CHEMICAL WARFARE

A Magazine devoted to the activities of the
CHEMICAL WARFARE SERVICE

Of Interest To All Arms

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Edited By STAFF, CHEMICAL WARFARE SCHOOL

"Every development of science that makes warfare more universal and more scientific makes for permanent peace by making war intolerable." *Major General Amos A. Fries.*

"A POWERFUL BUT HUMANE WEAPON".

Major General A. W. Brewster, Commanding the First Corps Area, has expressed his views on Chemical Warfare for the readers of this magazine. In response to a letter from the Editor asking his opinion, General Brewster replied as follows:

"The Chemical Warfare Service is one of the newest, but very technical branches of the Army, and the information which it has imparted to the other services and to the people of the country is of far reaching importance. As a result of its researches and experiments it has helped to turn the arts of war into the arts of peace. It is finding ways of using the knowledge and experience gained during the World War for the benefit of mankind.

"We must be prepared to defend ourselves against poison gas and poison smoke should the enemy in our next war resort to the use of such agents. With the latest type gas mask developed by the Chemical Warfare Service, the American soldier will be protected against poison gas far better than he will be against bayonets, shrapnel and high explosive shells.

"The use of non-toxic tear gas and screening smoke has each its tactical and practical value. Personally, I am not opposed to the use of gas in war, in my opinion it is a powerful, but in the long run humane weapon."

WARNS AGAINST RELIANCE ON ANTI-GAS TREATIES.

Address of Brigadier General C. L'H. Ruggles, Assistant Chief of Ordnance, Read to Graduating Class at Chemical Warfare School.

A warning of the grave danger in relying on an enemy's adherence to international agreement, is contained in an address by Brigadier General C. L'H. Ruggles, Assistant Chief of Ordnance, delivered to the Seventh Line and Staff Class of the Chemical Warfare, School at its graduation exercises at Edgewood Arsenal, November 21st. Referring to the present proposed treaty to bar the use of toxic gas in war. General Ruggles states that similar agreements in the past have proved ineffective and declares that, "every nation that has any regard for its national defense, must prepare itself in peace for the most effective use of chemical warfare in war".

The address was read to the class by Major Keith F. Adamson, Ordnance Department. General Ruggles at the last minute having been called to other duty, was unable to be present.

Congratulating the class upon its successful completion of the course, General Ruggles expressed hope that all officers in the service may receive such training. His address, in part, follows:

"Since the winning of our independence, we have entered every great war which has come upon us in a condition of almost complete unpreparedness, and we have paid the price of our own neglect in the needless sacrifice of precious lives and in the excessive and needless waste of public funds. At the end of every great war we promptly forgot the lesson it taught us as to the foolishness and even wickedness of unpreparedness, and we blindly assumed that we would not have another great war, or at least we considered that such a war would not come soon again, and determined anyhow to take a chance in the matter.

"Now, we have had a major war on an average of about every thirty years, so that we have paid the frightful price of our stupidity and undue optimism in all that relates to the national defense not merely once, but more nearly twice in the life of the average man.

"One of the most important factors in our plans for preparedness should be a complete knowledge of the possibilities of the new agencies of war, coupled with a readiness to use them to the fullest extent both in offense and defense should the necessity therefor arise. I am thinking now particularly of aerial and chemical warfare.

"It is true that our country has taken the lead in an attempt to have the nations of the world sign treaties for the prohibition of the use between the signatories of poison gases in warfare. It is also true that many of the nations have signified in protocols their willingness to enter into such treaties though no such treaty is yet in force between any of the larger powers. But this situation should only serve to put us on our guard with respect to chemical warfare.

VALUE OF ANTI-GAS TREATIES QUESTIONED.

"Leaving aside for the present the use of smoke, incendiary

materials, and such gases as tear gases which presumably will not come under the ban of poison gases and which, therefore, will be used to an increasing degree because of their effectiveness in war, there is great skepticism among military and naval men in other countries, as well as in our own, as to whether it is possible by international agreement to prohibit the use in warfare of any agency which has proved so effective as poison gas. This skepticism results from several considerations.

"Similar international agreements in the past have proved ineffective. Poison gases may be developed and manufactured secretly in large quantities so as not to inflame public opinion in advance and so as to lull a trusting adversary into a sense of false security, with results fatal to him. It is believed by many, moreover, that a nation with its back to the wall and possibly with its national life in danger cannot resist the temptation to employ against its enemy as a last resort of self-defense any agency that it believes will save the situation regardless of any international pledges it may have made in the matter. This last is particularly pertinent in the case of poison gases because their employment during the world war has shown not only the way they can be used, but that they are most effective both in offense and defense - and superlatively so against an enemy not prepared to meet them offensively and defensively.

"If we suppose two nations of approximately equal power at war with each other, one of which has prepared itself effectively to use chemical warfare methods while the other has not done so, I think it can be stated without fear of contradiction that, if the prepared nation resorts to chemical warfare, it certainly will win the war. Can any intelligent person fail to realize the temptation this will be to the nation that is prepared to use chemical warfare and the criminal neglect that must be charged against the nation that has failed to so prepare itself in the hope that an international agreement will protect it against its own folly?

