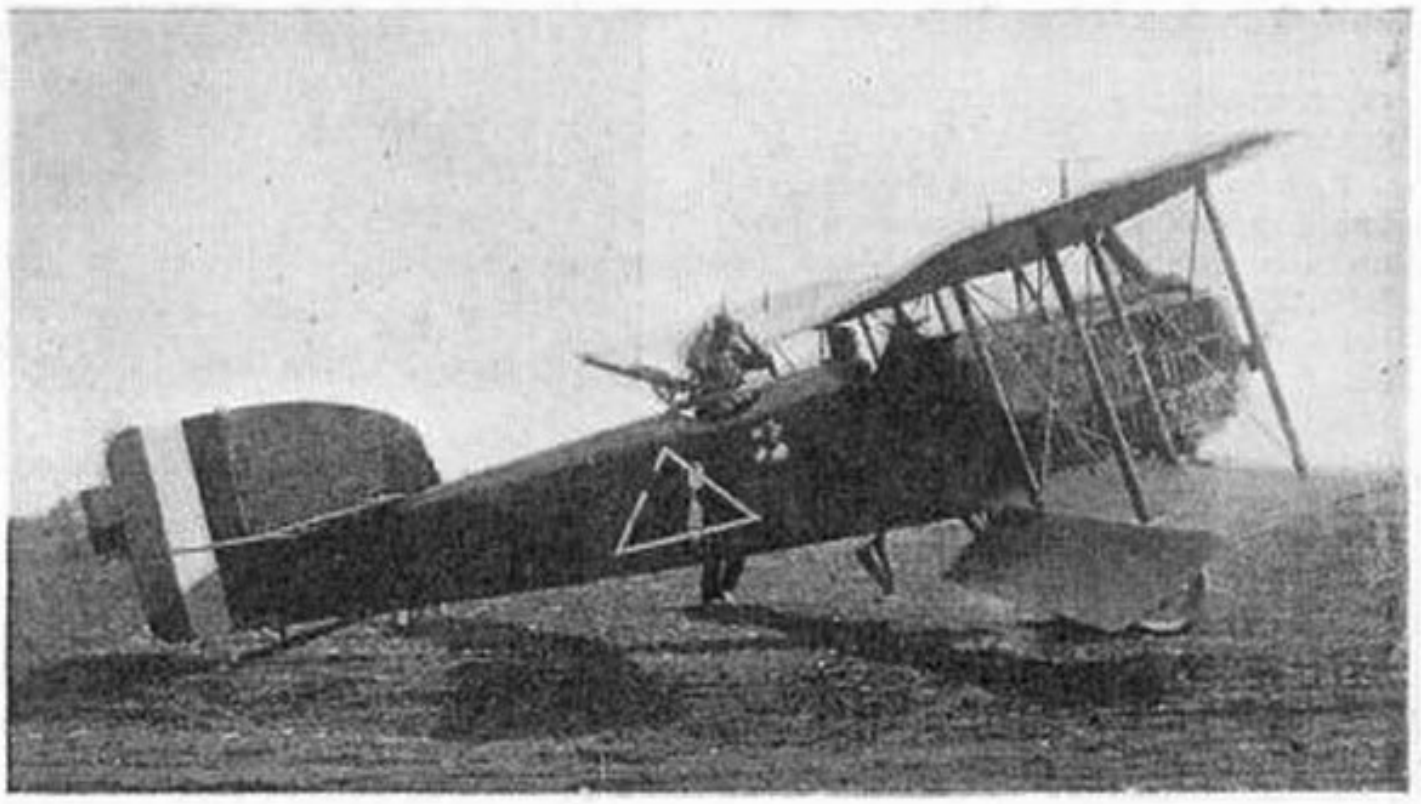
This interesting article tells just how bombing rapidly developed from comparative obscurity to one of the most important arms of the air-service.

THOUGH the airplane, in the early days of the World War, was used primarily for reconnaissance with little thought given to its armament, this was not so in the case of its employment as a bomber.

