

CHAPTER X

NEW METHODS AND HORRORS OF WARFARE

WHEN Germany embarked upon its policy of frightfulness, it held in reserve murderous inventions that had been contributed to the German General Staff by chemists and other scientists working in conjunction with the war. Never since the dawn of time had there been such a perversion of knowledge to criminal purposes; never had science contributed such a deadly toll to the fanatic and criminal intentions of a war-crazed class.

As the war uncoiled its weary length, and month after month of embargo and privation saw the morale of the German nation growing steadily lower, these murderous inventions were successively called into play against the Allies, but as each horror was put into play on the battlefield, its principles were solved by the

scientists of the Allied nations, and the deadly engine of destruction was turned with trebled force against the Huns.

This happened with the various varieties of poison gas, with liquid fire, with trench knives, with nail-studded clubs, with armor used by shock troops, with airplane bombs, with cannon throwing projectiles weighing thousands of pounds great distances behind the battle lines. Not only did America and the Allies improve upon Germany's pattern in these respects, but they added a few inventions that went far toward turning the scale against Germany. An example of these is the "tank." Originally this was a caterpillar tractor invented in America and adopted in England. At first these were of two varieties, the male, carrying heavy guns only, and the females, equipped with machine guns. To these was later added the whippet tank, named after the racing dog developed in England. These whippet tanks averaged eighteen miles an hour, carrying death and terror into the ranks of the enemy. All the tanks were heavily armored

and had as their motto the significant words "Treat 'Em Rough." The Germans designed a heavy anti-tank rifle about three feet longer than the ordinary rifle and carrying a charge calculated to pierce tank armor. These were issued to the German first line trenches at the rate of three to a company. That they were not particularly effective was proved by the ease with which the tanks of all varieties tore through the barbed wire entanglements and passed over the Hindenburg and Kriemhild lines, supposed by the Germans to be impregnable.

The tanks in effect were mobile artillery and were used as such by all the Allied troops. Germany frantically endeavored to manufacture tanks to meet the Allied monsters, but their efforts were feeble when compared with the great output opposed to them.

Before considering other inventions used for the first time in this war, it is well to understand the tremendous changes in methods and tactics made necessary by these discoveries.

Put into a sentence, the changed warfare

amounts to this: it is a mobilization of material, of railroads, great guns, machine guns, food, airplanes and other engines of destruction quite as much as it is a mobilization of men.

The Germans won battle after battle at the beginning of the war because of their system of strategic railways that made it possible to transport huge armies to selected points in the shortest possible time both on the eastern and the western fronts. Lacking a system of transportation to match this, Russia lost the great battles that decided her fate, Belgium was over-run, and France, once the border was passed, became a battlefield upon which the Germans might extend their trench systems over the face of the land.

Lacking strategic railways to match those of Germany, France evolved an effective substitute in the modern system of automobile transportation. When von Kluck swung aside from Paris in his first great rush, Gallieni sent out from Paris an army in taxicabs that struck the exposed flank and went far toward winning the first battle of the Marne. It was

the truck transportation system of the French along the famous "Sacred Road" back of the battle line at Verdun that kept inviolate the motto of the heroic town, "They Shall Not Pass." Motor trucks that brought American reserves in a khaki flood won the second battle of the Marne. It was the automobile transportation that enabled Haig to send the British, Canadians and Australians in full cry after the retreating Germans when the backbone of the German resistance was broken before Lens, Cambrai, and Ostend.

America's railway transportation system in France was one of the marvels of the war. Stretching from the sector of seacoast set apart for America by the French Government, it radiated far into the interior, delivering men, munitions and food in a steady stream. American engineers worked with their brothers-in-arms with the Allies to construct an inter-weaving system of wide-gauge and narrow-gauge roads that served to victual and munition the entire front and further serve to deliver at top speed whole army corps. It was

this network of strategic railways that enabled the French to send an avalanche clad in horizon blue to the relief of Amiens when Hindenburg made his final tremendous effort of 1918.

