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*"Rummaging in the government's attic"*

Description of document: **Various FBI, Army, and FBI documents with Army content concerning Bacteriological Warfare and/or Bacteriological Weapons**

Requested date: 23-April-2003

Released date: 26-February-2008

Posted date: 19-March-2008

Date/date range of document: Bulk of items date 1946 - 1951

Source of document: Commander  
310th FOIA/PO  
ATTN: IAMG-CIC-FOIA  
4552 Pike Road  
Fort Meade, MD 20755-5995  
Fax: (301) 677-2956  
Email: [902foiareq@mi.army.mil](mailto:902foiareq@mi.army.mil)

Notes: Original request: To FBI, for all files on Bacteriological Warfare/Bacteriological Weapons. FBI forwarded request to US Army, Freedom of Information and Privacy Act Division (DA FOIAIPA DIV), along with Army-originated records. DA FOIAIPA DIV forwarded request and Army-originated records to Department of the Army, United States Army Intelligence and Security Command (INSCOM). Some records withheld.

OCR quality spotty due to poor image quality.

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REPLY TO  
ATTENTION OF:

**DEPARTMENT OF THE ARMY**  
**UNITED STATES ARMY INTELLIGENCE AND SECURITY COMMAND**  
**FREEDOM OF INFORMATION/PRIVACY OFFICE**  
**FORT GEORGE G. MEADE, MARYLAND 20755-5995**

**FEB 26 2008**

Freedom of Information/  
Privacy Office

This responds to your Freedom of Information Action (FOIA) request of April 23, 2003, to the Federal Bureau of Investigation (FBI), requesting all files concerning Bacteriological Warfare or Bacteriological Weapons. The FBI on October 25, 2006, forwarded your request to the Department of the Army, Freedom of Information and Privacy Act Division (DA FOIA/PA DIV), along with Army-originated records, for a releasability determination. The DA FOIA/PA DIV on December 11, 2007, forwarded your request and the Army-originated records retrieved from their files to this office. This correspondence was received in this office on December 17, 2007.

We have completed a mandatory declassification review in accordance with Executive Order (EO) 12958, as amended. As a result of this review, information has been sanitized, as it is currently and properly classified SECRET according to Sections 1.2 (a)(2), 1.4 (c) of EO 12958, as amended. This information is exempt from the public disclosure provisions of the FOIA pursuant to Title 5 U.S. Code 552 (b)(1). On March 9, 1999, the President exempted the files series in which these records are maintained from the automatic declassification provisions on EO 12958, Section 3.4, as amended, pertaining to classified records more than 25 years old. The records are partially releasable and are enclosed for your use. A brief explanation of the applicable sections follows:

Section 1.2 (a) (2) of EO 12958, as amended, provides that information shall be classified SECRET if its unauthorized disclosure reasonably could be expected to cause serious damage to the national security.

Section 1.4 (c) of EO 12958, as amended, provides that information pertaining to intelligence activities, intelligence sources or methods, cryptologic information shall be considered for classification protection.

Information has been sanitized as the release of the information would result in an unwarranted invasion of the privacy rights of the individuals concerned, this information is exempt from public disclosure provisions of the FOIA per Title 5 U.S. Code 552 (b)(6).

The withholding of the information described above is a partial denial of your request. This denial is made on behalf of Major General David B. Lacquement, the Commanding General, U.S. Army Intelligence and Security Command, who is the Initial Denial Authority for Army intelligence investigative and security records under the FOIA. You have the right to appeal this decision to the Secretary of the Army. If you wish to file an appeal, you should forward it to this office. Your appeal must be post marked no later than 60 calendar days from the date of this letter. After the 60-day period, the case may be considered closed; however, such closure does not preclude you from filing litigation in the courts.

In addition, we have been informed by the FBI that their information is exempt from public disclosure pursuant to Title 5 U.S. Code 552 (b)(7)(C) of the FOIA. To aid you in identifying the FBI exempted information; we have bracketed it in red.

The withholding of the information by the FBI constitutes a partial denial of your request and you have the right to appeal this decision. If you decide to file an appeal, it should be sent to the Co-Director, Office of Information and Privacy, U.S. Department of Justice, 1425 New York Avenue, NW, Suite 11050, Washington, DC 20530-0001 within 60 days from the receipt of this letter. The envelope and letter should be clearly marked "Freedom of Information Appeal" or "Information Appeal". Please cite FBI (FOI/PA #977600).

We are forwarding a copy of this letter to the FBI (FOIA #977600-000) and to DA FOI/PA Division (FOIA #07-0139).

Additionally, we are coordinating with other government agencies concerning the releasability of their information contained in the records. We will inform you as to the releasability of the information upon completion of our coordination.

There are no assessable FOIA fees for processing this request.

If you have any questions concerning this action, please feel free to contact this office at (301) 677-4743. Please refer to case #197F-08.

Sincerely,

A handwritten signature in dark ink, appearing to read "Susan J. Butterfield", is written over the typed name.

Susan J. Butterfield  
Director

Freedom of Information/Privacy Office  
Investigative Records Repository

IV

FBI-1

FILE NO. 8510.0000  
WGS - INTELLIGENCE REPORT  
COUNTRY CZECHOSLOVAKIA  
REPORT NO. Cml-8-50  
I.D. NO. 698279  
SUBJECT: Biological Warfare Lecture  
FROM: CC Cml O, Wash. D.C. REFERENCES:  
EVALUATION: DATE OF INFORMATION: 12 Aug 1949 DATE OF REPORT: 5 Sept 1950  
INCL: 1 PREPARED BY: EH P 3414, [REDACTED] SOURCE: Czech Journal

SUMMARY OR SID REPORT:  
The attached report is an extract from a lecture given at a conference in the Military Hospital of PRAGUE XVIII on August 12, 1949, subject, Biological Warfare. It appeared on pages 36 - 39 of a Czech journal entitled "VOJENSKÉ ZDRAVOTNICKÉ" Listy No. 1-2 (50).  
APPROVED BY: [REDACTED] Chief, Plans, Tng & Intell Div  
DISTRIBUTION:  
AC of S, G-2 - 3  
State - 1  
ONI - 2  
A2 - 3  
CIA-OSI - 2  
CIA-SO - 3  
CmlC - 6  
SGO - 2

NOTE: This document contains information affecting the national defense of the United States within the meaning of the Espionage Act, 50 U.S.C. 31 and 32, as amended. Its transmission or the revelation of its contents in any manner to an unauthorized person is prohibited by law.  
OCS FORM 17A  
REPRODUCED BY OLD TOWN PAPER & CARBON COMPANY, BROOKLYN, N.Y. APRIL 2, 1949

RECEIVED FROM [REDACTED] TELETYPE CHANNELS  
DATE SEP 28 1950 [Signature]

b6 b7(c) Per FBI

ALL FBI INFORMATION CONTAINED  
HEREIN IS UNCLASSIFIED  
DATE 9/27/04 BY 60267 uc/nls/bja/cb

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100-93216-395  
OCT 6 1950  
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100-93216 (C) FDPS PPS 45-50



BIOLOGICAL WARFARE\*

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The term biological warfare means the employment of disease-producing agents (bacteria, foot and mouth disease, viruses, Rickettsia and other substances from living organisms), which are able to cause disease or kill human beings, animals and plants, for military purposes.

