

# CHEMICAL WARFARE

A Magazine devoted to the activities of the  
**CHEMICAL WARFARE SERVICE**

Of Interest To All Arms

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Headquarters Edgewood Arsenal - Edgewood, Md.

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Edited By **STAFF, CHEMICAL WARFARE SCHOOL**

## THE FOURTH REUNION OF THE 1ST GAS REGIMENT.

The Fourth Reunion of the First Gas Regiment was held at Edgewood Arsenal on June 3rd and 4th, 1925. The members of that Regiment volunteered from all parts of the United States and it is not possible to secure a large return of the members at any Reunion. Those who did return found both pleasure and inspiration and are heartily in favor of returning again.

The following program was arranged:

### REUNION PROGRAM.

June 3, 1925

7:30 P.M. Smoker and Business Meeting, at Ft. Hoyle Service Club  
just west of Barracks.

June 4, 1925

6:00 A.M. Breakfast - Regimental Mess Building #403.  
9:30 A.M. Regimental Review and Exercises connected with "Organization Day" (Parade Ground west of Barracks).  
10:30 A.M. Unveiling of Memorial Tablet (In front of Company "A")  
Prelude - Prelude to Kunihild - 1st Gas Regiment Band  
(Warrant Officer E. Innocenzy, Band Leader)  
Invocation Chaplain W.B. Hill  
Song - Recessional (De Koven), Mrs. Kyle, Mrs. Embich,  
Mr. Sachs, Dr. Miller (Mrs. Smith, accompanist)  
Music - 1st Gas Regt. Band - "Bright Star of Hope" - (Ravina)  
Address by Colonel C. W. Exton  
Address by Major C. P. Wood  
Music - 1st Gas Regt. Band - "Regimental Pride" (march)  
(J. C. Hood)  
Unveiling of Memorial Tablet by Mrs. P. V. Whipple  
Reading of Names on Tablet by T. Jabine  
The Star Spangled Banner - 1st Gas Regiment Band  
Salute  
Benediction by Chaplain W. B. Hill  
Taps

- 12:00 A.M. Lunch - Regimental Mess, Building #403  
 2:00 P.M. Base Ball Game at Walker Field  
           1st Gas Regiment - vs. - Tank Corps of Camp Meade, Md.  
 4:30 P.M. Parade, 1st Gas Regiment - Parade Ground west of Barracks  
 5:00 P.M. Dinner - Regimental Mess Building #403  
 5:00 P.M. to  
 6:00 P.M. Concert - 1st Gas Regiment Band (in front of Co. "C")
1. 1st Gas Regt. U.S.A. (March) by E. Innocenzy
  2. Slavonic Melodies (Overture) by E. Titl
  3. Jolly Fellows (Descriptive Waltz) by R. Vollstedt
  4. "Berceuse Celebre" from the Opera "Jocelyn"  
       (Cornet and Baritone duet by Sgts. Koschnicke  
           and Moore)
  5. "Madame Sherry" Selection by K. Hoschna
  6. "Forosetta" (Tarantella) by L. Arditi
  7. "Vision" (Morceau caracteristique) by Fr. Von Blon
  8. "American Patrol" by L. Meecham
  9. The Star Spangled Banner
- 7:30 P.M. Social and business meeting at Fort Hoyle Service Club.

The exercises at the unveiling of the Memorial Tablet were most impressive. This tablet is of bronze, about 26" x 36", and is placed on a natural boulder immediately in front of the Headquarters of the 1st Gas Regiment. The tablet bears the names of the eight officers and sixty-seven men of the Regiment who died in France.

#### ROLL OF HONOR.

Fred L. Allen	Jarrett Grigsby	Ernest R. Mills
Ernest H. Anderson	Harry R. Guilefuss	Raymond J. Mitchell
Edgar S. Barry	Oxcel F. Hagenson	William K. Neal
John C. Bleight	Joseph T. Hanlon	Millard L. Newsom
Joseph E. Bowers	Alfred A. Hansen	Adolph A. Nicholson
Gilbert C. Brooks	Hans Hansen	Nathaniel J. Owen
Vernon C. Buxton	Ernest Harrison	George J. Panuska
William F. Carroll	Allen K. Hartman	George Partridge
Paul H. Cordes	Walter H. Hass	Gerald S. Patton
Ernest A. Crites	Wesley W. Kerr	Ellsworth D. Powell
William H. DeBaun	Albert F. Klemz	Stuart H. Prescott
Cornelius J. Devereaux	Arthur R. Knouff	Percy A. Rideout
Joseph Digney	Fridrick E. Kottlowsky	George N. Ripka
Joseph C. Dodd	Ralph J. G. Lane	Bert W. Shields
Eugene W. Everett	Patrick J. Larkin	Iver O. Skulhus
Leo F. Farrell	Joseph C. Larsen	James T. Slamon
Frank M. Ferguson	Charles Lawson, Jr.	Joseph A. Snelsire
Domenico Finelli	Bert Lewis	Harry Tarson
John V. Fleming	Ernest J. McAlpine	John G. Utterback
Joseph O. Gans	James T. McKee	Adrianus H. VanGorcum
John J. Geagan	Jack Maeding	George H. Western
John M. Godbold	Herbert B. Martin	LeRoy M. Whipple
Paul L. Goss	Robert M. Mayne	Roland G. Whiteley
George C. Gray	Arthur C. Mely	Hubert C. Williams
Thomas R. Griffin	John Merkel	Elmer H. Zoeller

Gen. A. A. Fries was unable to be present but sent the following letter:

"May 15, 1925

My dear Mills:

Although I was forced to refuse your invitation to attend the annual reunion of the First Gas Regiment at Edgewood on June 4th this year, due to the fact that I will be on the west coast at that time, I am, as you know, deeply interested, and trust you will convey to those present at the reunion my sincere regrets that I will be among the absentees.

As the nominal commanding officer of the First Gas Regiment in France, I performed no duties therewith as all my time was occupied with those duties which devolved upon me as Chief of the Gas Service. Colonel Atkisson, as you know, was primarily responsible for the efficient raising and training of the First Gas Regiment, and it was he and those under him who had to work out all the details which are always so trying in the case of a new type of organization. I was, however, kept informed of the progress made, and have never failed to realize that the success of the Regiment was due to the hearty cooperation given by every member thereof. That the men selected for duty in this organization were particularly well fitted for their many varied duties is borne out by the record of the Regiment, of which you are, of course, familiar. The fact that it was cited for its conduct in the principal operations of the World War is alone sufficient to indicate its value to the country.

