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Of Interest To All Arms

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Edited By STAFF, CHEMICAL WARFARE SCHOOL

GRADUATION OF THE FOURTH NAVAL LINE OFFICERS CLASS.

On June 27, 1925, the Fourth Class of Naval Line Officers graduated from the Chemical Warfare School. The class consisted of twenty-nine officers the majority of whom were members of the 1924 class at Annapolis.

The course consisted of six weeks instruction in Chemical Warfare viewed from the Naval standpoint and ended with graduation on June 27th.

Graduation exercises were held in the Chemical Warfare School. Colonel C. W. Exton, C.W.S., Commandant, gave a short address expressing the pleasure of the Post at having had the class with us and our regret that they must leave after so short a stay. Colonel Exton complimented the class upon the work performed by them and assured them the School would always be at their service in assisting them with any problems in Chemical Warfare that might arise. Colonel Exton then introduced the principal speaker, Rear Admiral C. C. Bloch, U.S.N., Chief of the Bureau of Ordnance. The address of Admiral Bloch appears on another page of this issue. The exercises closed with the presentation of certificates by Admiral Bloch.

The following officers received certificates:

LT. COMDR. (MC) U.S.N.
Brown, Ernest W.

LT. (jg) U.S.N.
Minckler, Campbell H.

ENSIGNS, U.S.N.

Barchet, Stephen G.	Koonce, Paul B.	Peterson, George E.
Blair, Leon N.	Leslie, Harold K.	Sharp, Louis D.
Carroll, Ralph C.	McLean, Hugh B.	Sinclair, George A.
Cullen, Carl E.	McPeake, Lawrence J.	Smith, Steele B.
Davis, Frank R.	Magly, Austen V.	Southworth, Harrison B.
Huckins, Thomas A.	Mills, Ralph E.	Stephens, Marvin M.
Ilsemann, Frederick J.	Minter, Robert O.	Vose, Frederic B.
Johnson, Richard F. J.	Ocker, John M.	Weaver, Paul L. F.
Kissam, Gordon D.	Pearce, William T.	Wheeler, Homer B.

ADDRESS DELIVERED AT THE GRADUATION OF THE FOURTH NAVAL LINE OFFICERS CLASS AT THE CHEMICAL WARFARE SCHOOL.

By Rear Admiral C. C. Bloch, U.S.N., Chief of the Bureau of Ordnance.

Gentlemen of the faculty and of the graduating class, the apparent reason of my being here to-day is that I have been asked to say a few words to the class of naval officers who are just finishing their course at the Chemical Warfare School. The real reason, however, is that I am keenly interested in Edgewood Arsenal and its work, that I am keenly interested in the course of instruction here which is being given to naval officers, and, above all, I am greatly concerned that this course shall be continued.

You may wonder why; I will try to give you my reasons in a few brief words and at the same time to express a fervent hope that we will never be in such a state of unpreparedness for gas warfare as we were at the outbreak of the World War in 1914.

Gas warfare was thought of as far back as the 5th century before Christ, when burning sulphur was used to assist in the siege of the cities of Platea and Belium. There are other historical records of the use of gas and chemicals on land prior to 1900. At sea, there is record of quick lime having been spread to windward in a naval battle with the idea that it would blow down on the enemy and affect the sight and action of the enemy's crews. There is also record of the proposal of Admiral Dundonald of the British Navy to use burning sulphur at Sevastopol during the Crimean war. The thought of scientists and military men had been turned to the use of poison gas and, as a result, in 1899, at the Hague Conference, several nations pledged themselves not to use poison gases. This Conference was signed and ratified by Germany, however, the United States was not a signatory. In 1907, the second Hague Peace Congress adopted rules for land warfare, the 23rd article of which expressly prohibited the use of poisons and poisonous weapons. I think, in view of these Hague agreements that none of the great nations, really considered the probable use of toxic gas in war. However, it is a matter of fact that, notwithstanding the Hague conferences and the opinion of the world, on the 22nd of April 1915, at Ypres, the Germans launched a chlorine gas attack which was effective and fatal to the Allied Forces who were not expecting such an attack and who were totally uninstructed and unprepared for such an attack, nor were the Allies then in position to retaliate in kind.

The Treaty, which has been termed "A scrap of paper" by a German statesman, prohibited the violation of Belgian territory; notwithstanding this Treaty, Belgian territory was violated. Similarly, notwithstanding the two Hague Conferences, poison gas was used at Ypres, and having been used by the Germans, it was necessary for the Allies to proceed rapidly to the instruction of their own forces, not only in the use of poisonous gas, but also in the use of protective appliances, in order that the attacks of the Germans might be met. As a result, gas was more and more used during the War,

until it became one of the commonest forms of attack. In the latter part of 1921, and the early part of 1922, the Conference on the Limitation of Armament, held at Washington, drafted a treaty relating to the use of submarines and noxious gases in warfare. This treaty was signed by representatives of all the contracting nations and has been ratified by three of them; however, two of the nations have not yet ratified this treaty. Article V of the treaty reads as follows:

"The use in war of asphyxiating, poisonous or other gases, and all analogous liquids, materials or devices, having been justly condemned by the general opinion of the civilized world and a prohibition of such use having been declared in treaties to which a majority of the civilized Powers are parties. The Signatory Powers, to the end that this prohibition shall be universally accepted as a part of international law binding alike the conscience and practice of nations, declare their assent to such prohibition, agree to be bound thereby as between themselves and invite all other civilized nations to adhere thereto."

It will be noted in the discussions of the various representatives that it was agreed more or less unanimously that chemical warfare gases have such power against unprepared armies that no nation dare risk entering into an agreement which an unscrupulous enemy might break if he found his opponents unprepared to use gases both offensively and defensively.