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There are proofs that in 1915 German agents infected horses and cattle, sent from the USA, with disease-producing germs. In a general way this method of warfare was prohibited during the first World War. Between the first and second World War there was no uniform opinion concerning the possibilities of biological warfare, however, many scientists and military men called attention to grave danger from this quarter. In 1943, the Chief of Staff of the U.S. Army obtained proof that the Germans intended to make use of the biological weapon. (Hence, military protection in this respect was reinforced and the Chemical Warfare Service was charged in cooperation with the Health Service - to continue the study of this problem in the most intensive manner\*\*). Certain reports state that the Japanese used the biological weapon in China.

In order to judge the combat value of the biological weapon one should know its offensive and defensive possibilities. Biological means of combat may be scattered over extensive areas and cover at one time a considerable number of persons, animals and objects; they are not readily detected and for this reason are treacherous. Between the time that the individual comes into contact with the biological weapon and the appearance of the first symptoms of disease, a certain time passes - the so-called incubation period - and this is characteristic of specific disease-producing agents; this time may be several hours, days or even weeks and months. All disease-producing agents have a certain persistency, that is, they may remain viable in dwelling quarters, on objects and in the terrain for hours, days and even weeks and months.

If the above-mentioned characteristics of the biological weapon are in a certain measure analogous to the combat characteristics of chemical substances, they are still different in other respects. One of the most important ways in which it is different is in the matter of contagiousness, that is, the ability of the disease-producing agents to spread or to be transmitted from one infected individual (man, animal or plant) to another and in this way produce an epidemic. Further, we must consider here the infectiousness which is the minimum frequency with which the disease-producing agent causes the disease; this characteristic is one of the important criteria for the selection of the disease-producing agent for the biological weapon. A factor which has an influence on the contagiousness (infectiousness) of the disease-producing agent is immunity, that is, resistance to disease-producing agents, which in an immune person are not able to cause disease; immunity is acquired naturally, by having had the disease or by (artificial) vaccination, which can make one more or less resistant to specific contagious diseases.

The possibilities of biological means of warfare are considerable but limited. Disease-producing agents are usually strictly specific: certain agents are disease-producing only for men, others only for animals, some for both, and others for plants. So then the biological weapon must not only be directed at the target but must be specific for it.

Since a property of all biological processes is variability, it is impossible to expect with certainty that the deadly effect will be 100%, even when the biological weapon is chosen most advantageously. There are also possibilities that some will not come into contact with the infecting agent, or they may be resistant or immune to it.

The attacker, depending upon his purpose, may select other biological combat

\* Extract from a lecture given at a conference in the military hospital of PRAGUE XVIII on 8/12/1949.

\*\* See VOJENSKJE ZDRAVOTNICKE LISTY - 1948, Nos. 7-8, p. 281

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means which are capable of killing comparatively many or capable of causing only certain diseases that can cause terror and demoralization.

One should point out still another characteristic of the biological weapon. History shows that the victor must assist the defeated all the more, the greater the damage he inflicts upon the defeated. In accordance with this, the biological weapon should be the ideal one, because there is nothing more valuable than life.

One speaks a great deal about botulin toxins. Botulin toxins (A & B were isolated in a pure form during the war) are not infectious agents in the true sense of the word, but they are chemical substances (proteins). They are rather war chemical substances than biological combat means, with the exception of the fact that they were made by biological processes (that is, *Clostridium botulinum* is a product of growth on living media). The toxin of botulin in very insignificant doses (1 gram is sufficient theoretically to kill 8 million people) causes sickness like a poison, does not increase in the host, but it is similar to a biological agent, because it attacks only certain organisms.

Biological warfare directed against livestock and plants really amounts to economic warfare, having as its chief aim the destruction of the sources of food supply and secondarily the source of clothing, wool, cotton, and other biological products. Here of course the effects last for a longer time and the psychological effect may be more penetrating than the destructive effect. There may be attempts to disrupt the natural economic cycle of the given dependency of useful animals on plant forage and of useful plants on the fertilizers coming from the wastes of animals.

In the case of plants there are, in addition to agents infecting plants, means which destroy plants and classed among the biological combat means: these are purely synthetic chemical substances, plant hormones or growth regulators. (Of the more than 1000 compounds of this kind experimented with during the war the main one adopted was 2, 4-dichlorophenoxy acetic acid, which in suitable concentrations has an effect upon the size of plants. Another group of compounds, phenylcarbamate, has an effect upon grass and grains). This means differs from infectious agents and botulin toxins in that it has no selectivity, that is, in an appropriate dilution it destroys all plants without exception (just as for example potassium cyanide kills all living beings).

It is well to remember that disease-producing agents are dangerous for the persons handling them, because the persons can contaminate themselves; so then for handling disease-producing agents we should have specially trained personnel provided with suitable safety devices. The effect of disease-producing agents as a weapon, in contrast to chemical means of combat, may be "retroactive" (back fire, affect the persons using them), that is, in view of their infectiousness, contagiousness and persistence the disease-producing agents may attack not only those against which they were intended but also the attacker.

Contagious diseases are transmitted by foods, water, by contact, by the air and by living carriers, that is, by insects and animals. By means of water and food which have been infected with disease-producing agents, it is possible to transmit the disease in a very short space of time to a large number of consumers. By contact one can, on the one hand, spread the disease directly, from individual to individual, and on the other hand indirectly, because the disease-producing agent travels from the source of infection to various objects, animate and inanimate; in this way it is possible to spread very many contagious diseases. The greatest number of contagious diseases can be spread by the air, and it is probable that the possibilities of biological warfare are greatest here; it appears that the transmission of disease-producing agents will most likely take place by air. Among the diseases transmitted by air the greatest opportunities for biological warfare are offered by diseases whose germ is carried by living vectors (carriers); here again we have various diseases, and their method of propagation depends on vectors, which may be, for example, lice, mosquitoes, fleas, and ticks.