I am sure this reunion will be more successful than any previous one, and I trust you will extend my greetings to all present.

Sincerely yours,

Amos A. Fries,  
Major General, U.S. Army,  
Chief of Chemical Warfare Service."

The addresses of Col. C. W. Exton and of Major C. P. Wood, delivered at the unveiling of the Memorial Tablet are given below:

ADDRESS DELIVERED BY COLONEL C. W. EXTON.

"Ladies and Gentlemen, Members of the Old First Gas Regiment, and members of the present First Gas Regiment: As Commanding Officer of Edgewood Arsenal I welcome you here this day, the day of the annual reunion of the members of the Old First Gas Regiment and the anniversary of Organization Day of the new First Gas Regiment.

I have been requested by General Fries and Colonel Atkisson to express to you their profound regrets in not being able to be with you this day. They were both intimately associated with you in France and I can well appreciate what it would mean to you to have them with you. I can also well appreciate what it would mean

to them to be with you. General Fries is at present on the Pacific Coast and Colonel Atkisson is in London.

The principal object of the Reunion this year is to unveil this tablet, erected to the dead of the Old First Gas Regiment by its surviving members.

The site of this monument was selected after much consideration on the part of those here at the Arsenal. A site was tentatively selected near the Arsenal Headquarters, but this had certain disadvantages that we felt should be overcome. In the first place, the monument should be near the Regiment where it would become really a part of the Regiment. In the selecting of this present site we were confronted with the fact that it is within the area pertaining to Fort Hoyle and so the permission of the Commanding General, Fort Hoyle, had to be obtained. For this purpose I called upon General Collins one day, stating that we wished to erect this monument within his area because we wanted it near our Regiment and I asked him if he would grant us the permission. He replied "My dear Exton, I not only grant you the permission but I am delighted to do so and you may erect your monument anywhere in the Fort Hoyle area that you desire."

As Commanding Officer I charge myself with the duty of seeing that this spot is kept clean and swept as I think you would like to have it kept. When I finish my tour of duty here I shall pass this charge on to my successor, who in turn will pass it on to his successor, to the end of time.

This tablet will serve to keep green the memory of our departed comrades. It will constantly remind us of the sacrifice they made and it will be an ever present inspiration to the young men of the present First Gas Regiment who have pledged themselves to carry on the work through this period of peace and be ready to add new glories to the Old Regiment in case we are ever called to enter another war.

This Regiment stands unique as a fighting organization in military history. It has no precedent, either as to organization or method of fighting. It was created of necessity during the trying days of the greatest war in history. You men of the Old Gas Regiment are the charter members. You were the red blooded men who were willing to fight and you answered the call to the Colors even though you did not know what sort of fighting you were in for.

All honor to you and your fallen comrades for the work you did and for the trail you blazed for the benefit of those who are following in your footsteps.

On behalf of the members of the Chemical Warfare Service of today and the members of the present First Gas Regiment, I salute you."

ADDRESS DELIVERED BY MAJOR C. P. WOOD.

"Comrades and Friends:

We have looked forward to this day, when we could give formal expression to our feelings for those who have left us a precious

heritage. We are here to honor their memory. We have tasted the fruits of a victory for which others have paid with their lives. Ours is an humble part, as we stand on the spot ever to be consecrated by their names, ever to be guarded by their spirits.

War has been made more terrible than it used to be. Hundreds fall where one might have fallen, when the sword and the primitive firearm were the only weapons. The menace from beneath the sea, the poison in the air, the bolt from above the clouds, the shell from the distant gun -- all these have been added to what might have been feared from the enemy that could be seen or heard. So the soldier of today needs to have more knowledge and more patience, and just as much courage, as did any hero that ever has gone before.

The greatest deeds remain untold, because those who would have known all there was to tell did not come back. In the plague-stricken camp, in the hazardous arsenal, on the perilous seas, in the sickening trench, on the dark battlefield, our comrades faced death fearlessly. Moved by a simple, yet profound, sense of duty, they added to the great traditions of the human race.

It is well to recall that our regiment was formed for a special purpose; that our men mastered a new kind of warfare without even having the chance to learn the rudiments before going into the line. They volunteered for the most arduous work. They acted as infantry to protect their trench-mortar positions. They fought with whatever could be found to fight with and they went beyond their own lines to give help when it was needed. They worked in small detachments, widely separated, under fire, in darkness. They suffered heavy casualties alike among officers and men. They made a proud record of service under three flags.

We have not come here to glorify war. The peace of the world is always safe in the hands of those who are willing to fight or to make sacrifices for their Country. Unrighteous wars are inspired by others, who remain in positions of safety and who hide selfish interests behind a sham of patriotism. Rather are we here to pledge ourselves anew to the cause of peace by keeping green the memory of those who died that we might live in a better world. We know the forces that roused our peaceful Nation, when it became clear that our rights had been challenged. *The World* must know that the spirit of America, typical of peace and freedom, ever will be unconquerable.

The greatest privilege of a First Gas Regiment veteran is to have been called "Comrade" by these men, whose names we have set up here under the emblem of victory. No word of ours can add to their fame, already immortal. Let us try to express ourselves, then, in sympathy and care for their loved-ones and by striving to be steadfast and true, as they, our fallen comrades, have taught us to be. We have this memorial as a token of our esteem. We have their example ever before us as a pillar of fire. So may we be directed towards those higher things that will make our lives more worthy in the sight of God."

## CHEMICAL WARFARE AND ITS RELATION TO THE NATIONAL DEFENSE.

Address delivered by Lieutenant Colonel Claude E. Brigham

before the National Patriotic Council, Washington, D. C., March 6, 1925.

It is a privilege to speak to a body whose high purpose is that which this National Patriotic Council has set for itself. I am sorry that General Fries could not be here to talk to you in his interesting way. He regretted greatly that the necessity of attending the military tests and demonstrations at Fort Monroe prevented his being here.

When your President called me on the telephone this morning and requested that I take his place in saying a few words about chemical warfare, I found on the General's desk a letter on the stationery of the Council. I was struck by the parenthetic phrase in small type under the name of the Council. I shall quote it: "For coordinated patriotic effort and the dissemination of authentic information" - a splendid motto and task!