In its essentials, military effort in the great conflict may be roughly divided into

Open warfare,

Trench warfare,

Crater warfare.

The first battle of the Marne was almost wholly open warfare; so also were the battles of the Masurian Lakes, Allenstein, and Dunojec in the eastern theater of war, and most of the warfare on the Italian front between the Piave River and Gorizia.

In this variety of battle, airplanes and observation balloons play a prominent part. Once the enemy is driven out of its trenches, the message is flashed by wireless to the artillery and slaughter at long range begins. If there have been no intrenchments, as was the case in the first battle of the Marne, massed artillery send a plunging fire into the columns moving in open order and prepare the way for

machine gunners and infantry to finish the rout.

In previous wars, cavalry played a heroic rôle in open warfare; only rarely has it been possible to use cavalry in the Great War. The Germans sent a screen of Uhlans before its advancing hordes into Belgium and Northern France in 1914. The Uhlans also were in the van in the Russian invasion, but with these exceptions, German cavalry was a negligible factor.

British and French cavalry were active in pursuit of the fleeing Teutons when the Hindenburg line was smashed in September of 1918. Outside of that brief episode, the cavalry did comparatively nothing so far as the Allies were concerned. It was the practice on both sides to dismount cavalry and convert it into some form of trench service. Trench mortar companies, bombing squads, and other specialty groups were organized from among the cavalymen. Of course the fighting in the open stretches of Mesopotamia, South Africa and Russia involved the use of great bodies of

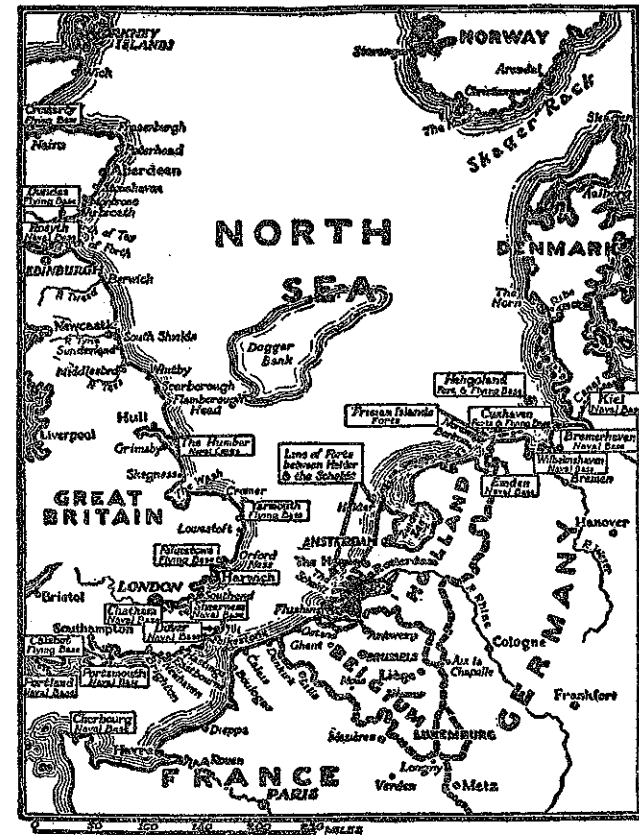
cavalry. The trend of modern warfare, however, is to equip the cavalryman with grenades and bayonets, in addition to his ordinary gear, and to make of him practically a mounted infantryman.

Trench warfare occupied most of the time and made nine-tenths of the discomforts of the soldiers of both armies. If proof of the adaptive capacity of the human animal were needed, it is afforded by the manner in which the men burrowed in vermin-infested earth and lived there under conditions of Arctic cold, frequently enduring long deprivations of food, fuel, and suitable clothing. During the early stages of the war, before men became accustomed to the rigors of the trenches, many thousands died as a direct result of the exposure. Many thousand of others were incapacitated for life by "trench feet," a group of maladies covering the consequences of exposure to cold and water which in those early days flowed in rivulets through most of the trenches. The trenches at Gallipoli had their own special brand of maladies. Heatstroke and a malarial

infection were among these disabling agencies. Trench fever, a malady beginning with a headache and sometimes ending in partial paralysis and death, was another common factor in the mortality records.