It was also recognized by a subcommittee that in warfare many high explosives might produce gases giving the same effect on men as would special gases used as a gas attack, so, therefore, there will always be a doubt after battle whether gas was actually used or whether any casualties from apparent gas were those of gases formed by the detonation of high explosives. This uncertainty may at any time cause the deliberate use of gas, on the grounds of retaliation.

It is therefore apparent that notwithstanding the Hague conferences, the Germans did use gas in the World War and as a result of their using gas, the Allies were forced to resort to the same methods of warfare. It now appears that notwithstanding the Treaty of 1922, and that although noxious gases are prohibited, it is still within the power of an unscrupulous nation to violate this agreement and thus force the other belligerents to the same method of warfare, and, furthermore, the uncertainty of whether one belligerent has used gas may cause another to deliberately use it. These reasons are the reasons which make it necessary for the continuation of our research into chemical warfare materials and protection against such materials. These reasons are the reasons which necessitate the continuance of the Chemical Warfare School. These reasons are the reasons which make it necessary for the Navy to send as many officers as can be to this school to familiarize themselves with the use of gas material and to familiarize themselves with the useof protective apparatus. These are a few of the reasons which make me most keenly interested in the education of officers in this method of warfare. I would like to state here that I believe the United

States undoubtedly surrenders a material advantage in renouncing gas warfare. The resources and developments of this Country are such that it is probably better able to wage gas warfare than any other Country in the world. It also might be said that, notwithstanding any treaties or agreements, scientists of other Countries are going ahead with their research and development of new gas material, therefore, it is incumbent upon us to proceed along the same lines in order that if gas is ever used we will not be found at a disadvantage, but, on the contrary, that we have an advantage in proportion to our skill, ingenuity and enterprise.

During the World War, the use of gas did not extend to the sea. As far as is known, it was only used on the battle field. I am firmly convinced that should any other war of any consequence occur, that the use of gas will be extended to the sea, and to the air, and therefore we naval officers must be fully informed as to the best methods of protection against gas and also how to use it effectively, in case we must do so. In the employment of gas on the battle field, lethal gases are extensively used; in sea warfare, I do not consider that such gases are demanded. I believe that only lachrymators and sternutators will be required. We require only such gases as take immediate effect and put the crews of ships out of action for an hour. Given such a handicap in time, it can be easily seen by those familiar with naval battles that no more will be required in order to insure victory and the destruction of the enemy feet.

I look upon you, gentlemen of the graduating class, as being evangelists; you will go forth from here into the Navy equipped with your special knowledge and training and you should preach it to your fellow officers and men, in order that they may know and understand, and should the unhappy occasion of another war occur, I feel sure that with the agency of this School and the efforts of its graduates that we will not be in the position of the Allies in 1915.

I congratulate you,one and all, upon having successfully completed your course. I trust that your future careers in the Navy will be benefitted by this course and that as future high ranking officers you will look back with respect and gratitude upon Edgewood Arsenal and its Chemical Warfare School.

GENERAL BULLARD DEPLORES PROPOSED DEFENSE CUT.

In commenting upon the proposed cut in appropriations for national defense,Maj. Gen. Robert Lee Bullard, U.S.A. (ret.), former commander of the First Corps Area and now president of the National Security League, said, in part:

"It is to be hoped that it will never be carried into effect. It can not be looked upon as a simple cut in appropriations, but as a terrific blow to national defense, now only in process of developing, not developed. The effect would be the same whether the cut is made on Regular Army,National Guard, Reserve, or all three. Under the law of 1920 our national defense is yet an unfinished building, easily shattered. - *From National Bulletin, June, 1925.*

THE DANGERS OF A RUSSO-GERMAN AERO-CHEMICAL ATTACK.

From "Chimie & Industrie", February, 1925

The French Committee of Aeronautical Propaganda has always affirmed that Germany was a great danger to our country; because the power of her chemical industry is tremendous;because her aero-dynamical laboratories,her new factories of dirigibles and airplanes, have since the Armistice been the object of constant effort and constant progress; because she possesses, in the manufacture of light metals, an unquestionable advance and freedom; because she wishes revenge; because her rulers, officers and instructors constantly entertain and stir up at home a terrible hatred against us.

But several months ago, there was discovered a new and very important fact; it is no longer only far-sighted Frenchmen who renew this assertion; it is the League of Nations itself.

Since 1921 the League has charged a special committee, composed of two Englishmen, Viscount Cecil and Admiral Aubrey Smith, one Italian,the General de Marinis,and one Frenchman,Colonel Reguin, with the study of the probable effects of recent discoveries in chemistry in the course of the next wars.

This Committee called several chemists and physiologists, of every country, among whom we note professors Andre Mayer of the College of France;Angelo Angeli of the Royal Institution of Advanced Sciences of Florence; J. Bordet of the Pasteur Institution of Bruselles; W. B. Cannon of the School of Medicine of Harvard; Th. Madsen of Copenhagen; Senator Paterno of the University of Rome; M. J. Enrique Zanetti of Columbia University of New York, and even the German, Pfeiffer of Breslau. The committee placed the problem before these specialists in the following manner:

"To reveal to the public opinion of the world the effects which the most powerful means of destruction, put by modern science to the use of modern warfare, would produce.

We shall consider that henceforth an armed nation utilizing all of its material and human forces strives to reach, at the same time as the combatants of the hostile front, the entire nation in its population, its riches, its resources of every kind. It is in a way a war of depth,in which the adverse nations become vulnerable up to the extreme limit of their respective territories. This kind of war has been made possible by the increased range of firearms, by the action of aerial forces, and by all other means of transporting or projecting agents of destruction,especially by dirigible balloons and airplanes.