"Now, what is the answer? It is simple. Notwithstanding all international agreements that may be made prohibiting the use of poison gas in warfare, every nation that has any regard for its national defense must prepare itself in peace for the most effective use of chemical warfare in war, not because it expects to violate any international agreement it may have entered into, but because it must not run the risk of its adversary doing so. This is the attitude taken by military and naval authorities, and it is the attitude taken by our Congress in maintaining the Chemical Warfare Service of the Army.

IGNORANCE OF CIVIL POPULATION.

"It will be the duty of all the graduates of this school to use the knowledge gained here to increase their own efficiency in the military and naval services and to impart this knowledge to other members of their services who have not been privileged to take this course. It is also the duty of officers to mingle freely with their fellows in civil life so that our people may know something of the services which they support by taxation and learn by personal

contact with service men the needs of the national defense and what the Army and the Navy are doing to take care of those needs.

"Contacts of this kind furnish a special opportunity for graduates of this school to remove some of the misapprehension as to chemical warfare that exists among the uninformed of our civil population, particularly with respect to the so-called barbarity of chemical warfare when employed against the combatant forces of the warring countries. I am sure that few persons in civil life know that the ratio of deaths to casualties caused by chemical warfare agencies in the world war is only about one-twelfth of a like ratio for the other agencies used. Nor do they realize that those who recover from gas wounds carry with them no permanent disability as do so many of those that recover from wounds caused by other agencies."

THE DANGER OF CONSERVATISM.

The danger of conservatism in the application of new developments in arms was pointed out by Major General Amos A. Fries, Chief of the Chemical Warfare Service, in addressing the Seventh Line and Staff Class of the Chemical Warfare School upon its graduation exercises at Edgewood Arsenal, November 21st.

"The change in armament has kept pace with the rapid strides in industrial development", said General Fries. "Basic tactical principles remain the same but human ingenuity has brought forth many new agencies for application of these principles. Yet, there is often a tendency of the military mind, particularly among the older officers, to undervalue a new idea or invention simply because it is new. Chemical warfare introduces warfare agencies which operate through space in all directions whereas bullets and shell fragments are limited in their effectiveness to the line on which they are propelled.

"We must be alive to new developments and be ready to adopt those which are proven useful. All of us recall the sensation of about twenty years ago when the Wright brothers startled the World by their first successful airplane flight. Yet the airplane is common-place now. The miracle of yesterday is the fact of today."

Dr. Carl Connell of New York, inventor of the Connell gas mask and one of the pioneers in the development of our Chemical Warfare Service, also addressed the class. He stated the next great war, in his opinion, will see an unprecedented use of air-power and chemical agents and congratulated the Chemical Warfare Service upon having at its head a man of insight and vision.

Presentation of diplomas was made by General Fries to the twenty-four members of the class. The thirty members of the Navy Line Officers Class now taking a course at the School were present at the graduation exercises of the Army class. Colonel C.W. Exton, Commandant of the School, congratulated the Navy upon the large number of line officers it sends to study chemical warfare at Edgewood and expressed hope to see the day when graduating classes would fill the assembly hall of the School.

THE HUMANITY OF CHEMICAL WARFARE.

Looking at chemical warfare from the standpoint of humanity, Lieut. Col. H. L. Gilchrist, M. C., Chief of the Division of Medical Research at Edgewood Arsenal, has written a convincing and forceful article appearing in the November issue of "The Military Surgeon".

Colonel Gilchrist writes with authority, basing his conclusions on personal observation and study of thousands of gas cases during the World War. Indeed his wide experience in the medical side of chemical warfare lends to his statements an unique significance. As commanding officer of a British hospital of 2000 beds, thousands of gas cases came under his personal observation and care. He served as Medical Director of Chemical Warfare in France. He was a member of the Interallied Gas Conference of October 1918. As commander of the American Typhus Fever Expedition in Poland for two years and as associate member of the Polish Health Commission he had further opportunity for intensive study of gas attacks and their effects. During the past five years as Chief of the Medical Division of the Chemical Warfare Service, Colonel Gilchrist has carried on a study of the after effects of gases on human beings.

However, it is not on his own observations and studies alone that he bases his unqualified conclusion that of all the means of so-called civilized warfare, the use of chemical agents is the most humane. He cites the casualty figures of chemical warfare of all the principal belligerents in the late war as proof.

Referring to the facts borne out by these statistics, Col. Gilchrist, in his article, says:

"It is not claimed that any killing or wounding is humane. To kill or wound people by the use of gas is not humane. It is the relative humaneness of gas compared with other weapons that has been considered."

Colonel Gilchrist sums up his arguments as follows:

SUMMARY AND CONCLUSIONS.

1. The humanity of any war weapon can only be gauged by the amount of suffering caused by that weapon at the time of injury, the degree of permanent disability and the remote effects, if any, resulting from wounds produced by the weapon.

2. During the past war there were 72,552 casualties from gas in our army. Of this number 200 died on the field of battle and 1,221 died in the hospitals from the effects of gas exposure giving a mortality of 2 per cent. There were 187,586 casualties from weapons other than gas. Of this number 46,519 or 24 per cent died or twelve times as many deaths from those weapons as there were from gas.

3. There were 754 men blinded in one or both eyes from war

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weapons during the war. Of this number gas was responsible for 29 or 3.8 per cent, other weapons being responsible for 725 or 96.2 per cent.

4. War weapons other than gas were responsible for 9,147 permanently crippled soldiers. Gas was responsible for no permanently crippled.