In order for the agent to be suitable for use in biological warfare it must meet certain other important requirements, namely, in addition to being suitable for manufacture in large quantities, suitable for transport in appropriate installations (reservoirs of airplanes, ampules, etc.) and for scattering (chiefly in air planes)

As to manufacture, we will say that means of biological warfare may be produced on a small scale in laboratories, which serve for scientific, medical and industrial purposes. For military purposes, when we need large quantities of biological combat means, it would probably be advantageous to build new production installations, or adopt those which we now have, and for highly contagious agents to build special installations for the exclusive production of poisonous agents.

The kind of transport for biological warfare depends upon the physical condition of the means and the purpose for which it is to be used. The culture of bacteria or viruses which are to be used for transmission by water or by indirect means may be prepared in a liquid or dry form, for example, in thin walled glass ampules. These are then placed in sawdust in a strong packing, the bottom of which is removed before releasing the ampules upon the target. In order to make sure that the ampules break into pieces when they strike the water, it is possible to provide them with arrangements like those on fire extinguishers, made by factories producing gas, and put on the upper end of the ampule. A similar arrangement for biological combat means in a dry form for spreading by water (for example, botulin toxin), may be manufactured from porous paper impregnated with a gum soluble in water or with pectin, and the arrangement may be loaded with metallic ribs, which will hasten the sinking.

As to projectiles, we will say that if this method of transport is possible, the infectious agent will probably be placed inside the projectile, so that on the one hand it will not be damaged as a result of the manipulation of the projectile and on the other hand it will not represent a threat for the serving personnel. The transport means for infected live vectors must be constructed so that the viability of the vector will not be disturbed, will enable the latter to reach the ground from the airplane and escape from the transport device. A container of pasteboard or other light material, either small or flat, so that it will fall gradually, perforated, and, in accordance with the needs, provided with an arrangement for opening or breaking when it strikes the ground, appears to be suitable for this purpose.

The airplane is clearly the most suitable method of transporting and dispersing disease-producing agents, whether they are transmitted by air, water, contact or by living vectors. In the three latter methods of dispersion the attack action depends chiefly on placing the infectious material in a source of water or terrain or in releasing live vectors so that they may reach the ground.

The transmission of disease-producing agents by air in airplanes is not so simple, because it does not suffice merely to scatter them in a liquid or dry form; it is necessary to incorporate them in media heavier than air, similar to a fog or smoke curtain and drop them in this condition from a low-flying airplane so that they can penetrate through windows and cracks of dwelling houses, covers, etc. The variables of the air, humidity, movement and direction of the air can have much greater influence upon the success of the attack than in the case of chemical combat means. As a vehicle, we may use a less toxic combat substance which on the one hand will veil the nature of the attack and on the other will prevent the scattering of the infectious agents in the atmosphere. It may also be found practical to spread the infectious agents by food substances or one may find a method of scattering them directly in particles the size of the minute fog particles, in the case of which the particles of infectious agents could be, in contrast to fog, invisible.

We now give the military uses of the biological weapon with the peculiarities of this weapon. The biological weapon may be employed both before the outbreak of hostilities and after the state of war is declared, against people, against industry, and against animals and plants indispensable as a source of food. It seems that the biological weapon is a suitable means of attack against isolated strong points, air or naval installations, especially those whose rapid "liquidation" is not necessary.

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In any manner to an unauthorized person is prohibited by law.

and it is also useful for attacking military camps and exercise grounds and similar frontier objectives. In actions in which the fighting units are in close contact with the enemy, or in movement, the biological weapon is probably less suitable -- just as in the case of the chemical weapon; the only one that may really use it is the attacker who is already immune to the disease-producing agent.

The biological weapon must be handled in accordance with the offensive possibilities and defense and protection against it will depend upon the method of combat. This is a difficult problem and must be solved by measures of alarm, detection, and identification of disease-producing agents, and measures for their destruction and liquidation of the results. In states and armies with well organized medical and veterinary services it is possible, with the normal personnel and equipment to ward off the biological attack against people and animals. In case of biological warfare it is well, however, that the medical and veterinary services be equipped with a view to fighting epidemics, which may be expected; it is likewise necessary to plan for protection of important plants. It is certain, for example, that the medical and veterinary services will be assigned important special tasks, but it is a fact that for active defense we must make use of other factors (for example, the alarm service against planes threatening to spread disease-producing agents, fighting against sabotage, etc.)

In case of an attack made by the biological weapon it will be advisable to take special alarm measures. The fact that one or more airplanes fly low over a certain space without dropping a bomb or without some other obvious mission must awaken the suspicion that it is an attack with the biological weapon. We should teach the citizens that they must not touch any object dropped from an airplane or which one suspects has been dropped from an airplane, even though it is innocent looking in itself. The best thing to do is to cover up such suspicious objects with clay or sand; the collection of them, the rendering of them harmless and the taking of samples for identification in the laboratory are carried out by the antiepidemic units. It is useful to learn that the shooting down of enemy airplanes carrying biological combat means may be just as dangerous as if we allowed the airplane to go its way in peace (unless the plane burns up when it is shot down).

Police and medical measures must be reinforced in order to forestall sabotage and harmful employment of biological combat means. As alarms we must regard the suspicious presence of unusual communicable diseases, the spreading of contagious diseases by unusual methods, their unusual course or the presence of unusual mixed infections.

By a laboratory diagnosis we can detect the majority of ordinary contagious diseases. It is obvious, however, that current methods of detection are not sufficient, because it is necessary to take into account contagious diseases the germ of which has been so modified that it does not react with the other methods of diagnosis: it is then necessary in the case of a biological war to find a new method.

For example, the methods of determining the presence of bacterial impurities in water are based on the determination of specific bacteria (b. coli), which, in case of intentional contamination of water with disease-producing agents, would certainly not be used together. We might recall here that filtration and chlorination of water removes and kills all possible kinds of disease-producing germs transmitted by water; it is well, however, to bear in mind that infectious agents carried by water may be used where filtration and chlorination installations do not exist or where they have been destroyed by bombardment.