But in spite of all these and other discomforts, in spite of the disgusting vermin that crawled upon the men both in winter and in summer, both sides mastered the trenches and in the end learned to live in them with some degree of comfort.

At first the trenches were comparatively straight, shallow affairs; then as the artillery searched them out, as the machine gunners learned the art of looping their fire so that the bullets would drop into the hiding places of the enemy, the trench systems gradually became more scientifically involved. After the Germans had been beaten at the Marne and had retired to their prepared positions along the Aisne, there commenced a series of flanking attempts by one side and the other which speedily resolved itself into the famous "race to the sea." This was a competition between the



FORTS, FLYING AND NAVAL BASES ON THE NORTH SEA .

opposing armies in rapid trench digging. The effort on either side was made to prevent the enemy from executing a flank movement. In an amazingly short time the opposing trenches extended from the Belgian coast to the Swiss border, making further outflanking attempts impossible of achievement.

This was not the first time in history that intrenched armies opposed each other. The Civil War in this country set the fashion in that respect. The contending sides in the Great War, however, improved vastly upon the American example. Communicating trenches were constructed, leading back to the company kitchens, and finally to the open road leading back to the rest billets of the armies.

When night raiding commenced, it was speedily seen that straight trenches exposed whole companies of men to enfilading fire. Thereupon bastions were made and new defenses presented by zig-zagging the front-line trenches and the communicating ditches as well.

To the formidable obstacles presented by

the trenches, equipped as they were with sand-bag parapets and firing steps, were added barbed-wire entanglements and pitfalls of various sorts. The greatest improvement was made by the Germans, and they added "pill boxes." These were really miniature fortresses of concrete and armor plate with a dome-shaped roof and loopholes for machine gunners. Only a direct hit by a projectile from a big gun served to demolish a "pill box." The Allies learned after many costly experiments that the best method to overcome these obstacles was to pass over and beyond them, leaving them isolated in Allied territory, where they were captured at the leisure of the attackers.

Trench warfare brings with it new instruments. There are the flame projectors, which throw fire to a distance of approximately a hundred feet. The Germans were the first to use these, but they were excelled in this respect by the inventive genius of the nations opposing them.

The use of poison gas, the word being used

in its broad sense, is now general. It was first used by the Germans, but as in the case of flame throwers, the Allies soon gained the ascendancy.

The first use of asphyxiating gas was by the Germans during the first battle of Ypres. There the deadly compound was mixed in huge reservoirs back of the German lines. From these extended a system of pipes with vents pointed toward the British and Canadian lines. Waiting until air currents were moving steadily westward, the Germans opened the stop-cocks shortly after midnight and the poisonous fumes swept slowly, relentlessly forward in a greenish cloud that moved close to the earth. The result of that fiendish and cowardly act was that thousands of men died in horrible agony without a chance for their lives.

Besides that first asphyxiating gas, there soon developed others even more deadly. The base of most of these was chlorine. Then came the lachrymatory or "tear-compelling" gases, calculated to produce temporary or

permanent blindness. Another German "triumph" was mustard gas. This is spread in gas shells, as are all the modern gasses. The Germans abandoned the cumbersome gas-distributing system after the invention of the gas shell. These make a peculiar gobbling sound as they rush overhead. They explode with a very slight noise and scatter their contents broadcast. The liquids carried by them are usually of the sort that decompose rapidly when exposed to the air and give off the acrid gases dreaded by the soldiers. They are directed against the artillery as well as against intrenched troops. Every command, no matter how small, has its warning signal in the shape of a gong or a siren warning of approaching gas.