As I read the phrase over I thought perhaps here is an opportunity to help just a bit in carrying out the purpose expressed in this motto. So at the risk of being dull, I am going to tell some facts, and facts are generally dull, about chemical warfare and its relation to national defense. I will ask you to keep these facts as national secrets - not to be told outside the nation. I know the patriotism of those present can be relied on, and those out on the air never have paper and pencil at the right time, so they will forget the secrets after the next event on the program.

There has been so much misinformation published about chemical warfare that it seems to me to be an appropriate time to tell some facts. The international situation regarding chemical warfare is doubtless well known; that is, the treaty relating to the use of chemicals in war signed at the Limitation of Armaments Conference in Washington has not been put into effect through exchange of ratifications. However, our country has carefully observed the principles which it advocated.

At this conference, it was made clear that in the opinion of the representatives of some of the greatest powers, no nation could afford to be unprepared to meet, and effectively deal with a nation which might use chemical weapons. In my humble opinion, this is so logical as to need no supporting arguments. If anyone should feel to the contrary, it seems to me that it is only necessary to obtain from the official files, the statements made by the representatives of these great powers in support of their conclusions. They were, briefly, that any nation through preparation for use of these weapons, preparation which could not be prevented or discovered by other nations, might by their use obtain such an advantage as to enable it to dominate the world.

We, therefore, come back to these existing facts, that is, that chemical weapons exist. They have been used in war; they may be used again in war. They, then, in my opinion, have taken their place in that long list of weapons and means for waging war that have been introduced, each in their turn, from the time of the club of the caveman, to the time of the chemical weapon used extensively in the

great World War.

I believe that this is becoming accepted among nations; certainly, one must be led to this view if they read the articles and statements appearing in newspapers and publications throughout the world. In this connection, one of the most informing articles on the subject of chemical warfare and one which has attracted world-wide attention appeared in the February number of the Atlantic Monthly. It was an article on chemical warfare by J.B.S. Haldane, Sir William Dunn Reader in Biochemistry, University of Cambridge. Even the League of Nations, if the report which I have read is correct, seems to have accepted the principle that nations must be prepared to defend themselves against this form of warfare.

In this I see nothing alarming if we are prompt in our acceptance of this principle and in our adoption of sane and reasonable steps to protect our nation against those who might use it.

Chemical agents are capable of application by every department and arm of a nation's defenses. We shall be negligent in our duty if we fail to study how these agents may be used and what changes their use would bring about in the methods of warfare. If our military forces are to be considered as our national guarantee of security and peace, they must be ready to meet and apply these changes in methods. This, I believe, is in strict accord with a policy of defense and non-aggression. In the event of war, one form of chemical warfare is certain to be used on a greater scale than it has ever been before. It is not forbidden in the words of any treaty. That is the use of smoke for screening and protective purposes. It will be the means of saving many lives. One of the most startling developments produced by the Chemical Warfare Service since the war is the device for dropping a smoke curtain from an airplane.

The country should be given authentic information regarding chemical agents and their effect, in order that there will be no hysteria over wild and fanciful statements regarding the power of new chemical agents or scientific weapons of any type. At the same time it should be taught a wholesome respect for chemical agents and told the means of protecting against them. Clippings from foreign newspapers received in our office yesterday, indicate that some countries are considering furnishing gas masks for the population of cities.

The Chemical Warfare Service frequently receives claims of inventors to some wonderful new discovery or invention of a chemical weapon far more powerful than any heretofore known. These claims come from all over the world. The Chief of the Chemical Warfare Service has adopted the policy of investigating these claims wherever there appears a possibility of there being any foundation in fact, and where it can be done with proper and reasonable expenditure of funds. In these investigations we have not, as yet, met with any phenomenal new agents, that by their use in war in small quantities would give a country an advantage that would mean victory in war. We have found enough facts in our research work at Edgewood Arsenal, to know that we must keep abreast of the developments of the science of chemistry.

I want to be clear that I am not advocating war either with

chemical or other weapons. I believe that military men, above all others, desire peace for they, more than all others, realize the meaning of war. But they are the sworn defenders of the nation and they want their nation to have a fair chance through a reasonable and sane policy of keeping abreast of scientific developments of the world that may be used in war. Our preparation has been and should continue to be independent of what other countries may or may not be doing along chemical warfare lines, one of preparation for security and peace. As our President said in his splendid inaugural address: "We have never practiced the policy of competitive armaments". We are not practicing it with regard to chemical armament.

It must have been very heartening to this Council to listen to the splendid statement by our President with regard to our national defenses where he says:

"Our country represents nothing but peaceful intentions toward all the earth, but it ought not to fail to maintain such a military force as comports with the dignity and security of a great people. It ought to be a balanced force, intensively modern, capable of defense by sea or land, beneath the surface and in the air. But it should be so conducted that all the world may see in it, not a menace, but an instrument of security and peace."

In pursuance of this policy the Chemical Warfare Service has advocated strongly the thorough preparedness of all our defensive forces to meet effectively any attempted surprise by an enemy through the use of chemical weapons. It believes this important preparation should be expanded more than it has been practicable in the past few years so far as the vital matters of research, protective materials, and training are concerned.

One of the most necessary elements of security is the development of the nation's chemical industries, which happily are making great progress.

I have found in conversation, many who do not know where the main body of the Chemical Warfare Service is situated, although the name of Edgewood Arsenal is pretty generally known. It is twenty miles east of Baltimore. Here are the large wartime plants for the manufacture of war gases, which will not be operated except in necessity; our research laboratories which must be kept always in operation and abreast of progress and the scientific developments of chemistry; our plants for the manufacture of gas masks, which, I believe, should be kept continuously in operation to furnish the supply of masks determined upon by our War Department as that necessary for protection from disaster.

Our Reserve Depot, First Gas Regiment and School are at Edgewood Arsenal. The School is one of our most important elements and while its classes have been small, it has been turning out from its courses officers of the Army, Navy and Marine Corps, who are proficient in the fundamentals of handling chemical agents and of protection against them.

Perhaps it may not be known to most of you, that here at Edgewood exists an example of the closest kind of cooperation and

coordinated effort between our two services of defense, the Navy and the Army. As your honored guest, the Honorable Secretary of the Navy knows, we have graduated from our school, more than a hundred officers of the Navy as well as a considerable number of officers of the Marine Corps; also, we are undertaking all chemical warfare problems for the Navy.