The new methods of detection will probably include, in the main, experiments on sensitive animals (guinea pigs, mice), in the case of which the material, after suitable concentration, will be used to inoculate the animals in various ways (even intraocularly). On the basis of the clinical and pathological findings in animals we can draw probably conclusions which may be confirmed by further necessary laboratory examinations. The methods of detecting microbial impurities in the air have not yet been worked out thoroughly. The identification of disease-producing germs, transmitted indirectly or by live vectors, should not offer any special difficulties.

We must also work out methods for the identification of biological combat agents for attacking livestock and plants.

For protection against the results of an attack with the biological weapon it would be well to organize, above all for industrial centers and military centers, some particularly mobile anti-epidemic units, analogous to the units of "BCIL". The unit must work with the local medical organizations, police organization and the "CO", must be able, if necessary, to enforce isolation or quarantine of individuals and whole areas to evacuate persons not contaminated by the biological agent; it must be equipped with protective masks and clothing, means for disinfection, insecticides, means for immunization, therapeutic means, etc. This unit must also, after identification of the infectious agent, teach the citizens and individuals the collective means of protection. The units of the CO, however, must be trained in the use of disinfectants and in the use of insecticides.

Reports obtained from abroad show clearly that one who thinks of the safety of his state must not forget the dangers of biological warfare, even though we should have permanent peace to some degree or other. It will be appropriate to cite at this place from the introduction to the yearly report of the General Secretary of the United Nations for the period from 1/7, 1947 to 30/6 1948: "The debate pertaining to the control of atomic energy has dragged along and the samples of the enormous destructive power of the atomic weapon has drawn attention away from the developments in the field of the bacterial and chemical weapons. Whatever the situation is or may be in the case of the atomic weapon, there will never be a real monopoly of the bacterial or the chemical weapon. It is probable that some of these weapons are potentially just as destructive for man as the atomic weapon but there has never been, up to now, any member of the UN to make a proposal for any system outlawing or control of these products, nor has there been in the UN any discussion of this problem or any study of it. For the present it would not be audacious to assume — as in the case of the atomic bomb — that great supplies of this weapon have been accumulated and that the deadliness of the weapon has been increased by new investigations."

FBI-1

BID NO.			SECRET	MANIA
MIG NO.				
REPORT NO.	R-279-51	WDGS - INTELLIGENCE REPORT	I.D. NO.	06503
SUBJECT:	Organization of Romanian Armed Forces & R-183-51			
FROM:	Athens, Greece	REFERENCES:	Specific Request for Information, Control No. GW-811/	
EVALUATION:	F-3	DATE OF INFORMATION:	Approx May 1950	DATE OF REPORT: 18 May 51
INCL.	PREPARED BY: AIC	SOURCE: Greek-Romanian Refugee		

**SUMMARY OR SID REPORT:** In compliance with Specific Request for Information, Control No. GW-811, b6 was re-interrogated on 18 May 51 at Athens, Greece on the following points relating to Special BW (microbe producing chemical) Section under the Romanian Ministry of National Defense and gave the following information:

- 1. Exact Designation** This section is known as **SECTIUNE MILITARA DE APARARE IMPOTRIVA RAZEIOIULUI CHIMIC SI BACTERIOLOGIC** (Military Section for Chemical and Bacteriological War Defense).
- 2. Assigned Mission** This section conducts experiments to develop new gases and new tactics for waging and combatting bacteriological warfare. Based on the knowledge gained from these experiments, they prepare manuals on gases and the offensive and defensive aspects of bacteriological warfare. Members of this section are dispatched to units of divisional composition or higher units to teach Chemical Warfare officers all that is known about common gases, the new gases which have been developed, bacteriological germs, and methods of testing water, food, etc. for purity. The officers thus trained, in turn become the instructors for the lower echelons.
- 3. Organizational Composition** There is no established T/O for this section. It is made up of Chemical Warfare officers and civilian specialists (usually chemists or bacteriologists). The government has the power to call in any specialist in the country and assign him to this section.
- 4. Present Location of Section** Source stated that he only knows that the offices of

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MANUFACTURED BY OLD TOWN RIDGEC & CARDON COMPANY, BROOKLYN, N.Y. JANUARY 19, 1946

*Bacteriological Warfare*  
*6/15/51*  
*Ridg*

*Wright*

All Army information contained herein was regraded UNCLASSIFIED on 6 FEB 2008 By USAINSCOM FOI/PA Auth Para 4-102, DOD 5200.1R

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DATE 7/12/04 BY 60267 uc/ars/bjw/cb

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20 JUL 7 1951

SECRET REPORT NO. R-279-51  
PAGE NO. 2

this section are located in the Ministry of National Defense building in BUCHAREST. Source does not know where the various laboratories used by this section are located. The government takes over any laboratory which this section feels is necessary to accomplish their mission.

COMMENTS: R-183-51 reported the existence of Special BN Sections under the Rumanian Ministry of National Defense. This infers the existence of two or more units possibly with a T/O strength. Re-interrogation revealed that there is one BN Section which is located in BUCHAREST. It seems unlikely that this section sends officers to Rumanian Army units as instructors but that it probably sends such officers as inspectors and advisors. We believe that a Chemical Warfare school exists in Rumania and that personnel are sent to it for instruction. However, Source could not furnish any information about this and would not refute such a belief.

JUN 16 2 25 PM '51

APPROVED:

b6

Army Attache

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FBI

REPORT NO. 122-51  
SUBJECT: Microbiology  
FROM: Hungary  
EVALUATION: DATE OF INFORMATION: 13 April 1951  
INCL: PREPARED BY: b6  
DATE OF REPORT: 18 April 1951  
SOURCE: Hungarian Press

SUMMARY OR SID REPORT:  
The following is a translation of an article appearing in the Hungarian press of 13 April 1951 entitled: Research Work Concerning Microbes.  
The article deals with research a la Russe in the Hungarian Public Health Institute in the field of microbiology by one [b6] who reportedly studied and worked in the Soviet Union. Typhoid, paratyphus, dysentery, are touched upon. The Lyssenko approach is propounded, etc.