Gas masks were speedily discovered to offset the dangers of poison gases of all kinds. These were worn not only by troops in the field, but by artillery horses, pack mules, liaison dogs, and by the civilian inhabitants in back of the battle lines. Where used quickly and in accordance with instructions, these

masks were a complete protection against attacks by gas.

The perfected gas masks used by both sides contained a chamber filled with a specially prepared charcoal. Peach pits were collected by the millions in all the belligerent countries to make this charcoal, and other vegetable substances of similar density were also used. Anti-gas chemicals were mixed with the charcoal. The wearer of the mask breathed entirely through the mouth, gripping a rubber mouthpiece while his nose was pinched shut by a clamp attached to the mask.

In training, soldiers were required to hold their breath for six seconds while the mask was being adjusted. It was explained to them that four breaths of the deadly chlorine gas was sufficient to kill; the first breath produced a spasm of the glottis; the second brought mental confusion and delirium; the third produced unconsciousness; and the fourth death. The bag containing the gas mask and respirator was carried always by the soldier.

The soldier during the winter season in the

front line trenches was a grotesque figure. His head was crowned with a helmet covered with khaki because the glint of steel would advertise his whereabouts. Beneath the helmet he wore a close fitting woolen cap pulled down tightly around his ears and sometimes tied or buttoned beneath his chin. Suspended upon his chest was the khaki bag containing gas mask and respirator. Over his outer garments were his belt, brace straps, bayonet and ammunition pouches. His rifle was slung upon his shoulder with the foot of a woolen sock covering the muzzle and the leg of the same sock wrapped around the breech. A large jerkin made of leather, without sleeves, was worn over the short coat. Long rubber boots reaching to the hips and strapped at ankle and hip completely covered his legs. When anticipating trench raids, or on a raiding party, a handy trench knife and carefully slung grenades were added to his equipment.

Airplane bombing ultimately changed the whole character of the war. It extended the fighting lines miles behind the battle front. It

brought the horrors of night attacks upon troops resting in billets. It visited destruction and death upon the civilian population of cities scores of miles back of the actual front.

Germany transgressed repeatedly the laws of humanity by bombing hospitals far behind the battle front. Describing one of these atrocious attacks, which took place May 29, 1918, Colonel G. H. Andrews, Chaplain of a Canadian regiment, said:

"The building bombed was one of three large Red Cross hospitals at Boulenes and was filled with Allied wounded. A hospital in which were a number of wounded German prisoners stood not very far away.

"The Germans could not possibly have mistaken the building they bombed for anything else but a hospital. There were flags with red cross flying, and lights were turned on them so that they would show prominently. And the windows were brilliantly lighted. Those inside heard the buzz of the advancing airplanes, but did not give them a thought.

"The machines came right on, ignoring the

hospital with the German wounded, indicating they had full knowledge of their objective, until they were over a wing of the Red Cross hospital that contained the operating room on the ground floor. In the operating room a man was on the table for a most difficult surgical feat. Around him gathered the staff of the hospital and its brilliant surgeons. Lieutenant Sage of New York had just given him the anaesthetic when one of the airplanes let the bomb drop. It was a big fellow. It must have been all of 250 pounds of high explosive.

"It hurtled downward, carrying the two floors before it. Through the gap thus made wounded men, the beds in which they lay, convalescents, and all on the floors came crashing down to the ground. The bomb's force extended itself to wreck the operating room, where the man on the table, Lieutenant Sage, and all in the room were killed. In all there were thirty-seven lives lost, including three Red Cross nurses.