Without discussing the legitimacy of such proceedings,we shall be held down to seeking everything which, permitted or not by the laws of war,may be nevertheless possible in order to give to public opinion the exact measure of what may be expected."

The replies of scientist of all countries permitted the Committee to get out a report, which was published last August, and which appeared specially in "Le Temps" of August 22, 1924. The following is an extract from this report:

"In the course of the last war, a first experiment made by the Germans in direct violation of the Hague Convention, the chemical arm was effectively employed by the belligerents and to an extent equivalent to that of other arms. In the future, it is to be feared that it may be employed to a still greater extent, for this use showed itself to be efficient in circumstances in which the other arms would have had little or no effect. While a combatant could obtain real protection against explosives in the trenches, in deep dug-outs, against noxious gases which penetrate everywhere, he remains without defense, whether in the open or under shelter.

The different methods of use, the cloud of heavy gas carried by the wind toward the enemy; the fire of toxic shells, intended either to produce very dense clouds of gas or infect the ground, aim at and reach the combatants at the front. But we can conceive in the future, other methods, such as the dropping of bombs from airplanes or other carriers charged with noxious products, which would reach the civilian populations as surely as the combatants. It is doubtful that people understand the power of this arm, and the danger to which they are exposed. We have seen nothing in the course of the last war which is comparable with the probable destruction of industrial centers, and massacres of civilian population.

Most of the combat gases are made from ordinary materials used in large quantity in time of peace, so that there is little difference between the industry of making dye, pharmaceutical or photographic chemicals, and that of making noxious gases for war."

For instance, phosgene, a suffocant, is used in the preparation of Victorian blue. Also mustard gas, an asphyxiant, is derived from indigo, and Georges Claude tells me that recently in new methods of making nitrogen products at a certain stage, a useless product is produced from which it may be obtained almost without expense.

The report classes these gases as irritants, suffocants, asphyxiants, and shows what are the effects of each on the human organisms, on animals, and on vegetation.

Passing now to the protection against the chemical arm, the report, after having shown that during the war, gas masks played a useful part, expresses itself thus:

"Nevertheless, if the concentrations are greater than a certain limit, the masks become ineffective. The combatants find themselves so to speak, deprived of every means of defense, and even in positions which formerly were considered the most secure, they are inexorably doomed to death. Moreover, it is essential that those who use them, have them immediately available and be practiced in putting them on. Against a crowd taken by surprise or not trained, the effect would be as terrible as that which was produced at the time of the first use of the chemical arm."

I digress here a moment. It was on the 22nd of April, 1915, that for the first time the Germans launched against us, gas clouds on the front of Ypres, between Langemarck and Bixschoote. The surprise was complete. Five thousand Frenchmen were killed. All the line was rendered incapable of action. Luckily the German high

command had not confidence in the new invention of their chemists, and did not profit by their victory. I invite the attention of my readers to the fact that our answer had to wait ten months, and that it was not until February, 1916, that we replied to this attack by gas. Confiding as we did in the Hague Convention, we had foreseen nothing and prepared nothing.

The experts continue:

"A similar catastrophe would be produced without any doubt in connection with the first use of the chemical arm against civilian populations.

The chemical arm produces the most diverse effects. There are no conceivable limits to its power, to its effectiveness, to its diversity, no more than there are in pharmacology, or in any other branch of chemistry. If these facts, extremely serious against unprotected men, can be reached by adequate measures of protection, nevertheless the problem of protection of civilian populations is still far from being solved.

The noxious substances employed, being in current use in time of peace, the chemical arm is at the disposition of every great power possessing chemical factories.

The extreme facility with which these factories can be transformed almost in a night to manufacture material for use in chemical warfare, gives rise to a sentiment of fear and deference toward a nation possessing a powerful chemical organization. It assures, in fact, to a power animated by evil designs, an immense superiority. A noxious gas, studied in secret -- and this study can be made no matter where -- manufactured in large quantity -- and this manufacture can be made in any chemical factory -- thrown by surprise on an unprepared population, can break every desire for resistance.

It must be admitted that from the technical point of view, it does not seem impossible that large cities should be attacked by means of toxic gas dropped by airplane or by weapons with greater and greater range of modern military and naval forces. There are, on the contrary, reasons to believe that in a future war, the Air Service will be much more developed than in the last war, as much in number of airplanes as in their capacity for transportation. However worthy of condemnation such an action may be, there would be no great technical difficulty in dropping bombs of large size, filled with toxic gas on centers indispensable to the political or economic life of the hostile country. It is to be hoped that an effective means of protecting the civilian populations against such dangers will be found, but the problem is difficult. Furnishing masks to an entire population seems to be almost impracticable and it remains still to be proven that collective methods of protection are efficient. (1)..

In the absence of these means, and without prior indication of the point of attack, complete protection is impossible. Moreover, heavy toxic gases remain near the ground, even in the open country

(1) Recently the A.R.S. masks in stock in one of our Arsenals were inventoried and only 9% were still serviceable.

for a long time. In a town it is difficult to say how long they would remain and would continue to be dangerous.

It can be said without doubt that such a development of war would be too terrible, and that the human conscience would revolt against such a practice. This is possible, but granting that in modern wars such as the last, the entire population of a country finds itself more or less directly engaged, it is to be feared that an unscrupulous belligerent might make no difference between using toxic gas against troops on the field of battle and using them against the centers which furnish these troops the means for fighting. (2)

In conclusion, admitting on the one hand the more and more numerous and varied applications of science to war; observing, on the other hand, that the real danger (danger of death) for a nation would be to remain inactive through confidence in international conventions, to awaken without protection against a new arm, it appears to the Committee essential that the people should know what a terrible menace hangs over them."