The first bombing in the World War started during that hectic month in August, when Lieutenant Immelmann, flying a Taube, released some small bombs on Paris. Aerial Bombing, however, actually dates back to 1911 when the Italians used this mode of warfare during the Tripolian Campaign and Immelmann adopted their technique. All of these early bombs, of course, were dropped by hand or hurled over the side of the airplane.

The first aerial bombs were generally homemade affairs or constructed from rejected artillery shells. Flechettes were also used in the beginning. These were pieces of steel about as long as a pencil, one end of which was sharpened. About two-thirds of the length of the Flechette was grooved, allowing it to fall in a straight vertical path.

Although frightful wounds were produced, their radius of destruction was so limited that they were replaced by explosive bombs. In any case where a column of cavalry was attacked by Flechettes, it was found that they penetrated the steel helmets of the riders, and went right through both the bodies of the soldiers and the horses.



A Type 14B2 Breguet bomber of the 96th American bombardment squadron ready for a trip over the lines.

With the necessity for greater accuracy and with the constant increasing size of bombs, it became imperative to devise some sort of bomb-dropping gear. Up to the advent of such apparatus, the bombs were carried vertically in the interior of the airplane by racks. With the new gear, however, it was possible to provide bomb racks out under the wings; and in the larger bombers, to be carried very much as in the present manner.

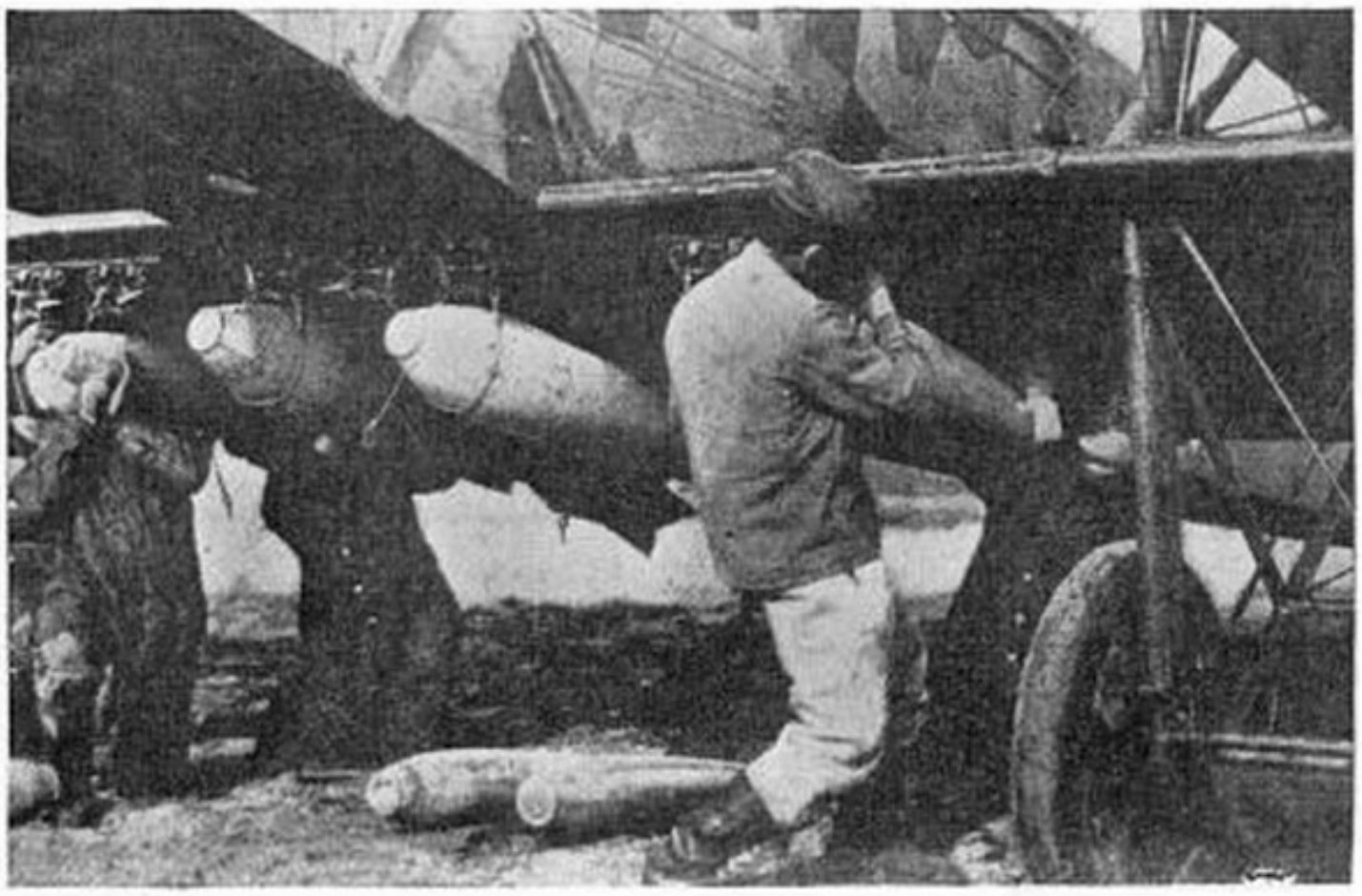
Recognizing the value of long distance bombing, the Germans succeeded, three months after the outbreak of war, in reaching the British coast and dropped several bombs near Dover. This took place six months before the first Zeppelin raid on England.