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*Rec'd from [unclear]  
5/18/51 [unclear]  
[unclear]*

[b6]

[redacted] (inf)

*Beach* b6 (per FBI)

[redacted] b7C

*Suskyband*

All Army information contained herein was regraded UNCLASSIFIED on 16 FEB 2008 By USAINSCOM FOI/PA Auth Para 4-102, DOD 5200.1R

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DATE 7/27/04 BY 60327 uc/mjs/bja/cb

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All Army information contained herein was regraded

UNCLASSIFIED on 6 FEB 2008

By USAINSCOM FOI/PA

Auth Para 4-102, DOD 5200.1R

"We have already dealt with the new National Public Health Institute. Planned research work at the new institute will result in improved biologic strength of our people. But we have not said what has so far been the best achievement of the reorganized institute. I am a microbiologist," says director [b6]. [b6] was my job also in the Soviet Union, and this interested me when I took over the institute. I saw at once that there were great deficiencies. There was something which hampered the development of microbiology. Work was entangled in sterile, western conditions. There was no hope of evolution.

"I succeeded to move microbiologic research work from this entanglement. My weapons were the ideology of dialectic materialism and [b6] methods which I had to transplant into the reorganized institute. With the help of [b6] methods our scientists succeeded in overcoming initial difficulties. I have learned already in the Soviet Union that you must develop yourself in order to become able to see the development of the world around you. [b6] too had to develop greatly before becoming able to achieve his results. The most important fact found out by Lissenko is that races belonging to the same biologic genus are not giving one another mutual support but hamper one another. [b6] has proved this by examples from flora. He has proved with the ulterior aim to prove the same for fauna. And thus [b6] induced me to transfer this thesis to microbes. In December research work has been started to this effect at the institute.

"Some weeks ago I gave an account of our first successes before the staff of the institute and invited guests. I started work with typhoid fever and paratyphus microbes and bred them together in order to prove them to be antagonists. We brought them together in a liquid, reared them and after two days removed them to a new place. This was repeated ten times and after the tenth removal - typhoid fever had disappeared and paratyphus remained victorious. Thus the first experiment has proved the correctness of [b6] thesis in the world of microbes.

"But one proof is no proof. We therefore continued our experiments with dysentery microbes. There are twelve different dysentery microbes which we associated in varying ways. It has been shown that in each variation always only one part of the pair remained in life. According to our experiences we classified the different microbes - strong ones, weaker ones and weakest microbes. In all cases the same microbe proved the weakest.

"This is a telling proof."

"Director [b6] shows us photos made of the different associations of microbes. They show the most interesting moments and the final result of the experiments. 'But we continued our experiments. Our supposition was that different races of microbes survived if associated. We took a typhoid fever and a dysentery microbe. The results are shown by another series of photos. The photos are to show the other aspect of [b6] thesis: that individuals of differing genusses can survive if associated. What remains to be proved? That surviving individuals are changing, and that the weaker genus is taken up by characteristic features of the stronger one. Similar experiments are made with tuberculosis and antrax microbes.

"These experiments will sooner or later influence practical medicine. Microbiologic scientific results will be of great importance in the preparation of protective medicines.

"One result has been to prove that the laws of dialectics are valid also in microbiology. Therefore we continue our experiments. What was the reason that scientists were so far unable to produce in each case an adequate protective medicine and why has old-fashioned research work stranded? First of all because our scientists were not guided by the dialectic ideology. They often associated with one another indifferent races without near relations, under conditions of life which were not characteristic for them. There was no system in their research work and it thus was forcibly without effect. Lacking the basic knowledge imparted by [b6] they wasted their time. [b6] said that there is no sphere all over the world in which the dialectic materialist ideology would fail. Of course, it is not enough to know this idea-

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REF ID: A66051

PAGE NO. 2

logy, one must also apply it. Our scientists should absorb this ideology and thus become able to resolve all problems.'

"Thus research work at the new Public Health Institute has been freed from handicaps and will better serve Hungarian life and the progress of Hungarian public health."

COMMENT: This article is forwarded as a matter of incidental Biological Warfare information for proper evaluation and possible medical interest.

Distribution by Originator: EUCOM and USFA

APPROVE

b6

Army Attache

All Army information contained herein was regraded

UNCLASSIFIED on 6 FEB 2008

By USAINSCOM FOIPA

Auth Para 4-102, DOD 5200.1R

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FBI  
Czechoslovakia  
705554

\*13. May 1950

Biological Warfare

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RECEIVED FROM THE TUDORIAN TUDOR ARCHIVES

OCT 6 1950

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REPORT NO. SR-147-50  
PAGE NO. 3

industrial plant. Average wage of a top flight engineer in Czechoslovakia is about 5,000 krona.)

Though always in civilian clothes, b6 had definite military background according to b6. He based this on three things: (1) his wide and accurate knowledge of military research, (2) his continual use of Soviet military slang, and (3) military bearing and discipline; evidenced particularly during the visits of the "General" to b6 plant. (This is in contradiction to b6 previous statement reported in BWR 100. When confronted with the inconsistency b6 claimed to have never stated that b6 had no military background.)

During the two years b6 was in the CSR he made three trips to the USSR, two of about one month's duration and one of about four months. During the first six months he devoted nearly all of his time to b6 plant. During the last year and a half he traveled about CSR at least fifty percent of the time. He never discussed these trips with b6.

Through a friend b6 learned that b6 visited Jochimov and Joachimsthal many times. This person was an engineer at Jochimov at the time and later fled to Salzburg. When attempts were made to contact this source through CIC, Salzburg it was learned that he had migrated to Venezuela recently.

b6 was very familiar with the activities of many of the Czech scientists and technicians. He often went to b6 and asked his advice on this or that person and wished to know if they would be sympathetic enough to accept positions in the Soviet Union.

No information regarding b6 present whereabouts was available except as reported previously in BWR 100. Similarly, b6 could not state if anyone came to CSR to replace b6.

#### Biological Warfare Research

Contradicting somewhat his previous statements reported in BWR 100, wherein it is stated that he did not believe there is any biological warfare research being conducted in the CSR, b6 during subject interview was of the definite opinion that laboratory research in BW was being carried out in Praha. Location of the laboratories is

b6 Formerly a medical laboratory of Charles University, it was constructed between 1930 and 1933 with money donated by the Rockefeller Foundation in the United States. The institute comprises four buildings, each three stories in height. A former university classmate of b6 is a biologist at this institute and is working on BW for the Czech Army. The laboratories are visited frequently by Soviet officials. b6 could supply no further information.

#### Radar

b6 stated, and this is well known, that practically all radar activity in CSR was devoted to renovating and rebuilding old German sets remaining in Czechoslovakia after the war. He did say, however, that in 1947 an electronics plant in Praha called "Generalka" opened up a special division for study of fire control radar systems. His basis for this information is that several of his assistants were offered higher salaries if they would quit b6 and go to work for this particular section of "Generalka".