5. There were one and a half times as many cases of tuberculosis per thousand occurring among soldiers who were not gassed in France as there were among those gassed, apparently indicating that gas acted as a preventive against tuberculosis.

6. As a result of extensive correspondence with over 3,000 physicians in this country and Europe familiar with gases, with chemical manufacturers who have long produced gases similar to those used in the war, from a careful study of the records in the Veterans' Bureau, veteran hospitals, and from continued laboratory research conducted at the Medical Research Division, Edgewood Arsenal, we are led to believe that in a great majority of instances persons suffering from exposure to lethal concentrations of gases show no permanent resulting pathological lesions. It is true in a minority of instances some permanent damage is done, but the damage is not widespread and is generally confined to small areas with the formation of fibrous tissue which is so small in amount as to hardly affect the functional efficiency of the lungs.

7. From an exhaustive study of this entire subject during which every effort was made to ascertain the true facts concerning the immediate and remote effects of the different warfare gases, the amount of suffering produced by each at time of exposure, and the percentage of deaths occurring among gas wounded as compared with the deaths resulting from wounds produced by other war weapons, it can be safely said that the use of chemicals in warfare is the most humane of any of the recognized weapons.

CROSSED RETORTS SCHOOL HEARS LECTURE ON GALLIPOLI.

Lieutenant Colonel Girard L. McEntee, Assistant Chief of Staff, First Corps Area, gave an illustrated lecture on the Gallipoli Campaign at the opening session of this year's course of the Crossed Retorts School, at Cambridge Armory, Cambridge, Massachusetts, November 18th.

This school is an organization of the chemical warfare reserve officers in the First Corps Area. Seventy-five reserve officers and members of the R.O.T.C. were present at the meeting, which was also addressed by Lieutenant Colonel C. E. Brigham, Executive Officer, Chemical Warfare Service. Colonel Brigham spoke on the present status of the service and future possibilities. Captain T. J. Johnston, Chemical Warfare Officer, First Corps Area, also spoke.

This school, which is said to be the only such of its kind, was organized last year for the purpose of carrying on chemical warfare instruction and promotion of professional interests. Lieutenant Colonel P.B. Moulton, CW-Res., is Commandant, and Captain D. S. Dinsmoor, CW-Res., is Secretary of the School.

MILITARY NOTES.

Furnished by the Military Intelligence Division, G.S.

GREAT BRITAIN.

Individual Equipment: The British military authorities are making efforts to reduce the weight of field equipment now carried by the soldier, which normally is as follows: dismounted soldier, 61 pounds; cavalry horse 252 pounds.

The first step in this direction is the adoption of a new rifle, to be lighter by approximately one pound. The present sword-blade pattern bayonet is to be replaced by a smaller and more pointed pattern.

MOROCCO.

French Medical Evacuation Service: By far the greater proportion of the casualties among the French in Morocco are from rifle fire, the number of casualties from machine-gun projectiles, artillery and grenades being comparatively few. The most difficult cases to treat are the grenade wounds because of their many small fragments. Many evacuations of wounded are made by airplane from landing fields near the front. Two types of planes are used: - one, a large plane which can carry two lying and one sitting cases; and, the other, a small plane which has been constructed to land and take off from a small space. It carries one lying and one sitting case. The French have been using thirty of these small planes in recent operations with great success.

ITALY.

Combined Army and Air Service Maneuvers: The combined army and air service maneuvers in Italy were held in the Piedmont district between September 22nd and 30th of this year.

The maneuvers consisted of a series of exercises designed to test the new "Ternaria" Division (i.e., a division of three infantry regiments, instead of one of two brigades of two regiments each), to verify theories regarding the use of aircraft as an independent arm and in cooperation with the ground forces, and to experiment with antiaircraft defense measures.

JAPAN.

Army, Navy and Air Maneuvers of 1925: In addition to the usual autumn maneuvers of the army and navy, this year Japan has had naval air maneuvers, and, for the first time, a Grand Air Maneuver.

The naval air maneuvers took place on September 6th and consisted of the defense of Tokyo Bay and adjacent territory by thirty planes. The attacking force was composed of fifty planes.

The first Grand Air Maneuver was held during September in and

around Tokyo. Over sixty planes, several balloons, two infantry regiments, two brigades of cavalry, a regiment of field artillery, a battalion of horse artillery, engineers and automobile corps took part.

RUSSIA.

Physical Condition of Recruits: A report recently appeared in the Soviet press dealing with the calling up of recruits of the year 1924. From the number of recruits who were liable for military service, 69.7% were fit; 9% were unfit, but were retained on the lists for the future; 5.2% were entirely unfit; 12.6% received furlough; 3.5% were ordered up for a second inspection by the medical authorities.

According to these statistics, in general, 30.3% of those called for military service were unfit. If to this figure are added the recruits who were declared as unfit afterwards, then the total amounts to 34.2%.

A comparison of the physical development of the whole mass of recruits in pre-war Russia with those in the S.S.S.R. in 1924 shows a marked decrease in the physical development.

FRANCE.

Higher Air Service Organizations: The higher air service organizations of the French Army include antiaircraft artillery and the two together are considered as a special combat arm.

France has two aviation divisions and two mixed aviation brigades.

The aviation divisions consist of two air brigades with a regiment of antiaircraft artillery. The mixed brigades are composed of an aviation regiment, a balloon regiment and a regiment of antiaircraft artillery.