Early in 1915, bombing started to become stabilized in comparison with the other branches of aviation. The first night raid took place at Dunkirk. Immediately afterwards, formations were employed for bombers for about a year previous to any such formations by pursuit units.

Sea vessels came in for their share of this early bombing, in spite of the general impression that no surface ships were attacked during war-time. In the first year and a half of conflict, the Russians bombed and sank a German destroyer. A German mine sweeper was sunk by a bomb from a British plane, the Turkish battleship "Barbarossa" was set on fire by aerial bombs, while four other smaller ships were bombed and sunk in the Sea of Marmora.

Besides the bombing raids engaged in by the Zeppelins, many such raids were made by airplanes in the year of 1916. Although these raids were not consequential, they were the foundation of the present day bombardment aviation. Some, without doubt, had no tactical or strategical value, such as the raid by the Bulgarian and Austrian air units on the camp of the Australian and French troops at Saloniki

This camp was severely damaged by the fire which broke out, but no attempt was made for ground strafing the troops during the confusion which ensued. No further attacks were made on the same objective during the re-



Loading the bomb racks of a Gotha bomber in preparation for a raid over the Allied lines.

building, which might have caused a change of location for the encampment. As a result, the effort was a complete military failure.

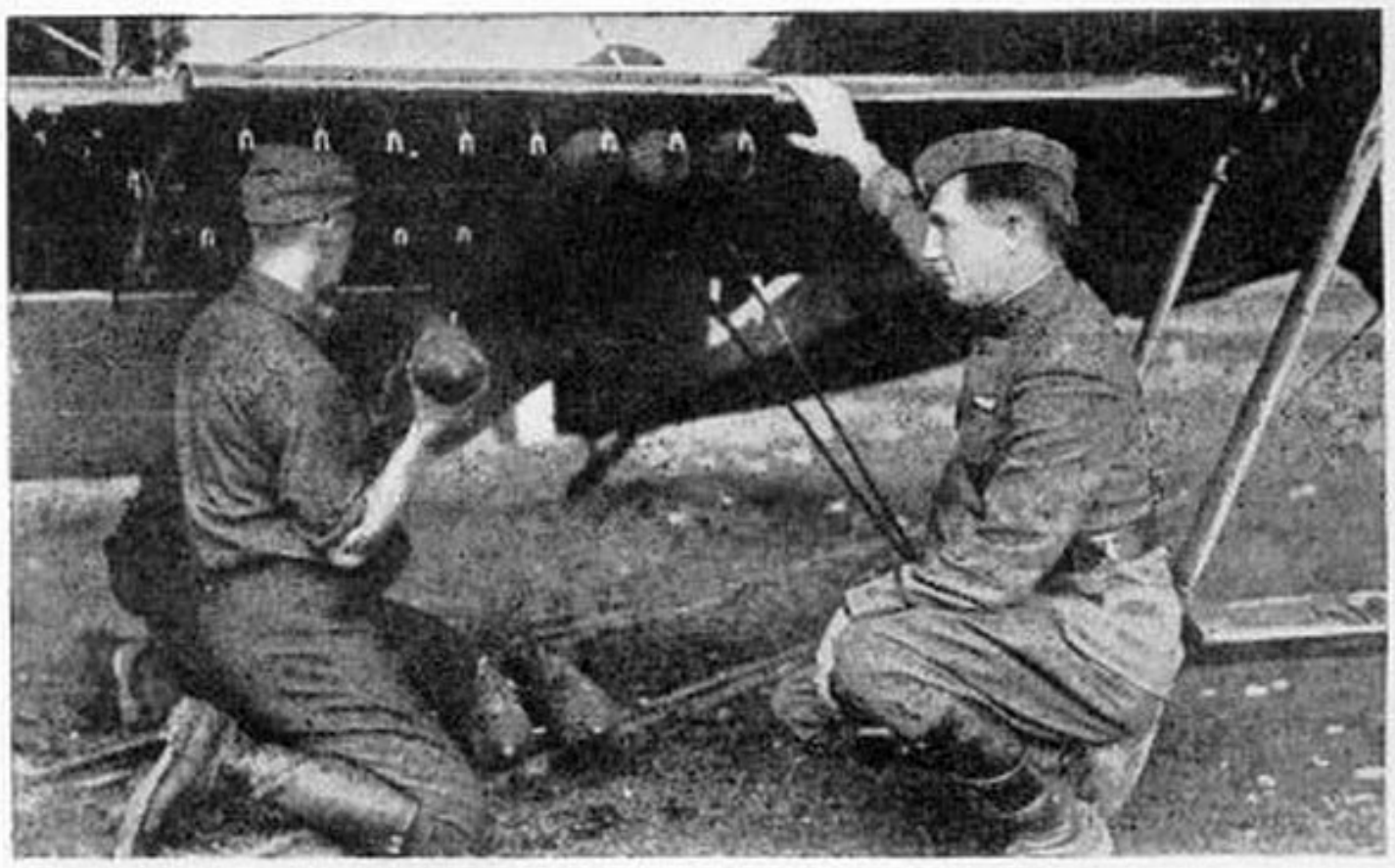
Shortly after this, three British naval airplanes made a trip of 300 miles in order to bomb Constantinople and Adrianople, still further north, in an attempt to destroy the large powder mills and the airdrome which were located there. The distance covered during this raid was a remarkable feat, but with the exception of demonstrating what might be expected of aircraft, no military damage of consequence was done.