I should like to say finally that we shall be glad at any time to respond to any requests from your Council and to assist it in its endeavors toward coordinated patriotic effort and the dissemination of authentic information regarding chemical warfare and the present work of the Chemical Warfare Service.

### CHEMICAL WARFARE TOO MUCH FOR MEPHITIS.

Reprinted from Army and Navy Register, May, 1925.

Chemical warfare assumed a new and important role at the Presidio of San Francisco. While Lieutenant James F. Smith, of the chemical warfare service, was instructing a platoon of the San Francisco police department on the Presidio parade ground in the use of gas masks, smoke and tear gas, Major Miner F. Felch, medical corps, was waging war with lethal gas at the Letterman General Hospital.

It happened this way: While making a survey of needed repairs to the plumbing of the nurses' quarters, Major Felch, accompanied by the post plumber, crawled under the building to inspect the pipes. It was very dark and the two worked their way along with the aid of a flashlight. Flashing his light into a small sump hole, the major saw two glaring yellow eyes. A faint aroma confirmed a vague suspicion as to the nature of the occupant.

Uncertain as to what tactics would be employed by the "enemy" should he decide to open hostilities, the major withdrew with his force in a more or less graceful and orderly, but nevertheless hasty, retreat. Having suffered no casualties, the major held his forces in a position of readiness while a council of war discussed the best means of making the assault.

Chemical warfare was finally decided upon after the council had rejected pistols, rifles, grenades, and other military combat weapons.

Armed with ten vials of chloroform and a long pole the invaders moved to the attack and began hostilities. Within a few minutes the defender succumbed to the effects of the fumes and was hauled out in the daylight, when it was seen that he was a fine specimen of the genus Mephitis, with a hide of luxuriant white fur striped with black. The skin is now stretched out at the hospital ready for tanning. As skunk fur is said to be very popular for ladies' wear this season, the question that now arises is, "Who owns the fur?" The nurse, under whose quarters the animal was found; the major, who led the fray, or the post plumber, who by ancient custom of his profession is entitled to all salvage.

The little animal is supposed to have wandered into the Army post from one of the wooded stretches in the suburbs, as none have been seen in this vicinity for a long time.

**DEFENSE DAY.**  
**WAR DEPARTMENT TELEGRAM**  
**OFFICIAL BUSINESS**  
**Washington.**

AG 370.01 (5-29-25)  
(Mis.) C

**COMMANDING GENERAL,**  
**All Corps Areas.**

Pursuant to authority of the President, the second Defense Test will be held on July fourth, this year.

The general purposes of the Defense Test are to acquaint people with their National Defense policies and existing organizational and muster plans of the Army of the United States, as well as to test said plans. Patriotic demonstrations should emphasize the historical occasion when Congress first pledged the manpower and resources of the country for national defense and should commemorate the sacrifices made for national defense. State response to the proposed Test is purely voluntary.

Instructions to be mailed you in a few days are similar to those of last year. Acting Secretary of War will invite cooperation of all Governors. Copy of telegram and letter to you by mail. Initiate without delay necessary action. Last year's provisions requiring test to be conducted without extra expense to the Government will apply.

DAVIS.

**DEMONSTRATION FOR THE ARMY MEDICAL SCHOOL CLASS.**

On June 1st the graduating class of the Army Medical School and the Field Medical Service School of Carlisle arrived at the Arsenal for two days. The class numbered 46, composed of Army Medical, Dental and Veterinary officers, Marine Medical officers and two officers from the Cuban army. The two days were occupied in inspections of the museum, plants and special activities of the Arsenal supplemented by informal lectures and a field demonstration.

Notwithstanding the oppressive heat, the visit was a successful one and the class expressed great appreciation of the efforts made in their behalf. They seemed cognizant of the fact that however hard the trip was for them in the blistering heat it was fully as difficult for those who staged the demonstrations.

The special features that awakened the most interest were the turret explosion test, the field demonstration and the field bathing unit. The latter, prepared under stress of hurry and unusual difficulty, was well exhibited and even clipped 20 seconds from last year's time record.

All told, this seems to have been the best of the Army Medical School demonstrations yet held. The class itself was most interesting and interested.

## SUMMARY OF MARINE PILING INVESTIGATION.

By Amos A. Fries, Major General, Chief of Chemical Warfare Service.

Reprinted from The Military Engineer, May - June, 1925.

The Committee of the National Research Council on the Marine Piling Investigations, early in 1923, requested the Chemical Warfare Service to undertake a study of the specific toxicity of poisons against marine borers and the application thereof. Inasmuch as this problem directly concerned both the Army and Navy, the Chief of the Chemical Warfare Service was glad to comply with the request.

Although no Chemical Warfare funds for this research were available, the Quartermaster Corps, U.S.A., and the Bureau of Yards and Docks, U.S.N., supplied \$10,000 each for this work and, through the courtesy of the Department of Commerce, the facilities of the Laboratory of the Bureau of Fisheries, at Beaufort, N.C., were made available. To date, about \$17,000 have been expended on this investigation. In addition to the practical knowledge obtained, many valuable additions have been made to the general toxicity data of the Chemical Warfare Service.

The problem naturally divides itself into three phases, as follows:

- (1) Toxicity study of the relative effectiveness of various poisons against marine borers.
- (2) Protection of piling already in place.
- (3) Protection of new structures.

The toxics used in this investigation were obtained from stock, or made at Edgewood Arsenal, and the toxicity studies were carried out at the Bureau of Fisheries Laboratory, Beaufort, N.C. The impregnations of all service test-pieces were made at Edgewood Arsenal, and all the impregnating apparatus for these tests were designed, assembled and installed by the Chemical Warfare personnel there.

The principal types of borer from which protection was desired are the teredine, the limnoria, and, to a lesser extent, the martesia. All three of these species are fairly abundant at Beaufort. By far the greatest damage is caused by the ship-worm (or teredine) borer, although the limnoria can not be ignored, especially when it is remembered that the activities of the ship-worm, so far as new attacks are concerned, are nearly always confined to the warmer months, except in tropical waters, while the limnoria works all the year. The biological factors and the present methods for prevention of attack have been thoroughly covered by Col. Wm. G. Atwood, in The Military Engineer for May-June, 1923, and November-December, 1924; by the San Francisco Bay Marine Piling Investigation Committee in their annual reports; and by the British Institution of Civil Engineers in their report on "The Deterioration of Structures in Sea Water".