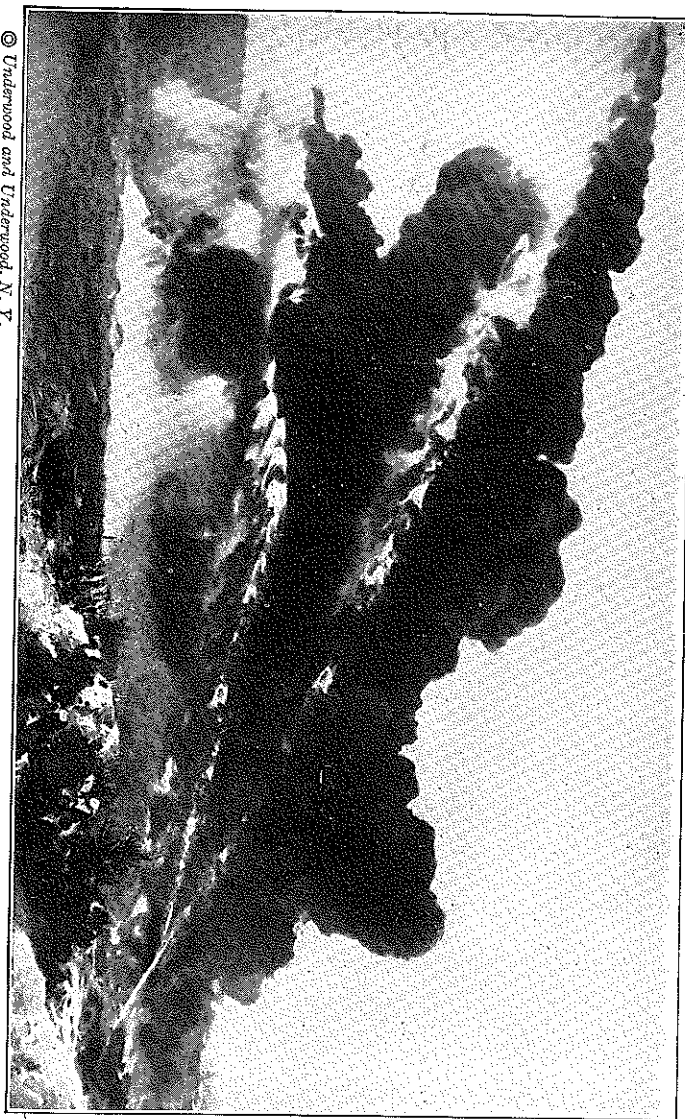
"The building caught fire. The concussion had blown the stairs down, so that escape from

the upper floors seemed impossible. But the convalescents and the soldiers, who had run to the scene of the bombing, let the very ill ones out of the windows, and escape was made in that way.

"And then to cap the climax, the German airplanes returned over the spot of their ghastly triumph and fired on the rescuers with machine guns. God will never forgive the Huns for that act alone. Nor will our comrades ever forget it."

The statement of Colonel Andrews was corroborated by a number of other officers.

To protect artillery against counter-fire of all kinds, both sides from the beginning used the art of camouflage. This was resorted to particularly against scouting airplanes. At first the branches of trees and similar natural cover were used to deceive the airmen. Later the guns themselves were painted with protective colorations, and screens of burlap were used instead of branches. The camoufleur, as the camouflage artist was called, speedily extended his activities to screens over highways,



© Underwood and Underwood, N. Y.
THE MADE-TO-ORDER INFERNO OF THE FLAME-THROWER
 A "rain-of-fire" attack in the front-line trenches. This weapon was devised by the Germans and was apparently one of those pre-war inventions they had counted on to make their conquest easy. It was never as effective a weapon as gas, even when developed by the Allies, but its terrifying effect can be gauged by the illustration given.

preventing airmen from seeing troops in motion, to the protective coloration of lookout posts, and of other necessary factors along the fighting front. Camouflage also found great usefulness in the protective coloration of battle-ships and merchant vessels. Scientific study went hand in hand with the art, the object being to confuse the enemy and to offer targets as small as possible to the enemy gunners.