All aviation in Morocco is organized into a regiment, the 37th, commanded by Colonel Armengaud. At the end of September, there were twenty-two squadrons in Morocco.

The French front in Morocco is divided into three sectors each containing a corps of two divisions. Normally, three to five air squadrons are assigned to each of the sectors subject to the orders of the sector commander. When additional squadrons are required for a particular operation, air reinforcements are released by the Chief of the Air Service for that operation only.

SWEDEN.

Historical Chart of the Royal Swedish Life Guards: An interesting historical chart of the movements, stations and battles in which the Royal Swedish Life Guards have taken part since their organization in 1500 has recently been received.

(Continued on page 22)

QUESTIONS AND ANSWERS ON CHEMICAL WARFARE HISTORY.

Compiled by 1st Lieut. H. R. Anderson, U.S.M.C.

1. When and by whom, was the first gas attack made in the World War?	By the Germans north of Ypres, between Bixschoote and Langemarck on April 22, 1915.
2. What gas and weapon was used in this attack?	Chlorine projected from cylinders.
3. Against whom was the attack made?	Against the Canadians and English.
4. What was the result?	5000 casualties and the capture of 60 guns by the Germans. A great gap was caused in the line by this attack.
5. Did the Germans take advantage of this attack?	No, they waited and when they did advance, the opening had been blocked.
6. Did the Germans continue with their gas attacks following April 22, 1915?	Yes, they executed six subsequent heavy cloud gas attacks on the western front during the period from April 22 to December 1915. Nearly all these were in May, chlorine cylinders being used. German gas operations were also carried out on the Russian front during May and June 1915.
7. When, where and by whom, was the first Allied gas attack?	The first Allied gas attack was made by the British at Loos in September 1915, using chlorine cylinders.
8. When and by whom was Phosgene first used as a warfare gas?	The Germans first used Phosgene against the British near Pilckum, Messnies Ridge front in December 1915.
9. Were the British prepared for this attack?	Yes, due to the efficient work of their Intelligence Service.
10. When was the last cloud attack made by the Germans?	In September, 1917.

11. Did the British continue the use of the cylinder throughout the war?

Yes. On January 23, 1918, they made a 1500-cylinder attack on Ypres. In March 1918, a cloud attack of 6000 cylinders was delivered near Lens. These cylinders were discharged from three trains without unloading.

12. Did the American Troops use cylinders during the war?

No. They confined their operations to the Livens projector and the mortar.

SHELL

13. When and by whom were gas shells first used in the World War?

French reports refer to German gas shells being used as early as February 1915, but it is certain that gas shells were fired by the Germans during the summer of 1915. They were being used along the entire front by the end of July.

14. What agents were used in these gas shells?

Benzylbromine and xylzl bromide, lachrymators of a very low toxicity.

15 When and by whom was mustard gas first used?

By the Germans on the night of July 12 - 13, 1917, on a small front against the British at Cambrai causing 6000 casualties.

16. What was the yellow cross shell?

It was the German mustard gas shell.

17. How was mustard gas referred to by the French and British?

French - Yperite
British - H.S.

18. What other types of gas shells were introduced by the Germans in 1917?

One of the earlier types was known as the "Green Cross" which was filled with an asphyxiating gas. There were several types of these shells - Green Cross 1, 2 and 3. The Blue Cross shell containing sneezing and irritating gas, was brought out in August, 1917.

19. What was the double yellow cross shell?

This was a mustard shell with a heavy bursting charge.

20. With the spring of 1918 was the use of gas on the increase?

Yes, especially by the artillery. During the preparation for the attack of March 21st on the British 5th Army, it is estimated that from March 10th to the day of the attack the Germans fired between 150,000 and 200,000 gas shells. Gas shell largely replaced HE for counter battery work.

21. When did the American Artillery first use mustard gas shell?

In July 1918, from behind the 3rd Division, when about 12000 shells were fired on the north bank of the Marne near Jaulgonne.

22. When did the Germans make extensive use of smoke shell?

Not until 1917, but before this time they made considerable use of smoke producers within their own lines.

23. When did the Germans first use smoke?

The first recorded use of smoke was in a gas attack against the British at Hulluch on April 27, 1916.

24. Name other important operations where the Germans used smoke to great advantage

In September 1917 in the attack on Riga, the passage from Duna was greatly facilitated by the creation of smoke screens by means of several batteries of 15 mm howitzers. There was extensive use of smoke by both machines and shell during the period of the great attacks of 1918.

25. What was the origin of the Livens Projector?

It was designed by a Capt. Livens of the British Army with the idea of projecting large containers of gas into the enemy lines.

26. When and where was the projector first used?

According to some reports it was used in operations of September 25-26, 1916, at Beaumont Hamel and Y Ravine, western front.

27. What other weapon made its appearance in 1916?

The 4" Stokes Mortar, a gun of British origin.

28. To what extent were projectors and 4" Stokes Mortars used by the British in 1917?

The following will give an idea as to the extent they were used. In four major offensives by the British in 1917, British companies operated as follows:

	No. of Cos. Engaged	Date	Projectors Gas Incendiary	4" Stokes Mortars	Tons
Arras	7 1/2	Apr 4-9	2251	5184	40
Mezzine	10	May 24-June 4	1805	3843	33
Ypres	7	June 15-21	5096-1494	14000	100
Cambrai	7 night	Nov. 19	4224	3059	60
			13,356-1494	26086	233 (37)

29. When did the Germans first use projectors?

In December 1917 at Cambrai.