### TOXICITY STUDIES.

The toxicity work was started in June, 1923, and concluded

July 1, 1924. Over one hundred compounds were tested in concentrations of one part by weight to fifty thousand and a hundred thousand parts of sea water. In cases where the solubility of the compound was less than this, saturated solutions were used. These compounds were tested against the following organisms:

- (1) Terepine embryos.
- (2) Terepine borers removed from their burrows.
- (3) Limnoria.
- (4) Terepine borers in wood blocks.

The relative positions of the compounds in the toxicity scale remained approximately the same for all four types, but the resistivity of the types increased in the order shown. In other words, the most effective compounds against the embryos were also most effective against the other types, but it took a longer time to kill limnoria than it did the embryos, and a longer time to kill the ship-worm when incased in wood blocks than any other form. Controls were run for each batch of compounds, using plain sea water instead of the toxic solution. About fifteen compounds were found which were from twenty-five to fifty times as toxic as the best grade of creosote. Two of the most effective found were chlorvinyl arsenious oxide, a derivative of Lewisite, and phenyl arsenious oxide, an intermediate in the manufacture of diphenyl chlorarsine (the sneeze gas used in German blue-cross shell).

A study of the digestive fluids of the terepine borers failed to reveal any appreciable acidity or alkalinity with the most delicate indicators. Had any definite indications of either acid or alkaline reaction been obtained, compounds would have been chosen which might have been reacted to give a higher degree of toxicity in the digestive tract. Compounds which were almost entirely insoluble in water, such as the oleates and stearates of copper and mercury, had practically no effect. These facts, taken in conjunction with the service tests, indicate that a compound must be at least slightly soluble in water to have any toxic effect against the borer.

#### PROTECTION OF PILING ALREADY IN PLACE.

The generation by electrolysis of chlorine from sea water, in the vicinity of the infested piling, as described by a commercial process, had no appreciable effect on the extermination of various marine borers.

By use of a tide-meter, obtained from the Coast and Geodetic Survey, a study was made of the degrees of dispersion of compounds of different solubilities, at varying distances below the surface of the water. This investigation indicated that, in case of emergency, it would be possible, by the selection of a toxic material with the right degree of solubility, to maintain a lethal concentration of the toxic in the vicinity of the infested structure, and that this concentration was so rapidly diluted as to have no deleterious effect on marine life beyond a limited area. This method would be a temporary remedy at best, and probably would be so expensive as to be justified only in extreme cases and for a limited time.

*Protection of new structures.* Before any specific toxicity information was available, test-pieces were impregnated with various compounds. These preliminary test-pieces were one foot long and three inches square, and were obtained by sawing pine and oak railroad ties to those dimensions. The method of impregnation depended upon the impregnating material but, in practically all cases some adaptation of a standard wood impregnation process was used. In most cases, no difficulty was experienced in obtaining a good radial penetration of the impregnant in the wood. These pieces were sheathed on two sides with untreated half-inch pine boards, after the manner of Shackell ("Marine Borers from The Wood Preserver's Standpoint," Procedure of American Wood Preserver's Association, 1916, p. 127), who found that in the case of creosoted blocks, ship-worms would cross from the untreated portion into the treated wood. This is equivalent to an accelerated service test because it enables the embryo to secure a foothold in the untreated wood and, by the time the impregnated portion is reached, the ship-worm is full grown and more resistant to the action of the toxic.

These test-pieces were installed in sets of three to each compound, and most of those showing no attack have been in place for two seasons. About twenty different compounds have stopped the borer from passing into the treated portion, after having riddled the bait pieces. Straight creosote impregnations did not stop the borers from passing into the treated portion. Untreated control-pieces were completely riddled in less than three months. The best results were obtained by additions of small percentages of organic arsenicals in creosote and fuel oil as vehicles, and by impregnations of copper salts from ammoniacal solutions. These pieces are still in place, but will be inspected periodically.

Pine fence posts averaging eight feet long and six inches in diameter, were impregnated in the small-scale impregnation plant with some of the mixtures indicated as being the most effective. Thirteen sets of ten posts each have been installed in Beaufort Harbor, N.C., during 1924, and it is planned to pull one post, of each set, per year for inspection, thus insuring at least a ten-year test, for this locality.

In addition to these long-time tests at Beaufort, arrangements have been made through Col. Atwood to install test sets at the following locations: Warren, R.I.; Charleston, S.C.; Key West, Fla.; Pensacola, Fla.; Galveston, Tex.; San Francisco, Calif.; Coco Solo, C.Z.; Pearl Harbor, T.H.; and Cavite, P.I.

These pieces will be two-foot sections of six-inch fence posts. Each set will consist of three compounds as follows:

- (1) 1.5% D.A. (diphenylchlorarsine) in fuel oil.
- (2) 1.5% D.M. (diphenylamine chlorarsine) in creosote.
- (3) Copper carbonate from ammoniacal solution.

Two complete sets will be installed in each locality, and inspection will be made by officers of the Corps of Engineers on river and harbor duty.

In view of the fact that creosote impregnation gives satisfactory

protection for a certain length of time, providing the proper grade of creosote is used and a sufficient degree of impregnation is obtained, it seems evident that when creosote does fail after a period of years, it is because of the loss of the toxic constituents of the creosote by leaching, due to their solubility. When there are not sufficient toxic ingredients left in the outside core of the pile to prevent the veligers from attaching, the borer is enabled to get a start in the leached-out portion of the wood and, upon reaching the adult stage, is sufficiently hardy to penetrate of the treated portion of the pile.

It would seem evident, then, that for a material to give better protection than creosote, it should be more toxic than creosote in lower concentrations, and should be less soluble. A suitable piling impregnant should, therefore, be slightly but definitely soluble in water, and should be at least as toxic as its solubility percentage. These requirements are fulfilled by a number of the compounds tested, chief among which are chlorvinyl arsenious oxide, phenyl arsenious oxide, diphenylchlorarsine, diphenylamine chlorarsine, diphenyl arsenious oxide, diphenylamine arsenious oxide, phenyl dichlorarsine, and copper carbonate. Some of the organic dyestuffs, such as crystal violet and malachite green, show much promise.

With the exception of chlorvinyl arsenious oxide, there is no increased hazard in the practical use of any of these materials in impregnating timber on a large scale. The chlorvinyl arsenious oxide is being further investigated with regard to its vesicant properties when in solution in creosote and fuel oil.