French squadrons then engaged in a two day raid in an endeavor to break up the railhead at Nantillons and Brieulles. Most of the damage resulting from this raid was confined to the buildings of the city which suffered materially. Other raids of consequence during this year took place at Kantara, Egypt, where there were many casualties and also at Bar-le-Duc.

Toward the end of 1916, with larger bombs and better equipment, the attacks grew in intensity. During the attack on Mariakerke, sixteen Allied planes dropped thirty-eight 100-pound bombs and seventeen 65-pound bombs, while the Solvany works at Zeebrugge were attacked by seaplanes with bombs of a similiar type. The Germans, with their seaplanes attacked Calais, dropping bombs on the port and the cantonments. Another German raid of magnitude was made on Reval. Seaplanes were used which bombarded military works and war vessels in the harbor. One submarine was hit four times, but none of the surface vessels were sunk.

Whereas these attacks, up to 1917, were of little military value, the appearance of the Gotha and the Handley-Page, in that year really put bombardment aviation in a distinct service by itself. With a bomb carrying capacity of nearly a ton, these bombers were very formidable weapons. The Gothas proceeded to carry out many raids on the French and English seaports and cities.

On one particular daylight raid on Paris, the Gothas dropped fourteen tons of bombs on that city. The civilian populace bore the brunt of that attack. Scores were killed and wounded in the streets and in their homes, while many homes, schools and hospitals were destroyed.



Loading bombs on a Breguet bomber of the 96th American squadron, making ready for a trip of destruction over the German manufacturing centers in the Ruhr district.