30. When and where was the greatest projector operation during the entire war?

It took place in March 1918 when the British fired 2500 in one operation against Lens.

31. When did the largest American projector shoot take place?

In the 26th Division sector at St. Mihiel, June 18, 1918, when 1000 drums of phosgene were fired.

32. When was the first projector attack made against the American Forces?

Against the First Division, on the night of February 25, 1918, in the Toul Sector.

33. When was the German rifle projector introduced?

During 1918. The projector had a range of 3500 metres and fired both HE and gas.

AIR SERVICE

34. Did Germany spray gas from aeroplanes during the war?

No, although Germany experimented with the spraying of gas from aeroplanes she never used this method.

TACTICS

35. Mention a good example of the application of gas to tactics in modern warfare.

In the German Drive on the British 3rd and 5th Armies in March 1918. In this attack both

mustard and non-persistent lethal gases as well as irritating gases were used in large quantities, in the artillery preparation, for ten days prior to the attack.

The British 3rd and 5th Armies occupied a front from Arras to Gobain, the 5th Army on the right. The left corps of the 5th Army held a strong position in front of Cambrai. The tactics adopted by the Germans were to shell this left corps heavily with mustard gas. The corps on the right of this area was subjected to heavy bombardments of non-persistent gas. To the south of this but little gas was used, there being a few local bombardments. To the north of Cambrai on the front of the 3rd Army no gas was used. Heavy concentrations of mustard gas were placed on the left flank of the 3rd Army and to the north scattered shoots of lethal gas were placed at several points along the line as far as Bethune, with some mustard shelling at Lens. A study of the map shows the front from Bethune to the 3rd Army, a distance of about 30 kilometers, subjected to gas attacks; the front of the 3rd Army a distance of 25 to 30 kilometers, was left clear. Entering the 5th Army sector, we find the 10 kilometers held by the left corps, covered with mustard gas and the adjoining 10 kilometers, held by the corps to the south heavily shelled with lethal gas. The remaining 40 kilometers received but little gas. Looking at the entire front of 120 kilometers, 50

kilometers were covered by gas in such a manner that lanes were left between the gassed areas. The placing of these gas concentrations would indicate that attacks might be expected between Arras and Cambrai and another attack to the south of the area gassed in front of Cambrai.

This was exactly what happened, the main attack being delivered against the 5th Army, to the south of the mustard gas area, and a secondary attack being launched against the 3rd Army. The result is well known.

The Germans had to avoid the mustard area in front of Cambrai, by going on either side. The British, nevertheless, had to evacuate it. They suffered more than 5000 casualties from mustard before the attack commenced. The breaking of this corps and the one to its right, which had been subjected to heavy concentrations of lethal gas, began the break of the 5th Army. The 3rd Army, which had not been subjected to gas, held its ground much better.

It is estimated that between 150,000 and 200,000 gas shells were fired in the ten days preceding the attack.

AMERICAN ORGANIZATION

36. When was a gas and flame regiment authorized?

On August 15, 1917. The Regiment selected was the 30th Engineers which later became the 1st Gas Regiment. Organization was begun at Camp, American University, Washington, D.C., about Aug. 30.

37. What followed in the organization for Chemical Warfare?

In September 1917, gas training was placed in charge of the Sanitary Corps. In Feb-

ruary 1918, gas defense production was controlled by the Medical Corps. Offensive material production was under the Ordnance Department. Gas alarms were handled by the Signal Corps, training of gas troops was a function of the Corps of Engineers, while Research was controlled by the Bureau of Mines.

38. When did these troops sail for France?

Regimental Headquarters, Headquarters 1st Bn with Cos. A and B, sailed for France on December 28, 1917. Cos. C and D sailed for France February 26, 1918 and Cos. E and F sailed, June 30, 1918.

39. When was the 30th Engineers transferred to the Chemical Warfare Service?

On August 9, 1918 and it was designated the 1st Gas Regiment.

40. How was the Chemical Warfare Service organized in the American Expeditionary Forces?

An order of September 3,1917, created a gas service which directed all chemical warfare activities.

41. When was the order issued forming a separate service in the United States, coordinating all chemical warfare activities?

On May 11, 1918.

42. What was the authorized strength of the Chemical Warfare Service at the time of the Armistice?

4066 officers and 44,615 enlisted men.

43. When was the construction of Edgewood Arsenal begun?

In November 1917.

1st GAS REGIMENT IN FRANCE

44. What is the brief history of the 1st Gas Regiment in France prior to the organization of the 1st American Army?

Companies "A" and "B" after training with British Gas Troops and while still attached to those troops, participated in operation involving the offensive use of

	gas. After being relieved from the British Front they were sent to the Alsace-Lorraine Front where they carried out some operations. Company "D" first went into action on the Chateau Thierry Front. Companies "E" and "F" were in training.
45. What happened to the 1st Gas Regiment when the First American Army was organized?	The 1st Gas Regiment consisting of the six Companies A, B,C,D,E and F became a part of the First Army.
46. How did they function as such?	The Regiment functioned as Army Troops but in active operations, battalions and companies were assigned to Corps and Divisions.
47. What operations did the 1st Gas Regiment take part in with the First American Army?	It participated in the St. Mihiel and Meuse-Argonne offensives.