Miscellaneous (Note: During the latter part of the interrogation b6 was under considerable strain due to bad news he had received of a personal nature. For this reason it was decided not to press him further, but to leave with him certain specific subjects to be answered at his will in writing. b6 comments to these subjects were later furnished G-2, USIA (Rear) who forwarded them for incorporation in this report.

1. Ionization Chambers "I did manufacture several ionization chambers for the Soviets. The Soviets placed several orders with me for various adaptations of ionization chambers which would indicate their use for the following: (a) In the measurement of

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X-rays and other radioactive rays. They were most interested in developing a new insulation material which would be better than amber or silicon and were also looking for an improved gaseous filling for ionization chambers which would increase the sensitivity. They also placed orders with me for certain galvanometers for the ionization chambers which would indicate to me that they have discarded the use of electrometers. (b) They urgently demanded the construction of ionization chambers with electrodes. Two such specially equipped chambers were constructed by me for the Soviets, who immediately after testing the units, shipped them to the interior of the USSR. A few months later I was informed that these two models were very good and was instructed to commence serious production. This I refused to do in view of the political situation after February 1948 as I at this time decided to make plans to flee the country".

2. Geiger-Mueller Counters "The Soviets placed orders with me for the manufacture of Geiger-Mueller Counters as early as 1946. Due to lack of qualified employees at the time, I was unable to fill the order. At a later date during a casual conversation I learned that the Soviets had received Geiger-Mueller Counters from Germany, but it is my impression that they received them from the Netherlands".

3. Doppler Effect "I frequently discussed the Doppler Effect with the Soviets who asked me to construct a new apparatus that would have greater response than those that had heretofore been constructed utilizing sound, optical or spectral principles. Though the construction of such equipment is entirely feasible, provided research facilities are available, I never complied with their wishes".

4. Infrared "During conferences with the Soviets we frequently discussed the subject of infrared. Invariably they would develop the conversation and it became quite clear to me that they were very knowledgeable. An exponent in this field is [b6] theoretical and experimental physicist at the Experimental Institute of Charles University, Praha. [b6] is credited with some of the basic development in the field of radar. I am personally acquainted with [b6] as he is my former instructor and later I became his co-worker in scientific research. I doubt if he is collaborating with the Communists. A second specialist in the infrared field is [b6].

[b6] He is a former classmate of mine at Charles University. [b6] is currently working together with [b6] mainly on ultra-short waves. During the last war [b6] was employed for three years in the research laboratories of the Zeiss firm in Germany. I knew him well and am certain that his attitude is not Communist". (Note: Previous conversation with [b6] revealed that [b6] were the two persons responsible for designing the Czech version of the Bildwandler tube being produced currently in the CSR. He stated that the tube was developed before the Communist coup in February 1948 and was already in limited production prior to the Soviet's taking over all output.)

5. Guided Missile Control "I discussed the matter with three Soviet specialists from Moscow who were at my plant. We discussed radio guided missiles and particularly the construction of compensation bridges for the measurement of special coils used in the missiles. During each of these conferences they were very careful not to divulge any information. They were extremely non-communicative. In reply to some of my specific questions they would give evasive answers and would lead the conversation only to the particular phase of the problem under discussion".

#### COMMENTS:

The information supplied by [b6] except for minor inconsistencies due to his poor memory for names and places, is believed to be correct. Source is extremely well qualified in the scientific instrument field; not only as a practical scientist but with a good grasp of the theoretical side of many fields. In the beginning he was hesitant in talking with the reporting officer, but later when the conversation changed to his native tongue he was more communicative. He talked of many things which, though having no place in this report, were nonetheless revealing of the man's character. Without the assistance of [b6] CIO, Salzburg, who nurtured [b6] from the time of his arrival in Austria, this report would not have been possible. Failing to obtain U. S. visas for himself, his family and three assistants, [b6] did not lack for a place to immigrate. He had received offers from Canada, Venezuela, Brazil, and recently, Switzerland. The latter is particularly interesting since it is

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uncommon for Switzerland to offer haven to refugees. At the time of subject interview with [b1] he received unexpected bad news to the effect that his fourteen year old son would not be allowed to immigrate to Canada with the others because of bad health. This caused [b1] to make a rapid trip to Switzerland for the purpose of obtaining immigration papers to Latin America. The writer saw [b1] again after his return from Switzerland and it was learned that he had been offered a position with [b6] who desired that he re-create his instrument laboratory and also assist them in guided missile research. [b1] claimed that he refused this offer because he did not wish to remain in Europe with his family. In spite of his refusal he was given \$500 in travelers checks and asked to think it over. Information has been received since from [b6] that previous difficulties have been overcome and [b1] with his group were to leave for Canada about the first of August. [b1] was very desirous of accepting a previous contract offered him by [b6] Federal Cartridge Corporation, Minneapolis, Minnesota to work on long range, high-velocity serial-explosive projectiles, the plans for which [b1] had realized in theory while in Czechoslovakia.

b1

Reference [b1] statements regarding [b6] he mentioned several times that he believed them to be non-communist. A third person, [b6] chief analytical chemist at Jachimov, was mentioned by [b1] many times. He claims that Steinacher is extremely desirous of getting out, but because of fear of his and his family's being treated as ordinary refugees, without guarantee of a future position, he refuses to leave.

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APPROVED:

J. J. O'HARE  
Brigadier General, GSC  
Army Attache

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1-15-1-1  
393461  
DIO NO. 2511 (C) 11  
RIG NO.  
REPORT NO. 10-10  
SUBJECT: POSSIBLE COMMUNIST BIOLOGICAL WARFARE AGENTS  
FROM: CHIEF, SECURITY DIVISION  
EVALUATION: F-6  
DATE OF INFORMATION: 13 Sept. 49  
DATE OF REPORT: 16 Sept. 49  
PREPARED BY: b6  
SOURCE: Personal contact

SUMMARY OF SIG. REPORT:  
b6 and b6 veterinarian and doctor, respectively, are suspected Communist agents.

*Rec'd from JDA  
11-14-49 JWR*

*Biological Warfare*

b6  
b7(c)  
Per FBI

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1. [b6] is a Rumanian national and a veterinarian by profession. He is employed by the "Camera de Agricultura de Quito" (assumed to be a government dependency), and in that capacity acts as an advisory veterinarian for some of the most important cattle ranches in Ecuador.