This report is terrible. The conclusions are frightful. They become still more so if we examine carefully the terms which are probably made less forceful than the circumstances warrant. If we read between the lines, if we ask ourselves first, who can be this "neighbor" -- "great industrial power possessing chemical factories" -- "having a powerful chemical organization"; then, if this "neighbor" is "animated by evil designs"; finally, if this "neighbor" is or may become "an unscrupulous belligerent"; to these three questions everyone will make the same reply: "Germany".

In fact it is not "a powerful chemical industry", which Germany has, it is a "formidable industry", ten times more powerful than ours, twice as powerful as the chemical industry of all the other nations combined.

For example:

In Germany the production of dyes exceeded 47,000 tonneau (1 tonneau = 1,000,000 grams) in 1920; 92,700 t. in 1922. Of nitrogen 102,000 t. in 1913 to 550,000 t. in 1923. She has then increased more than five times.

The German Universities included in 1923, 8,000 students, taking chemical courses; in France, the 150 students receiving diplomas annually have hardly been able to find employment.

The Interessen-Gemeinschaft, or more briefly, the I.G., which is to the chemical industry, what Krupp is to the metallurgical industry, groups in one gigantic cartel all the principal factories of Germany: first, the "Badische Anilin und Soda-Fabrik" (202 hectares, 500 acres, 15,000 laborers), which had in 1913 a capital of 36,000,000 gold marks, at the end of 1923, 178,000,000 gold marks, and is still increasing; second, the "Bayer" at Leverkusen (10,000 laborers, 2,400 employees, 17 doctors, 288 chemists); third, the "Aktien Gesellschaft fur Anilin Fabrikation" at Berlin; fourth, the "Hoechst" (10,000 laborers, more than 300 chemists, more than 80 engineers)

(2) General Nollet has said: "In a republican country, there are no non-combatants against aggression."

fifth, the "Cassella" at Frankfort-sur-Mein; sixth, the "Kalle" at Biebrich; seventh, the "Chemische Fabrik Griesheim-Elektron" at Frankfort; eighth, the "Chemische Fabriken vormals Weiler-ter-Meer" at Uerdingen, etc., without counting the new factories created by the I.G. in the interior of the country far from the view of our troops of occupation.

Nothing is more simple for Germany, who has in her blood the genius of camouflage and of trickery, than to study in secret and manufacture in enormous quantities a new gas, which, moreover she possesses, since her testing laboratories at Hanover have just produced a new mask corresponding to this new gas; since various accidents happened a few months ago in a military laboratory of Dresden where seven men were asphyxiated; more recently still among the fishermen of Haff, (on the Prussian coast of Fischhauser Pillau, following great manouvers, executed by 350,000, says the Socialistic Republic of Eastern Prussia, in its number of the 9th of last October), appear to have been caused by a toxic product derived from Lewisite, which had been tested in the course of these great manouvers, and which had remained in suspension in the atmosphere of their region.

What is Lewisite?

It is a gas discovered some months before the end of the war by the American chemist, Lewis, against which very probably our present mask would be useless. Of this gas, which the Americans can at present manufacture at the rate of 48 t. a day, General Fries has said: "A bomb of 433 kg. would render uninhabitable ten blocks of houses in New York. Each inhabitant would have a chance of ten to one of being killed. One hundred tonneau would render the entire city uninhabitable for a week, destroying the population, contaminating food and medicaments, preventing the burying of the dead, preventing those who might survive from being assisted."

It is still necessary to speak of the new explosive bombs of 1,000 and 2,000 kg., capable of blowing up an entire block of houses, of sending a cruiser to the bottom in a few minutes, if they fall at less than twenty meters from its side, of forming a great river of burning gas, which would cause, as in Tokio, great fires. Is it necessary to recall concerning incendiaries, that in the spring of 1918 the Germans had manufactured and put in stock incendiaries which they proposed to drop from their airplanes in showers of thirty or forty on the houses of towns to set fire to the roofs and to spread fire everywhere. The fear of exasperating public opinion on the eve of peace negotiations which they thought imminent made them abandon this project.

Also nothing is more simple for Germany than to make the thousands of airplanes necessary for the transportation of these toxic products. On this point it is sufficient to recall the situation of German aviation at the time of the Armistice: at the front 5,000 airplanes, divided in 310 squadrons, served by 85,000 men; at the rear feeding these 310 squadrons, 267 factories, employing 160,000 laborers, putting out each month 2,000 motors and 2,000 airplanes. (The total German production during the War was 48,000 airplanes,

19,400 during the single year 1917).

It is true that the Treaty of Versailles imposed on the Germans the delivery, or the destruction of their material. But in exacting this, they rendered them a service. Obliged to make a clean sweep of what they had, they took up their studies again in twelve official laboratories marvelously appointed, and in private laboratories of Zeppelin, Dornier, Junkers, etc.

As for factories, obliged by the Treaty of Versailles to limit themselves to the construction of small airplanes, they have made arrangements abroad where they construct without restriction and without control military airplanes:

In Holland, Fokker, at Amsterdam, at Vere, at Utrecht; Russia, Junkers, at Moscow, at Petrograd; in Switzerland, Dornier, Rohrschach, on Lake Constance, Friedrichshafen; in Italy, Dornier, Marina di Pisa; in Denmark, Rohrbach, former manufacturer of Zeppelin, on the Island of Amager. Besides in Esthonie, the Dwigatel, Reval; in Sweden, Svenska Aero Aktiebolaget, at Stockholm, they are constructing German aeronautical material.