CHEMICAL WARFARE MUSEUM SETS

A board of officers recently submitted recommendations for standard museum sets for the Chemical Warfare Service. A large and complete museum for the Technical Division at Edgewood Arsenal was recommended. Another museum set,especially rich in historical examples of the development of Chemical Warfare, was recommended for the Chemical Warfare School and for the Office of the Chief, Chemical Warfare Service. A standard museum set for use of all Corps Areas, Chemical Warfare Officers, Foreign Departments, Service Schools and such other institutions as might be authorized by the Chief, Chemical Warfare Service, was recommended. A traveling museum set for use at fairs and other exhibitions of a similar nature was recommended, designed and packed. The first exhibition of this museum set was held at the Montgomery, Alabama, State Fair, under the supervision of Captain Edmund G. Steis, Chemical Warfare Officer of the 4th Corps Area. Captain Steis reports a very successful showing of this exhibit. Small booklets describing the exhibit and giving other interesting information about the Chemical Warfare Service were furnished Captain Steis for this exhibit and much enthusiasm was noted among the visitors at the booth for Chemical Warfare Service.

CHANGES - CHEMICAL WARFARE OFFICERS' RESERVE CORPS.

NAME AND RANK	ASSIGNMENT JURISDICTION	REMARKS
LT. COLONELS		
McCullough, Ernest	2nd C.A.	4123 Carolin St., Long Island City, N.Y. TA Group. Resigned 11/5/24.
Mathews, Joseph H.	O.C.,CWS	128 Lathrop St., Madison,Wis. BA Group, Prod. Div., E.A. Prom. from major 11/6/25.
Stone, Lee A.	O.C.,CWS	1329 Thorndale Ave., Chicago, Ill. Trans. from MI-Res 10/28/25. BA Group,-Edgewood Arsenal.
MAJORS		
Hilpert, Willis S.	O.C.,CWS	829 Elm St., Winnetka, Ill. Apptd. 10/27/25; accptd.11/2/25. BA Group - Edgewood Arsenal.
Schaar, Adolph E.	O.C.,CWS	556 W. Jackson Blvd., Chicago, Ill. Apptd. 10/17/25; accptd. 10/21/25. BA Group, 4th Proc. Dist.
Suydam, John R.	Unassigned	St. Marks School, Southboro, Mass. Apptd. 10/30/25; accptd. 11/13/25.
Van Cleef, Paul	Unassigned	7720 Woodlawn Ave., Chicago, Ill. Apptd. 11/14/25;accptd. 11/18/25.
CAPTAINS		
Blake, Edward M.	Unassigned	1655 Sacramento St., Apt. 15, San Francisco, Cal. Trans. from Eng-Res 11/14/25.
Carter, Arthur B.	Unassigned	711 Courtland Ave., Park Ridge, Ill. Apptd.10/29/25; accptd. 11/5/25.
Chaine, Vincent M.	O.C.,CWS	Add. chgd. from: 196 Cambridge St., Boston, Mass. to: 17 Washington Heights, West Roxbury, Mass. BA - Edgewood Arsenal.
Coleman, Horace W.	4th C.A.	Add. chgd. from: P.O. 38, Frostproof,Fla. to: P.O. Box 407, Frostproof, Fla. TA Group.
Dormitzer, Henry C.	O.C.,CWS	7957 So. Hermitage St., Chicago, Ill. Apptd. 11/7/25; accptd. 11/16/25. BA Group, Edgewood Arsenal.
Hilman, George C.	O.C.,CWS	Add. chgd. from: Box 218, Iowa City, Iowa, to: Box 164, Port Arthur, Texas. BA - Chem.Div., E.A.

NAME AND RANK	ASSIGNMENT JURISDICTION	REMARKS
CAPTAINS (Cont'd)		
Jenness, Augustine W.	Unassigned	306 No. Main St., Fall River, Mass. Apptd. 11/5/25;accptd. 11/17/25.
Lightbody, Howard D.	Unassigned	East Lansing, Mich. Apptd. 11/11/25; accptd. 11/19/25.
Naudain, Glenn G.	O.C.,CWS	Add. chgd. from: Mellon Inst., Pittsburgh, Pa. to: Kansas State Teachers College, Pittsburgh, Kas. BA - Edgewood Arsenal.
Richards, Leird A.	9th C.A.	610 - 9th Ave., San Francisco, Cal. Trans. from Inf-Res. 11/10/25. TA Group.
Ruby, George B.	O.C.,CWS	Add. chgd. from: 90 Oak St., Aurora, Ill. to: 478 La Fayette St., Aurora, Ill. BA - Production Div., E.A.
Smith, Ronald Q.	Haw. Dept.	c/o Pacific Guano & Fertilizer Co., P.O. Box 48, Honolulu, T.H. Apptd. 10/2/25; accptd. 10/17/25. TA Group.
Sturdevant, Earl G.	6th C.A.	Add. chgd. from: 176 No. Humphrey Ave., Oak Park, Ill. to: 315 No. Long Ave.,Chicago, TA Group.
Walker, William E.	O.C.,CWS	82 Webster St., Arlington,Mass. Apptd. 11/10/25; accptd. 11/17/25. BA Group, Edgewood Arsenal.
FIRST LIEUTENANTS		
Clough, Lyle A.	O.C.,CWS	1½ Washington St., Auburn,N.Y. Apptd. 10/15/25; accptd.10/23/25. BA Group - Edgewood Arsenal.
Culhane, Paul J.	O.C.,CWS	1731 Wallen Ave., Chicago,Ill. Apptd. 11/3/25; accptd.11/9/25. BA Group - E.A.
Cox, Clyde B.	6th C.A.	Hq. 6th C.A., 1819 W. Pershing Rd., Chicago, Ill. (Sgt.C.W.S.) Apptd. 11/25/25; accptd. 11/28/25. TA Group.
Hardesty, John O.	O.C.,CWS	P.O. Box 801, East Lansing, Mich. Apptd. 10/22/25;accptd. 11/7/25. BA Group - E.A.
Jacobson, Orin B.	O.C.,CWS	5537 Washington Blvd.,Chicago, Ill. Prom. from 2nd Lt.11/16/25. Trans. from TA Group to BA Group - Edgewood Arsenal.