The raids on London took place with thirty to forty of these huge machines. The propriety of German bombing tactics allowed that any enemy city was a military target and they maintained a continuous war against helpless civilians. These ruthless raids, always leaving maimed and killed, caused the British to keep protective squadrons at home that should have been in France. On one raid, however, one of the home defense squadrons, engaged in defending London from these attacks, shot down seven German Gothas.

In addition to the Zeppelin raids on England, the German bombing planes made fifty-seven raids. The casualties resulting from these attacks, amounted to 1,117 men, women and children killed, and 2,886 injured. Of these, only 296 of the dead and 521 of the injured were soldiers.

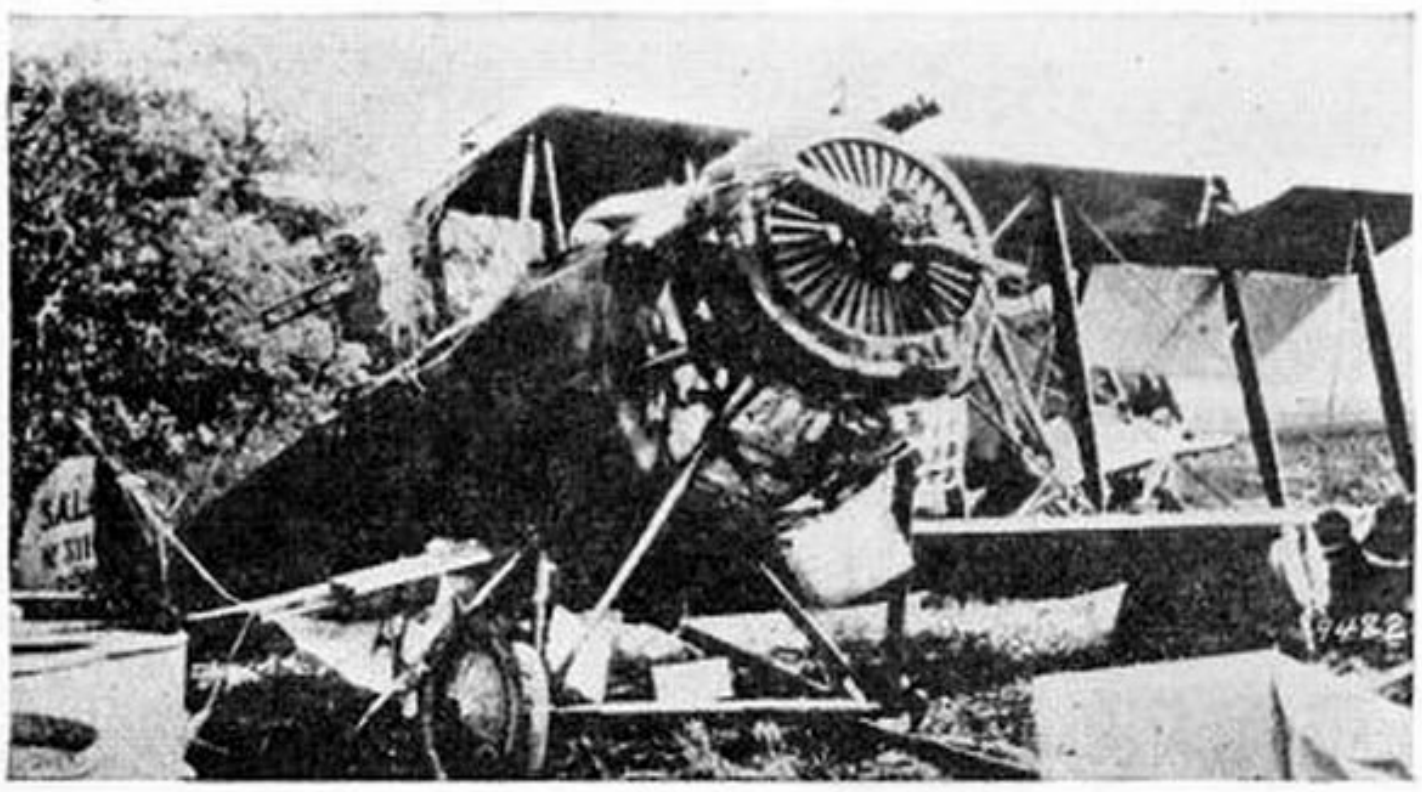
The Zeppelins, made 51 raids on England. These resulted in 498 men, women and children being killed and of this group only 58 were soldiers.