As for commercial aviation, its development has continued; thirteen companies are already in operation. The results obtained have allowed the directors, of which the principal is Junkers, to undertake the organization of an international aerial network, of which the operation should be assured by a group of Societies, mostly German, constituting a cartel, which bears the name of "Trans-European Union". This project, which should be entirely completed at the end of 1926, will give to Germany a commercial fleet, which will be the most powerful in the World.

Today the period of trials and calculations appears finished, and one would say that the production of airplanes is nothing for a people familiar with big business. One must remember that Germany can, in a few months, have thousands of modern apparatus ready to take the air. As to the necessary personnel, the twenty-two schools of aviation which are operating in Germany, companies of aerial navigation, the Associations of Aviators are being formed and are training a large number of pilots.

It results from all this that henceforth all our great cities will be at the mercy of surprise aerial chemical attack. The most in danger are those nearest the front.

On the 18th of last June, the "Society of Friends of the Chemical Industry of the Country and of its Defense against Gas", of Russia, adopted statutes, of which the following are extracts:

Article I: Aim:

(a) To develop chemical knowledge among the population and to spread among them the idea of the necessity of defense against gas.

(b) To aid in all ways the work of the laboratories.

(c) To aid in the development of chemical industry, conformably to the needs of national economy and the military defense.

(d) To seek means for organizing the chemical defense of the country.

Article II: In consequence the Society has the right:

(a) To establish throughout the country sections and affiliated societies.

(b) To seek resources for accomplishing the aims given in Article I in organizing conferences, agreements, etc.

(c) To organize everywhere Committees and auxiliary scientific institutions.

(d) To organize publishing houses, schools, expositions, congresses.

(e) To acquire and to sell, to conclude all contracts on sales, to sign agreements of all kinds, to testify in court.

Article V: The Society comprises active members and associate members.

Those eligible to active membership are important citizens, as well as organizations, governmental institutions, professional unions, societies of students, factories, workshops, etc.

These can be incorporated as active members: scholars not less than fourteen years of age may be inscribed as active members. Those not less than ten years as associate members.

Article X: Each active member has the following rights:

(a) The right to vote in the sittings of the organization to which he belongs and the right to be elected to any office in the society.

(b) The right to be gassed once in a chamber especially fitted up for this purpose, and of coming out unharmed while rabbits and dogs are asphyxiated. "This is the baptism of gas".

(c) The right to use libraries, museums, expositions, conferences, under favorable conditions.

(d) The right of priority of admission to the courses of chemical schools organized by the Society.

(g) The right to acquire products and masks, under favorable conditions.

Every member of the Society is obliged to assist in every way the work of the national defense, and to further the ends of the Society by means of propaganda and special measures. In particular, each must pay regularly his dues, attend regularly the meetings of his local section, as well as general meetings. He must work for obtaining new members and solicitating gifts. He must contribute to the distribution of books published by the Society, collect donations, organize conferences and demonstrations. He must take care that he commits no improper action in the name of the Society.

These statutes are those of the "Dobrokhim", whose activity extends over all the Soviets of all Russia, over the Ukraines, White Russia, Transcaucasie, Turkestan, Siberia, Ural, in short on the entire U.R.S.S.

Its directorate includes men like: Trotsky, Frounze, Boubnov, Kamenev, Vorochilov, Rosengoltz, chief of the Russian Air Service.

In reading in the last "Bulletin of the Society of Industrial Chemistry", a new sensational paper, I recalled having found some months ago, in the journal of the United States, that an association

of robbers, having remembered that on a certain day, at a certain hour, a train would transport 4,000,000 dollars, had, in order to capture it, operated in the following manner:

In a forest, early in the morning, the alarm was sounded. The train stops. Rapidly the engineer, mechanic, conductor are surrounded by bandits, themselves protected by masks, who projected over them asphyxiating gas. The passengers who opened windows or doors to see what was going on, were treated in the same way. The money was easily carried away in an airplane, which awaited in a neighboring clearing, the propeller of which was running slowly.

Soon the airplane flew away and put the frontier between the police and the robbers.

The directors of the Soviets, who are for the most part bold and intelligent men, have learned everything possible from this new aerial science and of the new branch of chemistry. And what I cannot well explain, what is to me unimaginable, is that our governors, the governors of England, Poland, of Belgium, of Italy, of Czecho-Slovakia, do not understand that to leave the aero-chemical arm in the hands of the Germans, in the hands of the Soviets, is to expose the middle, the intellectual, and the directing classes of Europe, primarily, then of the world, to extermination.

I hope that after what I have just said of the report of the League of Nations, after the considerations which I have just developed, I will no longer be considered as an old dreamer, somewhat foolish, who has plagiarized Jules Verne.

I hope that no one can now say "Oh, we have plenty of time. The Germans and Russians are still only engaged in theoretical studies. We have ten years before us. In that time they can do nothing serious."

If anyone is not of my opinion, I wish to explain that before two years, in one year perhaps, the Germans, aided by the Russians, will be able to operate successfully, for example on our own capital.

The area of Paris is 8,000 hectares, its cubical contents in air, calculated on say 10 meters in height, that is 3 stories, is 800,000,000 cubic meters. Knowing that a concentration of one gram of toxic gas per cubic meter of air is lethal, according to Mr. Kling, director of the municipal laboratory of Paris, there would be necessary then 800,000,000 grams, that is 800 tonneau to asphyxiate the population. To transport this 800 tonneau would require 800 airplanes, each carrying one tonneau.