2. [b6] also a Rumanian and a doctor by profession, is employed by the local pharmaceutical firm, "LIFE". (Information available in the Commercial Attache's files indicates that the full name of the firm is "Laboratorios Industriales Farmaceuticos Zenstorianos LIFE"; that it produces chemical products, serums, and vaccines; and that it is the largest pharmaceutical manufacturer in Ecuador.) [b6] was employed by "LIFE" on the recommendation of [b6] who is highly regarded by the directors of the firm because he recommends LIFE's veterinary products to local ranches. [b6] works in the bacteriological section of the LIFE laboratories.

3. Paisach and Bulow are intimate friends and they live in the same house on Calle Reina Victoria, Quito. During the latter part of the war when Rumania was occupied by Soviet troops, both subjects went to Russia to work professionally. After the war, they returned to Rumania where, according to some Rumanian refugees in Quito, they engaged in promoting pro-Russian propaganda. They subsequently went to Paris where they remained for one year before coming to Ecuador in 1948.

4. Both lead a rather secluded and mysterious existence in Ecuador and they apparently have no contact with other refugees. They never comment on their visit to Russia nor their subsequent return to Rumania, nor do they express any political opinions. Doctors in the LIFE laboratories have noted contradictions in the few statements made by [b6] concerning his travel and activities in Europe.

COMMENT:

In case of a Third World War, Russia's first offensive might be bacteriological. If [b6] were Communist agents, with [b6] a specialist in the LIFE bacteriological laboratories and [b6] as a veterinarian with entree in the largest cattle ranches in Ecuador, they could easily create an epidemic before they could be suspected. LIFE also sells its products in Venezuela, Colombia and Peru. The foregoing hypothesis may be exaggerated, but if it should prove true, one could easily suspect that the Russians have agents planted in similar positions in other countries.

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NO. 15  
 REPORT NO. [REDACTED]  
 SUBJECT: Dyhernfurth Manufacturing Facilities  
 FROM: OC Cnl C  
 EVALUATION: B-2  
 DATE OF INFORMATION: 30 November 1949  
 DATE OF REPORT: 13 December 1949  
 INCL: [REDACTED]  
 PREPARED BY: b6  
 SOURCE: Chief, Cnl Div. [REDACTED]

Per  
FBI

SUMMARY OR SID REPORT:

Under the auspices of ID, EUCCOM, scientific staff personnel of the Chemical Division, EUCCOM, interrogated b6 on 17 November 1949. b6 was a general supervisor of the Dyhernfurth "Anorgana G.m.b.H.", I.G. subsidiary charged with the German nerve gas production.

b6 states that:

1. The Dyhernfurth facilities were captured intact by the Soviets.
2. The Dyhernfurth facilities were dismantled and shipped to Russia in 1945.
3. One chemist, Von Bock, and two plant foremen went to Russia with the plant facilities.

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Biological Warfare

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JAN 24 3 15 PM '50  
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U.S. DEPT. OF JUSTICE

REPORT OF INTERVIEW BETWEEN SCIENTIFIC  
PERSONNEL, W/ EUCOM, AND [b6]

[b6]

1. In a discussion with [b6] and [b6] at War Criminals Prison No. 1, Landsberg, on 17 November 1949, [b6] stated that as the responsible Director of the Dyhernfurth Chemical Warfare plant for production of SARIN and TABUN, he was informed in the Spring of 1945 by one of his chemists that there remained at Dyhernfurth (near Breslau) after its abandonment, two hundred (200) kg of SARIN. At this time, the Russian Army had reached the outskirts of Berlin and some units were moving in a southeasterly direction towards Dyhernfurth. [b6] and several of his chemists proceeded to Dyhernfurth, protected by a detachment of German troops and destroyed the two hundred (200) kg of SARIN but did not destroy the plant or remove any equipment vital to the production of SARIN. He stated that this plant was designed to produce one hundred (100) tons per month of SARIN and had been in operation. He stated that he knows from actual operating experience that the plant was capable of producing more than one hundred (100) tons per month - perhaps one hundred fifty (150) tons per month. This plant was the basis for the design of the Falkenhagen plant, which was under construction at this time, but was far from completion. The Falkenhagen plant was designed to produce five hundred (500) tons per month of SARIN.

2. [b6] then stated that he knows definitely that three months after he left this plant intact it had been dismantled and moved to Russia. He has heard that it was reassembled in the vicinity of STALINGRAD. At this point, [b6] stated that he has received information that the reassembled plant is located thirty (30) km North of Stalingrad on the Volga River.

3. [b6] stated that one of his chemists, [b6], and two of his plant foremen went with the plant. Although [b6] has never been in charge of the SARIN production, he had been responsible for TABUN production and has access to SARIN plant records. [b6] assumes that with the aid of plant operating personnel at his disposal, it would not take [b6] long to learn how to operate the Sarin plant.

COMMENT (OC Cml C):

Information recently received from other, usually reliable sources is in general agreement with [b6] statements.

APPROVED BY:

[b6]

Chief, Plans, Trng & Intell Div

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A-2 Referred  
ONI ID, EUCOM  
ID, USFA Cml Div, EUCOM  
CC Cml C - 5 cys.

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REPORT NO. [ ]  
 SUBJECT: [ ]  
 FROM: OC Cml C  
 EVALUATION: B-2  
 INCL: [ ]  
 DATE OF INFORMATION: 7 December 1949  
 DATE OF REPORT: 15 December 1949  
 PREPARED BY: [ ]  
 SOURCE: Cml Div, EUCOM

SUMMARY OF SID REPORT:

Information has been furnished this office which indicates that the [ ] b6 [ ] claims for hex-methylene-tetranine and other drugs applicable as protective agents against Phosgene and Cyanide poisoning are not valid.

Subject [ ] b6 [ ] claims to have had no knowledge of the nerve gases.

Details of [ ] b6 [ ] original experiments with cats at HEIDELBERG are already known. Hexamine was found to give protection against phosgene and to have both prophylactic and therapeutic value. Against nitrogen-mustard on cats and humans, there was slight therapeutic value only. No other CW agents were used.

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In a subsequent series of experiments conducted with concentration camp inmates in a gas chamber, in groups of four over two days, 21 inmates protected by a 6-gramme oral dose of hexamine were found to be protected against a phosgene concentration estimated at Ct 6,000. There was one partial failure, where lung oedema developed. The Ct value is expressed in milligrammes per cubic meter and t varied from 20-30 minutes. The Ct value was not measured, but was deduced from the quantity of liquid phosgene introduced into the chamber and checked by later calculation when measuring technique had been developed.