The advent of the Handley-Page bomber was a disheartening affair for the British. As with all other airplanes sent to the front, it was flown across the channel only to alight on the German airdrome at Laon. Whether it was flown there by mistake or by treachery, has never come to light to this day.

Its capture gave the Germans the inspiration for the Gotha bomber. The constant flying of it and the sham attacks by their scouts, brought out its good and weak spots, so that they knew what they were up against. After that lesson, the British never let an experimental plane get out of England until it was on a full production basis.

In spite of that first misfortune, they proved their worth many times over. One of the most successful raids by a ship of this class took place in 1918. Starting out from England to Paris, it flew down the Rhone valley to Marseilles then to Pisa and finally to Rome, Italy, where it landed for fuel. Leaving Rome, it flew over Naples and Oranto to Salonika where were based other Royal Air Force units. There, preparations were started for a raid on Constantinople, 250 miles distant. Their objective was reached after two and a half hours of night flying over hostile territory. Over the sea of Marmora, they released four bombs on the battle cruiser "Goeben" from an altitude of only 800 feet.

Hits were made on two submarines and the transport "General," which was the headquarters of the German General Staff, was set on fire. Two bombs also hit the Turkish War Office doing considerable damage. In all there were thirty bombs loosed over the capitol. It was found, on the return, that the plane had been struck in twenty-six places by shrapnel, and one of the power-plants was so badly disabled



After the German bombing raid on the 96th American squadron, this Breguet bomber was wrecked. The next night, the 96th squadron paid the same sort of raid on the German airdromes.

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Bombing

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that most of the journey home was made on one engine.

The last year of the conflict saw bombing in full swing. It was a year of reciprocal bombardment. Constant urgent calls from the military for long distance raids resulted in the British organizing the Independant Air Force, which was composed entirely of bomber squadrons.

The French organized the Air Division, which consisted of two pursuit brigades of twenty-four squadrons, and two bombardment brigades of fifteen squadrons, with three protection squadrons of big three-seater airplanes. These latter, however, were too slow and cumbersome to ward off the attacks made by the fast German pursuit craft, and generally bore the brunt of the battle.

In one such case, three of these ships, which were the only pursuit protection with the bombers, were the first to go down under the onslaught. But as the raids were carried further inside the lines, it was impossible for the smaller pursuit ships, with their short cruising radius, to accompany the bombers the entire distance. Arrangements were therefore generally made for this protection to meet the bombers on the return home.

When it was possible to locate them on the return, the bombers more often had company in the shape of fifty to sixty Albatros and Fokker scouts. It would be a fortunate day indeed, if one-third of them managed to get that far back, and generally all of the crews of these would be wounded and their airplanes riddled with bullets.

Personnel of the bombardment units suffered heavier losses than the pursuit division. The casualties of our own First Day Bombardment Group were twice that of the First Pursuit Group, which incidentally bore the brunt of our air fighting, inasmuch as it was the first of our combat units on the front. This was true in all of the air services, with the possible exception of the German air force, whose losses in pursuit were undoubtedly higher than that of their bombardment.

The achievements of the American First Day Bombing Group on the front are interesting. The group, as a whole, was not completed until October, 1918. In June, the 96th Squadron started operations and up to the time of the Armistice had dropped 649 tons of bombs. The 20th Squadron and the 11th joined the 96th in September, when the Group started to function.

They dropped respectively, 279 tons and 223 tons.

The 166th Squadron joined up in October, and kicked their tail gates for a 113 tons of bombs in the short time that they were on the front. These squadrons, operating as a group, accounted for forty-six confirmed victories over enemy aircraft. Their most important targets during their last days on the front were at Montmedy, Longuyon, Dommary-Baroncourt, Conflans and Corny.