Moreover, since the Black Forest is 450 km. from Paris, these airplanes should be able to travel 1000 km. without landing. These two conditions are satisfied by the airplaines being manufactured at the present time.

The objection will be raised that all of the airplanes will not arrive. This is equivalent to saying that Germany must have, in order to attempt this operation, not 800 but double that number, say even 2000 airplanes, and 2000 tonneau of bombs. What do these figures amount to in relation to the present possibility of German industry?

Dornier, in his Italian factory, Marina di Pisa, is at present delivering in Spain hydroplane bombers. One of them accomplished, on the 17th of last August, a remarkable raid from Marina di Pisa to Melilla, 1560 km. in ten hours 20 minutes, with a crew of three men and a load of 2300 kg. freight.

At the Universal Postal Congress at Stockholm, last August, Junkers presented to certain members of the Congress, the model, on the scale of 1 - 20 of a new airplane (6 low speed Diesel motors, commercial speed 225 km, useful load 15 tonneau). He declared that he would equip with this apparatus the postal lines for which he might be given the concession.

It is superfluous to dwell on the consequences of partial or total destruction of Paris, the seat of the Government, of the public administrations, of great electrical centers, most of the factories of airplanes, automobiles, war materials, and great arsenals; head of the five great networks of railroads. Paris, with its surroundings, is the brain and the heart of France, and the destruction of a half or even a quarter of our capital, increased by the agitation of the population, would cause an evacuation; might even cause a revolution already prepared by the communists, encouraged by international bolshevism. This revolution would very probably be a mortal blow to our country for the Government which it would have in its power would have signed with Germany a peace like that of Brest-Litovsk, even before the mobilization of our army could be accomplished.

The German hatred appears today to designate us as the recipients of the first blows of Prussian militarism. But the fluctuations of politics may lead her tomorrow to wish to destroy London, or Brussels, or Prague, or Milan, or Copenhagen, or Varsovie (in order to undertake with her Russian allies a new partition of Poland). Is it possible that we first, our allies later, finally all neutral peoples, remain indifferent before to the risk of seeing in a night our capital destroyed?

We see only one means of meeting this terrible danger. The organization of immediate and overwhelming reprisals. The day when Germany feels that if she attacks Paris, London, Varsovie, Brussels, in the twenty-four hours which follow, the Allies will bombard the line at the same time, at Cologne, Essen, Hambourg, Munich, and Berlin. But only on that day, without doubt, the European peoples can feel secure.

An International Convention should be signed, by which each nation engages to:

(1) Have always ready to take the air, a number of bombarding airplanes, such that the total made up by all the signatory powers will be almost double in number and power that which the enemy possesses.

(2) In case of attack on one of them, to bombard, the following night, the hostile cities which will have been designated in advance.

For example, suppose that the hostile fleets, German and Russian,

are composed of a maximum of 2000 airplanes, the Allies should engage to maintain a total of 4000 airplanes always ready for the retaliation, which might be divided thus: France, 1200; England, 1200; Italy, 600; Belgium, 200; Poland, 350; Czecho-Slovakia, 350; Denmark, 100. The objectives designated for attack by each nation would naturally be the cities nearest to its frontier. Denmark should bombard the canal of Kiel, Hamburg; Poland, Berlin; Breslau, Koenigsberg; Czecho-Slovakia, Munich, Nuremberg, Leipzig, Dresden, etc.

The French Aeronautical Propaganda Committee has undertaken the following task:

(1) To emphasize the peril, not only in France, but also abroad, for this peril is almost everywhere ignored, at least its extreme gravity is not realized.

(2) To make among our compatriots, the rulers of France first, then each of the countries which surround Germany, an effort to spread the propaganda necessary in order that our project may be understood and adopted.

ANDRE MICHELIN,
Vice-President of the French Committee
of Aeronautical Propaganda.

GENERAL PERSHING STRESSES THE NEED OF DEFENSE.

From National Bulletin, June, 1925.

Speaking at Philadelphia on June 15th, on the occasion of the anniversary of the election of George Washington as Commander-in-Chief of the Continental Army, General John J. Pershing again stressed the great need of adequate national defense.

If George Washington was alive today he "would thunder out in no uncertain terms and say, carry on your training camps, continue your instruction of National Guard and your reserves; complete your organizations, and hold annually a thorough defense test to try out your progress", said General Pershing.

He reviewed the work of Washington in organizing the Continental Army and drew from it a lesson which, he said, was applicable today in the proper functioning of the country's defense forces.

Speaking of the "pacifist" tendencies of certain organizations and persons, General Pershing said:

"The same insidious influences are at work today to prevent its (national defense) complete accomplishment as were at work during the Revolution to prevent Washington's success.

"We are at a critical period in the development of our system of defense and any reduction might prove fatal to the whole system. It would be false economy not to perfect the scheme so auspiciously begun."

UNITED STATES CIVIL SERVICE EXAMINATION.

The United States Civil Service Commission announces the following open competitive examination:

PHYSIOTHERAPY AIDE
PHYSIOTHERAPY PUPIL AIDE
PHYSIOTHERAPY ASSISTANT

Receipt of applications for these positions will close July 25, August 29, September 26, October 24, and November 28, 1925. The dates for the assembling of competitors will be stated on the admission cards sent applicants after the close of receipt of applications.

In the Public Health Service the entrance salary for physiotherapy aide is $1,020 a year, with quarters, subsistence, and laundry; for physiotherapy pupil aide $720 a year, with quarters, subsistence, and laundry, or $1,200 a year without allowances. The salary of physiotherapy assistant is $1,500 a year, without allowances.