#### SUMMARY.

(1) About fifteen compounds show specific toxicity against marine borers of from twenty-five to fifty times that of creosote.

(2) Better protection for piling than is afforded by creosote alone may be obtained at a very slightly increased cost by the addition of a specific toxic to the creosote.

(3) At least equal protection to that afforded by creosote may be obtained at less cost, by the addition of a specific toxic to fuel oil or some other cheap vehicle.

(4) Final selection of the best all-round materials for use depends upon the results of the long-time test-pieces now installed.

(5) The use of any of these materials will not involve any change in the present commercial methods of impregnation.

(6) No increased hazard, either in the impregnation process or in the installation of the piling, results from the use of any of the compounds now being tried in long-time service.

Questions are frequently asked as to why the Chemical Warfare Service has been engaged in such research as substituting a better material for impregnating piling and other structures in sea water, or the substitution of a barnacle proof paint for the present paint for ship's bottoms, or the finding of a better material for fumigating ships, a more efficient means of destroying the boll weevil and numerous similar problems. During the war and since, the Chemical

Warfare Service has been engaged on an intensive study of powerful and poisonous chemicals. The tremendous amount of accumulated knowledge, together with personnel trained in their handling, makes the Chemical Warfare Service supreme in any studies involving their use. No other organization has the knowledge, written or otherwise, or the trained personnel for making, testing, and protecting against these chemicals. That is the role of the Chemical Warfare Service in peace, and that is why it was asked and did cooperate with the National Research Council in the investigation of better methods of protecting piling against marine borers.

## SCIENCE AND PURSUIT OF PEACE.

By Benjamin Harrow

From The New York Times Book Review, April 1925.

The author of this book (*Building for Peace* by William Albert Noyes) is Professor of Chemistry at the University of Illinois. He is a chemist of sufficient distinction to have been President of the American Chemical Society. Like Frederick Soddy, the Oxford scientist, Mr. Noyes has been impressed with the point of view expressed by Galsworthy, that since scientific men have made war so destructive they are under an especial obligation to do something to prevent further wars. To contribute to this end, Professor Noyes has spent his sabbatical year in Europe, exchanging viewpoints on the political situation with French and German scientists.

A record of these conversations merely strengthens the conviction held by some that in politics the majority of scientists think like the masses at large. This does not, of course, mean that such an outlook is necessarily wrong, but it does mean that scientists, thinking as they do today, have nothing new to contribute to the discussion.

Professors Marie and Moureu, representatives of French Chemistry, declare that, despite the seizure of Alsace and Lorraine in 1870, the French did not harbor any designs against Germany. On the contrary, Germany, bent upon world dominion, deliberately started the war of 1914 to crush her rival beyond recognition. The violation of Belgian neutrality, the atrocities committed in Belgium and Northern France, the publication of the Manifesto signed by ninety-three German "Gelehrten," the attempts to break at all costs every provision of the Treaty of Versailles, the stocks of concealed arms found in various parts of the empire, the ever-changing green police, who, in reality, form the nucleus of a large and well-disciplined army, all point to German ruthlessness and to a spirit which changes not with time and with defeat. A nation that not only makes greivous mistakes but refuses to acknowledge these mistakes and to show any signs of repentance cannot be trusted. Hence the necessity for a large standing army in France. Hence the necessity for expenditures of large sums of money which might otherwise be used to far better

purpose.

It is Dr. Marie's contention that what is true of the German nation is doubly true of the German scientists. During the war they supported with acclaim every conceivable brutality committed by the German Army. He charges them with being directly responsible for the war and for the "collective soul" which they have created.

These attacks are answered by Professors Willstaetter and Wieland, prominent German chemists. They believed that France entered the war primarily to recover the two provinces lost in 1870. They believe that France cleverly manoeuvred her diplomatic policy to involve first Russia and then England, and that Germany struck out in self-defense only when she found herself at bay surrounded by hostile groups. Since the war France has been consistently hostile to any suggestions which might lead to German recovery. France is bent upon holding the Ruhr and all the country on the west bank of the Rhine, upon forming a Rhenish republic, upon separating Bavaria from Prussia, upon dismembering the Germany that remains, etc.

As to the attitude, more specifically, of German scientists, Professor Willstaetter points out that, while bitter attacks on Germany appeared in the scientific *Comptes Rendus* in the Fall of 1914, no such attacks appeared in German scientific publications. He also contrasts the erasure of the names of German chemists from the honor rolls of scientific societies in enemy countries with the decision of the German Chemical Society not to erase the names of chemists belonging to hostile nations. The obvious conclusion Professor Willstaetter wishes us to draw from these examples is that the German scientist never forgot that he was a scientist.

These parry-and-thrust arguments cannot lead very far. They are the outburst of passion-fed men repeating what has been drilled into them. But when the subject of poison gas is approached there the French scientist is convinced that the German scientist has not a leg to stand upon; for what could more clearly show the low depths to which the German scientist has fallen than the introduction, at his suggestion, of poison gases into warfare? Where in the annals of history do we find a bad cause supported by worse means? To this charge we have a reply from Professor Haber, who was in command of the German Chemical Warfare Service. As this is the first time that a statement from so authoritative a source has reached us, it might be well to quote Haber:

"At the beginning of the war it is certain that among the weapons with which the French entered the war were rifle grenades filled with bromacetic ester (a poison gas). From Aug. 1, 1914, to April 22, 1915, we have always had in mind the possibility that the French would use gases, because, from the beginning of the war, the enemy press gave us the belief that the French prepared and used such war materials. I have a number of press clippings which show that such weapons were reported on the side of our enemy. We have ourselves used such materials in the form of dianisidine chloride, a sneezing

powder, and xylyl bromide. In February, 1915, the French Minister of War gave out to the soldiers printed service directions for the use of these gas weapons. I have myself seen the printed service directions. I have been informed about the diplomatic communication from an authoritative French source. These uses were not on a large scale. Since success was only to be expected on a large scale, and artillery was not sufficient, we introduced the method of blowing the gases over, and on April 22, 1915, clouds of chlorine were blown over at Ypres."

To this the French chemist Grignard replies:

"As to the use of asphyxiating gases, I can tell you that the Government had no stock of them. There was only a small amount of bromacetic ester for the police of Paris, who used it to overcome thieves or madmen who barricade themselves in their apartments. It was not with that, at all, that we could start a war."