The Second Day Bombing Group, consisting of the 100th, the 163rd Day Bombing Squadrons and the 115th Night Bombing Squadron, had just been organized and was stationed on the Ourches airdrome when hostilities ceased. As a result it did not get to see any action.

During the last year and a half, single-seaters were utilized for low bombing against ground troops, as attack aviation at that time was unknown. The Germans, though, used a special type of two-seater for this purpose. A campaign against airdromes was instigated by the Allies, with a view of destroying German pursuit planes so that the bombers could work unhindered, and an effort was also made to neutralize German bombardment by destroying the bombers on the ground.

Night pursuit squadrons were organized to combat the menace in the dark. We had the 185th Night Pursuit Squadron, consisting of Sopwith Camels and attached to the First Pursuit Group. One of the most successful of the night squadrons was the 151st Squadron of the Royal Air Force. This Camel outfit accounted for twenty-one of the large German bombers in two weeks of night sorties.

This need for night pursuit grew out of the policy of the German air force to do most or all of their bombing at night. As a consequence, very little bombing was done by them during daylight hours and every effort was put to meet this new situation. The 185th squadron came into being during the Argonne-Meuse offensive. It had little time to operate and was handicapped by a shortage of pilots and airplanes, but succeeded on several occasions in making contact with the enemy.

The Germans were fully aware of the part to be played by night bombardment. Many factories were turned over to the air service to build these monsters, as the existing airplane factories were being taxed to their utmost. Squadrons on the front had to have replacements, and new units were continually going into the field. Bombers had to be obtained, and quickly.

The Essen Works was one of the first of the factories to be taken over. They were awarded a contract for three hundred machines of the giant R-type, fitted with six engines. Four of these engines were in two sets in the center, so they actually drove four propellers. These were armed with five machine guns.

Then, the Link-Hoffman Railway Carriage Works at Breslau was commandered to turn out the Giant Riesen four-engined bombers. The Albatros Works soon had their Giant R-1. This was another eight-seater with six Mercedes 260 horsepower engines which drove four propellers. The two center plants were pushers, while the wing

engines were tractors. This machine was a flying arsenal carrying six machine guns and two tons of bombs.

The Gotha firm then came out with their G-VII, G-VIII and G-IX, Friedrichshafen turned out the new G-IVa, A. E. G. came out with the G-IV, a new three-seater with a remarkable performance. Siemens-Schuckert R-8 bombers with three engines were beginning to be seen over the lines. The Zeppelin Five Engined Giant, with a useful load of 9,000 pounds, had already raided England and others of the same type had been attacked and shot down.

And to top it off, the Lizenz, nine-seater bomber, with a span of 140 feet, was riding the night skies with four Maybach 300 horsepower engines. Not content with that the Lizenz engineers had just completed plans for the same ship with six Maybach 500 horsepower engines. Had the war lasted longer it too would have become a reality, but it was too late now. Allied ships had broken up the famed Jagdstaffels and driven them from the air, so it remained for the Allied bomber crews to do the rest.

Just preceding the St. Mihiel offensive, the greatest concentration of aircraft was assembled, that was ever placed under one command. Although the American squadrons were being equipped as rapidly as airplanes and pilots became available, our air force at that time consisted of only seven observation squadrons, one day bombing squadron and twelve pursuit squadrons. Two other pursuit squadrons were serving with the British and were therefore not available.

The French, thereupon, placed at our disposal a large number of their squadrons, while a number of bombing squadrons of the British Independant Air Force also joined up. Shortly afterwards, and just before the drive commenced, some of our new units became available and these were hastily rehearsed in their part of the plan.

When the concentration was complete, this force consisted of 1,482 airplanes. They were all placed under the command of the Commander of the First Army Air Service, and consisted of 701 pursuit airplanes, 366 observation planes, 391 day bombardment and 91 night bombardment airplanes. At no time had there ever been so large a force of aircraft assembled on any front.