In the Veterans' Bureau the entrance salary for physiotherapy aide is $1,680 a year; for physiotherapy pupil aide, $1,000 to $1,400 a year, depending upon the training and experience of the appointee. The compensation of physiotherapy assistant is $1,320 to $1,600 a year.

The duties of physiotherapy aides consist of administering physiotherapy in its several branches -- massage, electrotherapy, hydrotherapy, mechanotherapy, thermotherapy; active, passive, resistive, and assistive exercises and remedial gymnastics; keeping daily record of the work and progress of each and every patient coming under direction and treatment;and making the required reports of the activities of the reconstruction work in physiotherapy.

The duties of physiotherapy pupil aides are the same as those for physiotherapy aide,except that they are pupils under the supervision and instruction of the chief aide in all the work above mentioned.

The duties of physiotherapy assistants consist of administering to special cases the treatments of physiotherapy, as massage, electrotherapy,hydrotherapy, thermotherapy,mechanotherapy; active, passive,assistive,and resistive exercises and remedial gymnastics; keeping a daily report of the work in progress on each patient under the appointee's direction and treatment;and making the required reports of the activities of the reconstruction work in physiotherapy.

Full information and application blanks may be obtained from the United States Civil Service Commission,Washington,D.C., or the secretary of the board of U.S. civil-service examiners at the post office or customhouse in any city.

CHANGES - CHEMICAL WARFARE OFFICERS' RESERVE CORPS.

NAME AND RANK	REMARKS
COLONELS	
Burrell, Geo. A.	120 Ruskin Apts., Pittsburg, Pa. App. 5/19/25. Acc. 6/8/25.
LT. COLONELS	
Richter, Geo. A.	158 Prospect St., Berlin, N. H. App. 5/23/25. Acc. 6/5/25.
Sibert, William O.	10 Park Ave., Bloomfield, N. J. Trfd. from TA to BA Group, Replacement Center.
MAJORS	
Burn, Walter P.	Add. chgd. from 265 1st Nat. Bank Bldg., San Francisco, Calif. to 838 Walnut Ave., Burlingame, Calif.
Elwell, Kenneth R.	Add. chgd. from 35 No. 5th Ave., La Grange, Ill. to News Tower Bldg., Miami, Fla.
Esselen, Gustavus J.	437 Puritan Rd., Swampscott, Mass. App. 5/19/25. Acc. 5/26/25.
Hicks, John F. G., Sr.	Add. chgd. from 19 C St. South, Forest Grove, Ore. to 972 Belmont St., Portland, Ore.
Leigh, Townes R.	Add. chgd. from Univ. of Fla. Gainsville, Fla. to Cor. Roper and Seminary Sts., Gainsville, Fla.
Mc Arthur, Leslie	200 Oxford Ave., Kenilworth, Ill. App. 5/28/25. Acc. 6/4/25.
Paine, Albert W.	c/o State Rd. Commission, Parkersburg, W. Va. BA Group, School Bn - E.A. Prom. from Capt. 6/2/25.
Pierce, Charles H.	Add. chgd. from 34 Palmer Pl., Leonia, N.J. to 4 Palmer Pl., Leonia, N.J.
Thompson, Louis E.	Add. chgd. c/o Maryland Oil Co., Ponca City, Okla. to 410 No. Tenth St., Ponca City, Okla.
CAPTAINS	
Barns, Otis A.	Perm. Add. Univ. of Utah, Salt Lake City, Utah. Temp. Add. to 9/15/25 - RFD 3, Auburn, Ill.

NAME AND RANK	REMARKS
CAPTAINS (Cont'd)	
Clark, Jay R.	941 Naples St., San Francisco, Calif. App. 5/11/25. Acc. 5/25/25.
Chapple, Charles E.	Add. chgd. from 1234 East 8th St., Brooklyn, N.Y. to 25 Vernon Ave., Batavia, N.Y.
Felsing, William A.	Add. chgd. from Univ. of Texas, Austin, Texas to 3007 Washington Sq., Austin, Texas.
Herrick, Horace T.	1003 La Belle Ave., Steubenville, Ohio. App. 5/18/25. Acc. 6/6/25.
Hodgson, Charles I.	Add. chgd. from 324 W. Main St., Batavia, N.Y. to 342 W. Main St., Batavia, N.Y.
Howson, Charles E.	Div. 31, Patent Office, Washington, D.C. App. 5/23/25. Acc. 6/1/25.
Johnson, Henry S.	BA Group, E.A., Perm. add. Univ. of Porto Rico, Rio Piedras, P.R. Temp. Add. to 9/1/25 23 Trumbull St., New Haven, Conn.
Lawson, Walter E.	Add. chgd. from Edgewood Arsenal, Md. to 14 Bedford Court, Wilmington, Del.
Ligorio, Cosmo	2 B King St., New York City. App. 5/20/25. Acc. 5/27/25.
Pack, Charles	Add. chgd. from 47 Chicago St., Elmhurst, L.I. to Shore Rd. & Kanes Lane, Huntington, L.I.
Peeples, William M.	BA Group, Chem. Div., E.A. Add. chgd. from 1059 Riverside Ave., Evansville, Ind. to 526 Cathcart St., Orlando, Fla.
Phelps, Raymond A.	58 Polk St., Ashkosh, Wis. App. 5/22/25. Acc. 6/1/25.
Yont, Alonzo E.	Add. chgd. from 6 Beacon St., Boston, Mass. to 1029 Park Sq. Sta., Boston, Mass.