NAME AND RANK	ASSIGNMENT JURISDICTION	REMARKS
FIRST LIEUTENANTS (Cont'd)		
Long, Homer D.	O.C.,CWS	Add. chgd. from: 1136 Pratt Blvd., Chicago, Ill. to: Wilson Ave., Golf, Ill. BA Group - Chem. Div., E.A.
Miller, Henry E.	O.C.,CWS	Monticello, N.Y. Apptd.10/27/25; accptd. 11/3/25. BA Group - Edgewood Arsenal.
O'Donnell, James E.	O.C.,CWS	Add. chgd. from: 2031 Grand Ave., Milwaukee, Wis. to: 1617 Grand Ave., Milwaukee, Wis. BA Group - E.A.
Spicer, Myrle H.	Unassigned	Washington,Ill. Apptd. 11/11/25; accptd. 11/20/25.
Steller, Guy E.	O.C.,CWS	Add. chgd. from: 2015 Raymond Ave., Los Angeles, Cal. to: 4268 Halldale Ave., Los Angeles, Cal. BA - Mech. Div., E.A.
Tuttle, Chester C.	O.C.,CWS	24 Stoner St., Kennebunk, Me. Apptd. 10/27/25; accptd.11/2/25. BA Group - Edgewood Arsenal.
Vanselow, Waldemar	O.C.,CWS	621 No. Lake St., Madison, Wis. Prom. from 2nd Lt. 11/17/25. BA - Chem. Div., E.A.
Wilkins, Richard A.	O.C.,CWS	Add. chgd. from: 2 Commonwealth Ave., Boston, Mass. to: 285 Lynn Shore Drive, Lynn, Mass. BA - Mech. Div., E.A.
SECOND LIEUTENANTS		
Armstrong, Robert E.	O.C.,CWS	281 W. Prairie Ave., Decatur, Ill. Apptd. 10/23/25; accptd. 10/28/25. BA Group, E.A.
Barnard, Harvie	O.C.,CWS	1133 Forest Ave., Evanston, Ill. Apptd. 10/27/25; accptd. 11/9/25. BA Group - E.A.
Berryhill, Robert H.	O.C.,CWS	Add. chgd. from: 233 No. Mt. Vernon St., Prescott, Ariz. to: 514 E. Culver St., Phoenix, Ariz. BA - School Bn., E.A.
Brown, Samuel C.	4th C.A.	Add. chgd. from: c/o Pensacola Gas Co., Pensacola, Fla. to: 84 Ashley Ave., Charleston,S.C. TA Group.
Calkin, Frank G.	O.C.,CWS	Solvay Clubhouse, Syracuse, N.Y. Apptd. 10/16/25; accptd. 10/22/25. BA Group - E.A.

NAME AND RANK	ASSIGNMENT JURISDICTION	REMARKS
SECOND LIEUTENANT (Cont'd)		
Carlson, Reuben T.	O.C.,CWS	Add. chgd. from: Baker St., Extension, Jamestown, N.Y. to: 1402 Massachusetts Ave., N.W., Washington, D.C. TA Group.
Caveness, Hugh L.	O.C.,CWS	Add. chgd. from: 603 Alston Ave., Durham, N.C. to: 10 Enterprise St., Raleigh, N.C. BA Group, Edgewood Arsenal.
Colwell, Donald L.	Unassigned	4026 No. Lowell Ave.,Chicago, Ill. Trans. from QM-Res. 11/28/25.
Culver, Joseph J.	O.C.,CWS	419 W. 118th St., New York City. Apptd. 10/24/25;accptd. 11/5/25. BA Group - E.A.
Donovan, Robert E.	9th C.A.	225 Bush St., San Francisco, Cal. Trans. from Inf-Res. 10/24/25. TA Group.
Johnson, Leland B.	O.C.,CWS	P.O. Box 118, Waterloo, Iowa. Resigned. BA Group, School Bn., E.A.
Johnston, Willard A.	O.C.,CWS	6005 So.Artesian Ave.,Chicago, Ill. Trans. from FA-Res. 11/9/25. BA Group, Edgewood Arsenal.
Joss, Ernest J.	Unassigned	c/o Baker Laboratory, Ithaca, N.Y. Apptd. 11/6/25; accptd. 11/16/25.
Loubriel, Jose W.	2nd C.A.	Add. chgd. from: Box 745, San Juan, P.R. to Box 1006, San Juan, P.R. TA Group.
Loriot, Noel H.	O.C.,CWS	258 Prospect St., Long Island City, N.Y. Apptd. 10/8/25; accptd. 10/20/25. BA Group - Edgewood Arsenal.
McCarthy, Donal F.	O.C.,CWS	Add. chgd. from: Conard Apts., 13th & I St.,N.W., Washington, D.C. to: Apt. 27, 1711 E. Capitol St., Washington, D.C. BA Group - 1st Gas Regiment.
McColm, Eugene M.	O.C.,CWS	Add. chgd. from: University Club, Akron, Ohio. to: Furnald Hall, Columbia Univ., New York City. BA - Prod. Div., Edgewood Arsenal.