The moving of this force into advanced airdromes was accomplished with the utmost secrecy, as any marked concentration would immediately have aroused suspicions of the Germans. However, all units were in place several days ahead of the attack, which commenced on September 12th. Although it took only four days to complete the wiping out of the St. Mihiel sector, the air forces were compelled to operate the first three days in very unfavorable weather which caused all flying to be done under one thousand meters.

On the third day, many new enemy pursuit organizations were identified, and it became evident that they had been heavily reinforced. The day bombardment squadrons composed of American, French and British airplanes, which were penetrating well back into the rear areas, now began to suffer severe losses. The high winds and low clouds prevented any semblance of formation being flown, and the Germans were tenaciously attacking at every opportunity, endeavoring at the same time to cover their retreat.

The attack on the St. Mihiel salient added new laurels for the bombers. Much material damage had been done, and confusion in the rear of the enemy lines successfully prevented them from bringing up the much needed reserves and supplies. The most outstanding features of the employment of this large air force were the continous attacks made by brigades of nearly five hundred airplanes each. While one brigade was over the objective another would be taking off, while the third would just be returning and refueling. By this means a distant objective was subjected to an attack as continous as if done by heavy artillery.

The raids of the Independent Air Force and the French Air Division struck terror everywhere. In the attack on Fere-en-Tardenois, nearly 150 ships were in the air. The German supply depot in the woods was completely destroyed. Twelve of our large bombers went down in flames, their crews perishing with them, while six of the escorting pursuit were shot down. The Germans lost twenty scouts in attempting to ward off this attack. Other towns came in for their share of these attacks in the Ruhr district. Mannheim, Saarbrucken, Cologne, Frankfurt, Kaiserslautren, Karlsruhe and Treves soon learned to distinguish a bomber from a pursuit ship, 709 raids were made by the Independent Air Force. One hundred and eleven bombers were lost, while they destroyed 150 German scouts in the course of their combats, which is a good score considering that the bombers did not go out of their way to seek combat. That was one thing they could be sure of, trouble always came to them.

The long hoped for four-engined Handley-Pages did not reach the front until November. With their arrival it was expected to push the war still further back. Plans had been already made to bomb Berlin with them. This type had also been adopted by our own forces and two squadrons of them were composed of Americans. The fear of gas bombs being employed, as the bombers soared nearer and nearer in those last months, caused panic to reign in the capital of Germany. The Kaiser skipped to Holland and safety, and the citizenery decided it was no use for them to be the dead heroes, so they called it quits, while the bomber crews, who fought the greatest odds and suffered the heaviest casualties, went home without becoming aces.

END.

Balloon

(*Continued from page 114*)

this line, all the way down to H and mark these points O, A, B, C, etc. All of this layout work must be done very accurately to insure perfectly fitting gores and a round smooth balloon.

Starting at A, mark off distances equal to J'K', JK, LM, NP, etc., in such a way that the straight line passes right through the middle of these distances. Run a line through these points and you will have the exact shape of one of these lunes or gores. This lune of wrapping paper is now cut out and is used as a pattern for cutting the tissue. The job will be more accurate if the tissue is piled so that several sheets are cut at one time. Don't forget at this point that a selvage of about ¾ inch must be left all around the pattern to allow pasting surface.

The seams can be fastened with banana oil or rubber cement. If the latter, be sure to apply the rubber cement on both surfaces or it will be certain to come apart. Don't use paste containing water as a water paste will cause wrinkling and bulging.

And now for the heater that is to supply the warm air. Get some very thin asbestos paper at the hardware store or plumbing shop and roll it up to form a tube about one inch in diameter and four inches long. Seal at one end with asbestos paper and the tube is then attached to the paper cone that fits in the bottom of the bag. Three supports, made from music wire, support the tube in a vertical position.

The wire is attached by weaving it in and out like a pin in cloth, while the loop in the wire is for radiating heat before it reaches the glue where the wire is attached to the cone. The ends of these wires are then bent to a hook shape where they are extended to the top of the cone, and they must be made so that they will slip over a rattan ring which fits around the bottom of the bag. In short, the heater in the cone must be made so that it can be quickly detached. The cone slightly overlaps the opening in the bottom of the envelope.

The gondola has a diameter of about 1/14 the diameter of the envelope.

END.