Again, where are you? In any case, if you agree with the head of our own chemical warfare section that the use of poison gases in warfare is humane, because, while it tends to disable, temporarily, many fighters, it kills relatively few, the Nobel Peace Prize should go to Haber or to whoever else is responsible for the introduction of so humane a weapon in warfare.

Professor Noyes's attempts to bring the scientific men together are laudable, but, so far as the reviewer can judge, get the reader nowhere. If peace continues for any length of time the French and German scientists will get together just as they did after the Franco-Prussian War, and irrespective of whatever men like Noyes may do; and if war comes again the scientists will part again and again call one another names, just as they did during the Franco-Prussian War and the great war - again irrespective of what men like Noyes may do. The problem is not insoluble, but it just happens to be the most difficult problem in the world to solve. My pet scheme of social evolution, probably as unworkable as hundreds of others, may be outlined in its barest form in this way: Admitting the view expressed by Soddy that scientific men stand for something in the world higher than anything which has as yet found expression and representation in Governments, particularly in their international relations - and of course if you don't admit that you need go no further - the very first task which confronts scientists is to continue to think scientifically after they have left their laboratory. They must be taught to regard the scientific method as one applicable to a universal outlook on life and not merely to a chemical reaction. It follows from this that once such a view has become firmly entrenched among them, and the fundamental difference in method between scientist on the one hand and industrialist, diplomat and politician on the other, will become apparent. It will no longer be possible for the type of men who today control the destinies of the world to misuse the glorious discoveries and inventions of science. At least one may confidently look forward to a death struggle between two schools diametrically opposed to one another.

## **GAS IN WARFARE.**

From Chicago Tribune, May 11, 1925.

There has been no such discussion of policy as to the use of gases in warfare as would justify our delegates at Geneva in committing the United States to the position Mr. Burton and his colleagues seem to be taking there. On the contrary, there is authoritative objection to this position besides intelligent skepticism as to the wisdom of attempts by treaty to restrict the use of gases.

We think that such a treaty is a disadvantage and danger to the conscientious party and puts a high premium on evasion and surprise. Gas was prohibited by international convention before the late war, but under stress of circumstances it was used. It is too useful to be ignored by a nation which feels its life or its vital interests are at stake, and it will be used by any nation if it thinks it essential to defense and by some nations if they think it conducive to victory. The more conscientious the signatory is, the greater the disadvantage it will suffer. There will not be for a long time, if ever, such cooperation among neutrals as could be safely relied upon to enforce the treaty.

Furthermore, the demand for restriction is founded, in our opinion, upon a sentimental fallacy as to the inhumanity of gas. Gas has painful effects, but they are not worse than shell wounds, at least to the extent of putting them in a prohibitory class.

And as a matter of fact all shells emit gases, so that the difficulties of strict prevention would be almost insurmountable. But the strongest argument against an anti-gas treaty is that it would be broken by the more desperate or the more unscrupulous combatant. The proposal is ill considered.

## **AN OPPORTUNITY TO HELP POPULARIZE CHEMISTRY.**

From Industrial and Engineering Chemistry, May 10, 1925.

As a part of the effort to spread information regarding the relation of chemistry to modern life and thereby gain both appreciation and support for the science, the Chemical Foundation, Inc., is preparing to publish and distribute a new book on a nonprofit basis.

The plan of the book is to devote a page or not more than two pages each to suitable quotations from the sayings and writings of great men, biographical sketches, and as many incidents as possible depicting the service of chemistry to industry, national defense, and agriculture. H. E. Howe, Editor of This Journal has been requested to prepare the copy for this volume and he desires the cooperation of all who may have information available for such a publication. A great number of examples of the earning power of research will be useful. Anecdotes can be used. The material must be prepared and arranged so that no matter where the lay reader opens the book he will find beginning on that page something of interest. This will lead him to read not only that story but the other stories and perhaps to keep the book at hand for frequent reference.

A wonderful opportunity is thus offered to present the story of chemistry to the American people in a dignified and readable way. If you have any helpful material or suggestions, kindly communicate with H. E. Howe, 706 Mills Bldg., Washington, D. C.

## CHANGES - CHEMICAL WARFARE OFFICERS' RESERVE CORPS.

<u>NAME AND RANK</u>	<u>ASSIGNMENT JURISDICTION</u>	<u>REMARKS</u>
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Barry, John G.	8th C.A.	Add. chgd. from: 1112 Mills Bldg., El Paso, Texas. to: 612 Mills Bldg., El Paso, Texas. TA Group.
Clarkson, John L.	O.C., CWS	Add. chgd. from: 1317 Spruce St., Philadelphia, Pa. to: c/o Bartholomay-Darling Co., 323 So. Wells St., Chicago. BA Group, Mil. Int. Div., OC-CWS.
Pope, Frederick	O.C., CWS	Add. chgd. from: 280 Madison Ave., New York City. to: 60 Broadway, New York City. BA Group, Ind. Rel. Div., OC-CWS.
<b>MAJORS</b>		
Auer, Charles I.	O.C., CWS	Add. chgd. from: 2729 Pershing Drive, El Paso, Tex. to: 2631 Pershing Drive, El Paso, Tex. BA Group, E.A.
Conard, Frederick U.	1st C.A.	Add. chgd. from: 357 Washington Ave., Brooklyn, N.Y. to: c/o Underwood Typewriter Co., Plant No. 2, Bridgeport, Conn. TA Group.
Katz, Sidney H.	O.C., CWS	188 Boulevard, Marion, Ohio. Apptd. 4/1/25; acctd. 4/21/25. BA Group. 3rd CWS Proc. Dist.
Morrell, Jacque C.	O.C., CWS	168 No. Harlem Ave., Oak Park, Ill. Apptd. 3/17/25; acctd. 4/14/25. BA Group, Technical Div., OC-CWS.
Shockley, Homer G.	O.C., CWS	101 Crescent Ave., Great Kills, S.I., N.Y. Apptd. 5/9/25; acctd. 5/14/25. BA Group, Training Div., OC-CWS.
<b>CAPTAINS</b>		
Carp, Fred	Unassigned	Route No. 6, Wichita, Kas. Apptd. 4/16/25; acctd. 5/6/25.
Conn, Wallace T.	O.C., CWS	122 E. Capitol St., Washington, D.C. Trans. to Aux-Res. 5/8/25. BA Group, Chem. Div., E.A.
Dean, Carlton M.	1st C.A.	No. 1 True Place, Woburn, Mass. Apptd. 5/5/25; acctd. 5/11/25. TA Group.
Edmunds, Norman	1st C.A.	93 Burrill St., Swampscott, Mass. Apptd. 5/5/25; acctd. 5/13/25. TA Group.