NAME AND RANK	ASSIGNMENT JURISDICTION	REMARKS
SECOND LIEUTENANTS (Cont'd)		
McGrew, Ralph V.	Unassigned	Lindgren House, Sheridan Road, Evanston, Ill. Apptd.10/29/25; Accptd. 11/20/25.
McNeil, George F.	O.C.,CWS	76 Day St., Jamaica Plain, Boston, Mass. Apptd. 11/6/25; accptd. 11/16/25. BA Group - Edgewood Arsenal.
Maloney, John R.	Unassigned	168 Bradford St., Brooklyn, N.Y. Apptd. 11/13/25; accptd. 11/20/25.
Milas, Nicholas A.	Unassigned	5731 Kenwood Ave., Chicago, Ill. Apptd. 11/14/25;accptd. 11/20/25.
Morgen, Ralph A.	Unassigned	1855 Clay St., San Francisco, Cal. Trans. from Inf-Res. 11/16/25.
Neff, Andrew M.	O.C.,CWS	Temp. add. to July, 1926: Mellon Inst. of Ind. Research, Univ. of Pittsburgh, Pittsburgh, Pa. BA -Chem.Div.,E.A.
Neuman, Daniel	O.C.,CWS	2224 Woodstock Ave., Swissvale, Pa. Trans. from CA-Res.10/28/25. BA - Edgewood Arsenal.
Palmateer, Russell E.	O.C.,CWS	5488 Ellis Ave.,Chicago,Ill. Apptd.10/27/25; accptd.11/9/25. BA Group - Edgewood Arsenal.
Paul Karl F.	O.C.,CWS	2508 Dupont Ave., Minneapolis, Minn. Apptd. 10/19/25; accptd. 10/31/25. BA Group - E.A.
Richtmyer, Nelson K.	Unassigned	1697 Cambridge St., Cambridge, Mass. Apptd. 11/18/25; accptd. 11/24/25.
Robinson, Chester L.	O.C.,CWS	19 Wadsworth St., South Manchester, Conn. Apptd.11/10/25; accptd.11/14/25. BA - Edgewood Arsenal.
Robinson, Edward A.	O.C.,CWS	39 Lonsdale St., Dorchester, Mass. Trans. from Cav-Res. 11/16/25. BA Group - E.A.
Ronaldson, William C.	Unassigned	1100 Adams St., Denver,Colo. Trans. from Med-Res. 11/16/25.
Sanders, Palmer W.	Unassigned	2020 Ave. H, Ensley, Ala. Apptd.10/17/25;accptd.11/16/25.
Shields, Henry M.	3rd C.A.	506 - 2nd Ave., Johnsonburg, Pa. Trans. from AS-Res. 11/24/25. TA Group.

NAME AND RANK	ASSIGNMENT JURISDICTION	REMARKS
SECOND LIEUTENANTS (Cont'd)		
Sneed, Dabney H.	9th C.A.	c/o Dunham, Carrigan & Hayden Co., San Francisco, Cal. Trans. from Inf-Res. 11/7/25. TA Group.
Swahn, John A.	O.C., CWS	Add. chgd. from: 44 - 10th Ave., Woonsocket, R.I. to: 205 W. 57th St., New York City. BA - Chem. Div., E.A.
Swedenborg, Edward A.	O.C., CWS	c/o Director of the Mint; Treasury Dept., Washington, D.C. Apptd. 10/27/25; accptd. 11/4/25. BA Group - Edgewood Arsenal.
Wagner, Raymond R.	Unassigned	c/o Macon Gas Co., Macon Ga. Apptd. 11/5/25; accptd. 11/23/25.
Walker, Joseph H.	4th C.A.	State Normal School, Florence, Ala. Trans. from Cav-Res. 11/3/25. TA Group.
Wilson, George E.	O.C., CWS	1515 W. Monroe St., Chicago, Ill. Apptd. 10/12/25; accptd. 10/19/25. BA - 4th C.W.S. Proc. Dist.

RESERVE OFFICERS PLEASE NOTE.

It is requested that any errors or omissions noted in these lists of Reserve Officers, be reported to the Personnel Section, Office, Chief, Chemical Warfare Service, Munitions Building, Washington, D.C.

MILITARY NOTES.

(Continued from page 8)

It is believed that the scheme used in the chart might well be adopted by our regiments for use on "Organization Day".

The scheme, in brief, is as follows:- The Swedish regiment uses a map of Europe, about seven by six feet in size. On this the various moves of the regiment are plotted, using a different color for each campaign and a uniform color for routine changes of station, with a special symbol for battles engaged in to show a victory or defeat.

Such a plan for one of our old regiments would require a chart of the world to show changes of station and engagements in this country, voyages to the Philippines, Alaska, Europe and Cuba, as well as battles and skirmishes in our foreign wars.