NAME AND RANK	REMARKS
FIRST LIEUTENANTS	
Aiker, Lewis J.	TA Group, 3rd C.A. Add. chgd. from 2 Wellsport St., Oakland Sta., Pittsburg, Pa. to 3831 Dawson St., Oakland Sta., Pittsburgh, Pa.
Annis, Burton B.	Add. chgd. from 2063½ N. High St., Columbus, Ohio to 509 Crosby St., Akron, Ohio.
Harris, Loyd E.	Unassgd. Add. chgd. from 1633 Madison St., Madison, Wis. to 303 Princeton Ave., Madison, Wis.
Leslie, Roland R.	Add. chgd. from 1328 N. Hunter St., Stockton, Calif. to PO Box 745,Stockton, Calif.
Porro, Thomas J.	Add. chgd. from 625 Puget Sound Bank Bldg., Tacoma, Wash. to 1701 Washington Bldg., Tacoma, Wash.
Roper, Thomas D.	BA Group, Prod. Div., E.A. Add. chgd. from 32 Calif. Pl., Charleston, W. Va. to Hurricane, W. Va.
Sherrick, Paul H.	TA Group, Add. chgd. from 5233 Cornell Ave., Chicago, to 7700 E. Lake, Terrace, Chicago.
Wallace, Carl E.	Add. chgd. from 625 Puget Sound Bank Bldg., Tacoma, Wash. to 1701 Washington Bldg., Tacoma, Wash.
Winter, Willis L.	TA Group. 809 Grange Rd., Burlingame, Calif. App. 5/6/25. Acc. 5/15/25.
SECOND LIEUTENANTS	
Andrews, William R. E.	407 N. 63rd. St., Phila., Pa. App. 6/3/25. Acc. 6/11/25.
Bellows, Lloyd A.	TA Group, 6th C.A. Add. chgd. from 54 N. Lockwood Ave., Chicago, to 5316 W. Washington Blvd., Chicago.
Browning, Chas. A.	BA Group, E.A. Perm. Add. Bingham Military School, Ashville, N.C. Temp. add. to 9/1/25 - 215 N. 4th St., Danville, Ky.

NAME AND RANK	REMARKS
SECOND LIEUTENANTS (Cont'd)	
Caveness, Hugh L.	603 Alston Ave., Durham, N.C. Trans. from TA to BA Group 5/26/25. Unasgd.
Cowdrey, Chas. F.	5 Bluff Ave., Fitchburg, Mass. App. 5/18/25. Acc. 5/26/25.
de Leeuw, Philip M.	BA Group, E.A. Add chgd. from 4 - 942 N. Spaulding Ave., Chicago to 4300 N. Clarendon Ave., Chicago.
Duecker, Werner W.	Add. chgd. from 412 Tenth St., Ames, Iowa, to 922 Burnett Ave., Ames, Iowa.
Frisbie, Fredrick G.	509 Mt. Vernon Ave., Coraopolis, Pa. App. 5/19/25. Acc. 5/26/25.
Lewis, Alden G.	TA Group, 6th C.A. Perm. Add. 1235 S. 17th St., La Crosse, Wis. Temp. Add. to 9/1/25, 708 N. Chestnut St., Green Bay, Wis.
Malone, Harold C.	U. S. Engineer's Office, Burrwood, La. Trans. from Inf. Res. 6/1/25.
Marshall, Fred A.	Add. chgd. from 299 Cole St., Apt. 9, San Francisco, Calif. to 1244 Evelyn Ave., Berkeley, Calif.
Maynard, Julian L.	Chem. Div., E.A. Add. chgd. from Campus Club, 112 Church St., S.E., Minneapolis Minn. to School of Chemistry, Univ. of Minn., Minneapolis, Minn.
Newsome, Philip T.	Perm. add. 1028 W. Dayton St., Madison, Wis. Temp. add. to 10/1/25 South English, Iowa.
Nichol, Leonard	Add. chgd. from 402 Union Ave., Mt. Vernon, N.Y. to 662 S. 7th Ave., Mt. Vernon, N.Y.
Rinehart, Cleo A.	1032 E. 41st St.,Chicago.Trans. from BA Group, Prod. Div., E.A. to TA Group.
Rousseau, Albert J.	Add. chgd. from 1136 - 19th Ave.,Eugene, Ore. to 1136 - 19th Ave., East Eugene, Oregon.

NAME AND RANK	REMARKS
SECOND LIEUTENANTS (Cont'd)	
Schroeder, Frederic W.	Warrentown, Mo. App. 5/13/25. Acc. 5/23/25. Add. chgd. from above to 4800 Forbes St., Pittsburg, Pa.
Sullivan, Camillus C.	TA Group, 4th C.A. Add. chgd. from 809 Euclid Ave., Jackson, Miss. to Mangum Apts., 329 N. State St., Jackson, Miss.
Tambling, Robert L.	Perm. Add. P.O. Box 92, Princeville, Ill. Temp. add. to 9/4/25. 6032 Kimbark Ave., Chicago, Ill.
Thomas, Thomas P.	Add. chgd. from 1508 Wood St., Wilkinsburg, Pa. to 117 Gordon St., Edgewood, Pittsburg, Pa.
Vandergrift, William	Add. chgd. from 28 West Market St., West Chester, Pa., to 13 North High St., West Chester, Pa.
Walker, Burnham S.	Unassgd. Add. chgd. from 19 Myrtle St., Boston, Mass. to Evans Memorial Inst., 80 E. Concord St., Boston, Mass.
Warnock, Irl B.	BA Group, E.A. Add. chgd. from Mason City, Ill. to c/o Educational Bureau, Manila, P.I.
Willie, Clarence W.	Add. chgd. from 947 - 4th St., Milwaukee, Wis. to Waupun Hotel, Waupun, Wis.

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.

TABLE OF CONTENTS