<u>NAME AND RANK</u>	<u>ASSIGNMENT JURISDICTION</u>	<u>REMARKS</u>
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Giesy, Paul M.	O.C., CWS	Add. chgd. from: 838 Westfield Ave., Elizabeth, N.J. to: 181 Belleville Ave., Bloomfield, N.J. BA Group, Chemical Division, E.A.
Harris, Louis	O.C., CWS	Add. chgd. from: 182 Scheerer Ave., Newark, N.J. to 137 Shephard Ave., Newark, N.J. BA Group, Chem. Div., E.A.
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Overmyer, Calvin J.	1st C.A.	Wadsworth, Howland & Co., Inc., 141 Federal St., Boston, Mass. Apptd. 4/28/25; acptd. 5/5/25. TA Group.
Schedler, Carl W.	O.C., CWS	139 Hillcrest Road, Berkeley, Cal. Trans. from Production Div., E.A. to 5th CWS Proc. Dist., San Francisco, Cal.
<b>FIRST LIEUTENANTS</b>		
Baker, John B.	O.C., CWS	911 W. High St., Urbana, Ill. Trans. from Production Div., E.A. to 1st Gas Regt. BA Group.
Bray, John R.	Unassigned	Buena Vista, Colo. Temp. add. until further notice: 89 Watesing Ave., Bloomfield, N.J. Apptd. 3/26/25; acptd. 4/20/25.
Darling, Elton R.	6th C.A.	1293 W. Macon St., Decatur, Ill. Apptd. 4/23/25; acptd. 4/28/25. TA Group.
Green, Louis W.	2nd C.A.	205 Redmond St., New Brunswick, N.J. Trans. from chem. Div., E.A. to TA Group.
Hampton, George W.	Unassigned	Box 423, Boulder, Colo. Apptd. 4/18/25; acptd. 4/24/25.
Lee, Henry A.	Haw. Dept.	Add. chgd. from: Exp. Station, H.S.P.A., Honolulu, H.T. to: 2054 Makiki Roundtop, Honolulu, H.T. TA Group.

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Macfarlan, Edward J.	2nd C.A.	179 Amity St., Flushing, N.Y. Apptd. 5/11/25; acctd. 5/14/25. TA Group.
St. John, Pierre P.	O.C.,CWS	94 Wolcott Ave., Beacon, N.Y. Died, BA Group, Property Div., E.A.
Schechter, Samuel N.	Phil.Dept.	807 Wright St., Manila, P.I. Apptd. 2/26/25; acctd. 3/31/25. TA group.
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Cumming, Edwin D.	9th C.A.	c/o Shell Oil Co., Long Beach, Cal. Trans. from BA Group, Chem. Div., E.A. to TA Group.
Davis, Chester B.	Unassigned	312 So. 13th St., Herrin, Ill. Apptd. 5/11/25; acctd. 5/23/25.
Hilbert, Alfred	2nd C.A.	18 Center St., Clifton, N.J. Apptd. 5/19/25; acctd. 5/23/25. TA Group.
Hill, James E.	9th C.A.	130 Falcon Ave., Long Beach, Cal. Trans. from Chem. Div., E.A. to TA Group.
Humphreys, Moreland M.	O.C.,CWS	910 Clarkson St., Denver, Colo. Apptd. 4/17/25; acctd. 4/25/25. Supply Div., OC-CWS, BA Group.
Jacobson, Orin B.	6th C.A.	1103 W. Illinois St., Urban Ill. Trans. from Chem. Div., E.A. to TA Group.
Knight, Charles W.	1st C.A.	39 Gladstone Ave., Windsor, Ont., Canada, Apptd. 5/6/25; acctd. 5/12/25. TA Group.
Kuhne, Cecil C.	Unassigned	Oil Hill, Kas. Apptd. 4/15/25; acctd. 4/27/25.
Labarthe, Jules	Unassigned	3620 Terrace St., Pittsburgh, Pa. Apptd. 4/28/25; acctd. 5/21/25.

<u>NAME AND RANK</u>	<u>ASSIGNMENT JURISDICTION</u>	<u>REMARKS</u>
SECOND LIEUTENANTS (Cont'd)		
Leach, Howard S.	O.C., CWS	Add. chgd. from: 2918 - 20th Ave., Ensley, Ala. to: 3124 Ave. "E", Ensley, Ala. BA Group, Chem. Div., E.A.
Loubriel, Jose W.	2nd C.A.	Box 745, San Juan, P.R. Trans. from CA-Res 4/24/25. TA Group.
McColm, Eugene M.	Unassigned	University Club., Akron, Ohio, Apptd. 4/17/25; acctd. 4/30/25.
Osmond, Charles H.	O.C., CWS	Add. chgd. from: 163 Overhill Rd., Upper Darby, Pa, to: Ivy Way, Port Washington Estates, Port Washington, L.I., N.Y. BA Group, Prod. Div., E.A.
Schurr, Perry N.	9th C.A.	504 - 19th St., Huntington Beach, Cal. Trans. from BA Group, School Bn., E.A., to TA Group.
Snider, Hiram F.	Unassigned	907 So. 6th St., Champaign, Ill. Apptd. 5/11/25; acctd. 5/21/25.
Spurlock, William W.	O.C., CWS	Add. chgd. from: Box 373, Silverton, Colo. to: High School, Cheyenne Wells, Colo. Temp. add. to 9/10/25 - Box 6, Zephyr, Texas. BA Group, E.A.
Street, John N.	O.C., CWS	Add. chgd. from: 817 Euclid Ave., New York City to: 621 No. Lake St., Madison, Wis. BA Group, Chem. Div., E.A.
Warren, Charles E.	Unassigned	110 Hancock St., Brooklyn, N.Y. Apptd. 5/6/25; acctd. 5/12/25.
Westerman, Harry R.	2nd C.A.	26 E. 177th St., New York City. Trans. from Inf-Res. 4/4/25. TA Group.
Wood, Sylvan R.	8th C.A.	201 Husband St., Stillwater, Okla. Trans. from FA-Res. 3/29/25. TA Group.

#### 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.

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