Crater warfare came as a development of intensified artillery attacks upon trench systems. It was at Dunajec on the eastern front that for the first time in modern war the wheels of artillery were placed hub to hub in intensified hurricane fire upon enemy positions. The result there under von Mackensen's direction was the rout of the Russians. When later the same tactics were employed on the western front, the result was to destroy whole trench systems with the exception of deep dugouts, and to send the occupants of the trenches into the craters, made by shell explosions, for protection.

It was observed that these craters made excellent cover and when linked by vigorous use

of the intrenching tools carried by every soldier, they made a fair substitute for the trenches. This observation gave root to an idea which was followed by both armies; this was the deliberate creation of crater systems by the artillery of the attacking force. Into these lines of craters the attacking infantry threw itself in wave after wave as it rushed toward the enemy trenches. The ground is so riddled by this intensive artillery fire that there is created what is known as "moon terrain," fields resembling the surface of the moon as seen through a powerful telescope. Troops on both sides were trained to utilize these shell holes to the utmost, each little group occupying a crater, keeping in touch with its nearest group and moving steadily in unison toward the enemy.

One detail in which this war surpassed all others was in the use of machine guns and grenades. The Germans were first to make extensive use of the machine gun as a weapon with which to produce an effective barrage. They established machine-gun nests at frequent in-

tervals commanding the zone over which infantry was to advance and by skillful crossfire kept that terrain free from every living thing. The Germans preferred a machine gun, water cooled and of the barrel-recoil type. The English used a Vickers-Maxim and a Lewis gun, the latter the invention of an officer in the American army. The French preferred the Hotchkiss and the Saint-Etienne. The Americans standardized the Browning light and heavy machine guns, and these did effective service. It was asserted by American gunnery experts that the Browning excels all other weapons of its type.

Two general types of grenades were used on both sides. One a defensive bomb about the size of an orange, containing a bursting charge weighing twenty-two ounces. Then there was a grenade used for offensive work carrying about thirty-two ounces of high explosives. The defensive grenades were of cast iron and so made that they burst into more than a hundred jagged pieces when they exploded. These wounded or killed within a radius of one

hundred and fifty yards. In exceptional instances, the range was higher.

The function of artillery in a modern battle is constantly extending. Both the big guns and the howitzers were the deciding factors in most of the military decisions reached during the war. Artillery is divided first between the big guns having a comparatively flat trajectory, and the howitzers whose trajectory is curved. Then there is a further division into these four classes:

Field artillery,

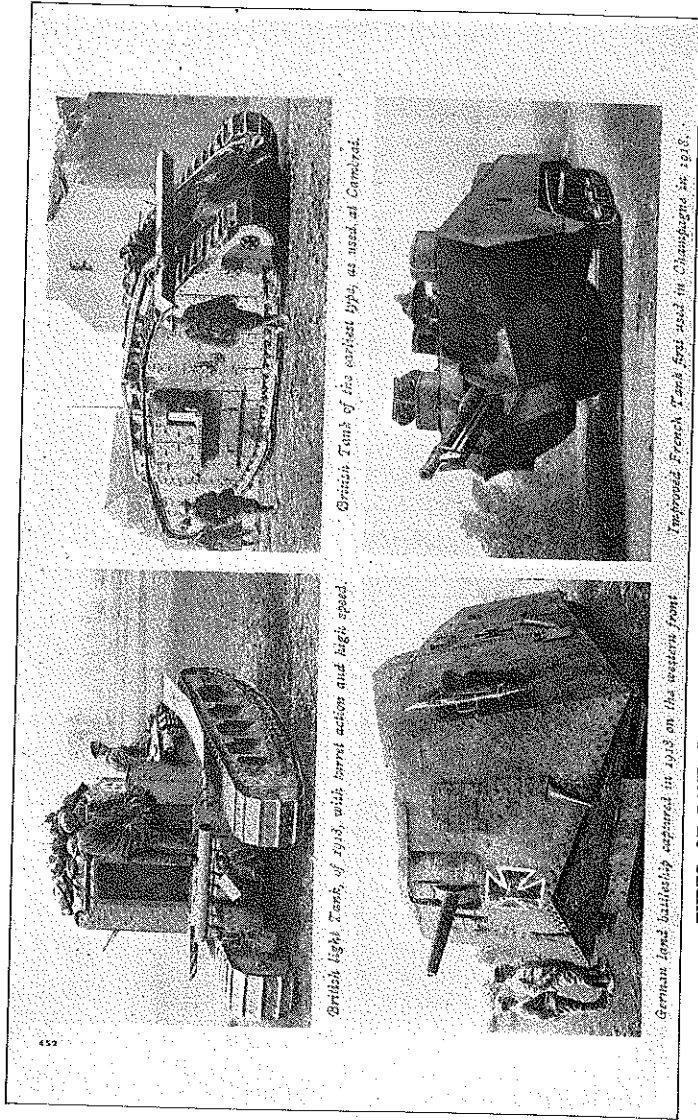
Heavy artillery,

Railroad artillery,

Trench artillery.

The type of field artillery is the famous 75-millimeter gun used interchangeably by the French and Americans. It is a quick-firing weapon and is used against attacking masses and for the various kind of barrages, including an anti-aircraft barrage.

Included in the heavy artillery are guns and howitzers of larger caliber than the 75 millimeter. Three distinct and terrifying noises



TYPES OF LAND BATTLESHIPS DEVELOPED BY ALLIES AND GERMANS

accompany explosions of these guns. First, there is the explosion when the shell leaves the gun; then there is the peculiar rattling noise like the passing of a railway train when the shells pass overhead; then there is the explosion at point of contact, a terrific concussion which produces the human condition called "shell shock," a derangement of body and brain, paralyzing nerve and muscle centers and frequently producing insanity.

The railroad artillery comprises huge guns pulled on railways by locomotives, each gun having a number of cars as part of its equipment. These are slow-firing guns of great power and hurling the largest projectiles known to warfare. The largest guns of this class were produced by American inventive genius as a reply to the German gun of St. Gobain Forest. This was a weapon which hurled a nine-inch shell from a distance of 62 miles into the heart of Paris. The damage done by it was comparatively slight and it had no appreciable effect upon the morale of the Parisians.

Its greatest damage was when it struck the Roman Catholic Church of St. Gervais on Good Friday, March 29, 1918, killing seventy-five persons and wounding ninety. Fifty-four of those killed were women, five being Americans. The total effect of the bombardment by this big gun was to arouse France, England and America to a fiercer fighting pitch. The late Cardinal Farley, Archbishop of New York, expressed this sentiment, when he sent the following message to the Archbishop of Paris:

Shocked by the brutal killing of innocent victims gathered at religious services to commemorate the passing of our blessed Saviour on Good Friday, the Catholics of New York join your noble protest against this outrage of the sanctuary on such a day and at such an hour and, expressing their sympathy to the bereaved relatives of the dead and injured, pledge their unfaltering allegiance in support of the common cause that unites our two great republics. May God bless the brave officers and men of the allied armies in their splendid defense of liberty and justice!

Trench artillery are Stokes guns and other mortars hurling aerial torpedoes containing great quantities of high explosives. These

have curved trajectories and are effective not only against trenches but also against deep dugouts, wire entanglements and listening posts.

One of the most important details of modern warfare is that of communication or liaison on the battlefield. This is accomplished by runners recruited from the trenches, by dogs, pigeons, telephone, radio, signalling lamps, rockets, but above all by airplanes using radio. These communications between air and earth are of course not as exact nor as general by night as they are by day, but even at night the airplane plays its important part in liaison.

As has been heretofore stated, the airplane considered in all its developments, is the newest and most important of factors in modern warfare. It photographs the enemy positions, it detects concentrations and other movements of the enemy, it makes surprise impossible, it is a deadly engine of destruction when used in spraying machine-gun fire upon troops in the open. As a bombing device, it surpasses the best and most accurate artillery.