The next experiment conducted by [b6] upon himself was in a measured Ct of either 2,000 or 3,000, the hexamine being administered by a 6-gramme oral dose.

The third series of experiments was carried out, using 16 concentration camp inmates, including unprotected controls, under similar conditions to the first series, except that the Ct values were measured, the maximum being 6,000.

The general conclusion was that a 5-6 gramme oral dose of hexamine would give temporary protection against phosgene concentrations up to Ct 6,000. The dose could also be administered by intravenous injection, when protection was obtained more quickly and the conditions varied. The critical factor was the hexamine concentration in the blood stream which had to be maintained at a level prophylaxis but could not, in fact, be kept sufficiently high for more than a few hours. An overdose or too frequent repetitive doses would cause irritation of the urinary tract, bladder and kidneys by the formation of  $\text{CH}_2\text{O}$  and  $\text{CHON}$ .

Further information of [b6] work will be reported as it becomes available.

APPROVED BY:

b6

Chief, Plans, The A Int Div

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SID NO.	SECRET	COUNTRY	CZECHOSLOVAKIA	b6
MIG NO.				
REPORT NO.	R/P 480-50	WDGS - INTELLIGENCE REPORT	I.D. NO.	693328
SUBJECT	Supplement to Movidyn - Chemical used to Counter BW			b7C
FROM	REFERENCES: Rot No R/P 269-48	TD 514512		
EVALUATION	DATE OF INFORMATION: 1948	DATE OF REPORT: 1948		Per FBI
INCL	PREPARED BY: Scient Sec. G-2, GSUSA	SOURCE: Czech refugee - b6		
		Referred		

SUMMARY OR SID REPORT:

This report is a translation of the original manuscript of [b6] source of above referenced report. Although little additional information is furnished, the translation contains some details which were not covered previously. The original report contained extracts of [b6] manuscript as well as information obtained from interviews. The following additional information was obtained from [b6] during interview with [b6] Chemical Corps:

1. The use of the term "yellow fever" in the ID report referred to is an error due to mistranslation or to a misunderstanding on the part of the re-writer who converted the original Czech version into English. The original report written by [b6] in Czech is dated 7 October 1948, and does not contain any word that could be translated "yellow fever". [b6] has a typewritten copy of his own original report in Czech in his possession and would be glad to supply it if it is required.

2. [b6] knowledge of the alleged contamination of wells in the Sedocany area is entirely based on rumor. He has no direct knowledge of the operations and disclaims any knowledge of the methods employed. (CONT'D)

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Bacteriological Warfare

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REPORT NO. 3/P 428

3. Detailed interrogation of [b1] with reference to the special forms utilized by the Unkorov team has repeatedly failed to elicit from [b1] any information beyond that which was contained in his original report and in his verbal report given in Washington shortly after his transfer to the United States.

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REPORT NO. 693328  
PAGE NO. 1 of 6

Translation of Original Text in Czechoslovakian by b1

MOVIEDYN

In January 1946, the firm known as Moudry & Co., later renamed the MOVA Corp. of Industrial Chemistry, in which I was a stockholder and an official, was requested by the Ministry of Industry, Food, Health and the Economic Group for Chemistry to develop a new preparations varied from concentrations of 1:3000 for Cumasina to 1:50,000 for Katadyn. In June 1946, the firm assigned its expert in laboratory techniques, University Prof. Dr. J. Babicky, to head the scientific research work. The first sample corresponding to the average of the three above-indicated preparations was developed in August 1946 and authenticated under serial B 137 that same month. In September, success was achieved in producing standard samples which were submitted to the SZU (Government Institute of Health) on 13 Aug. 1946 under the serial C 13 for official recording (attestation). Experimental results showed that the submitted sample was far more effective than any similar preparations abroad since, of an original concentration of 250,000 Bacillus Coli germs per cubic cm of water, 230,000 were destroyed in a period of 60 minutes, and in an additional 24 hours, only 700 Bacillus Coli were left. In this connection, a concentration of 1:1,000,000 was used, which has never before been attained in world practice.

As a result of this test, the SZU notified the Ministry of Health whose I-3 section in turn notified the MNO (Ministry of National Defense) and the VVBU (Military Bacteriological Research Institute). Subsequently, in November 1946 the firm was ordered to continue the investigations and endeavour to develop an improved preparation. From this time on, the

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samples produced were officially turned over to SZU in Prague for verification, and at the same time, we arranged to send duplicates to VVBÚ in Prague.

The Hydrology Dept. issued official reports of test results on the samples and the VVBÚ subjected the duplicate samples to comparative tests. Immediately thereafter, the firm was taken into the sector of "enterprises of importance to the defense of the state". Toward the end of Jan. 1947, the first samples were submitted which were effective for concentrations of 1:20,000,000. Shortly after, the firm was ordered to take into the organization b6 in the Czechoslovak Army, whose job was to control the performance of the experiments and to guard the interests of the Czechoslovak Army. Simultaneously with the laboratory checks, the SZU was carrying out experiments with Movidyn in the field. On the basis of the firm's desire to approve Movidyn for sale, the SZU in November 1946 granted permission but restricted the distribution. Movidyn was from this date supplied to dairies, fruit and vegetable canneries, soda and water bottlers, at a price of 455.50 Kcs. per kg. in accordance with NUC (Office of Price Adm.?).

In November 1946 the first deliveries of Movidyn to the State took place and were used to treat the water sources in the former SS training camp in Sedicany. Starting on 1.4.47, I was named by the Minister of Health as their accredited representative for the water decontamination work in Bohemia and Moravia. On 8.4.47, the firm was authorized to supply Movidyn, in quantities amounting to 1,073,447 Kcs, in total, for carrying out the decontamination of all the water sources in the Pisek political district. The Ministry of Health appointed me as the chief supervisor for carrying out the program while control over the actual operations was vested in SZU and ZUV (Inst. of Health Research?) in Prague, as well as in ONV (Okres National Committee) in Pisek. At the same time the VVBÚ prohibited the carrying out of disinfection in the designated districts

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without its authorization because, as I later found out, the investigations involved the testing of Movidyn in the field against various types of bacteria of epidemic diseases. Not until several months later, from a conference which I eventually got wind of, was I able to confirm that in the middle of May several water sources had been infected in 15 districts of the decontamination area. As a consequence of this, several persons became sick in the Krenovice district. Immediately, the army command authorized the carrying out of decontamination work in the infected water sources. SZU investigated and checked only for the presence of Bacillus Coli while the presence of the others was investigated exclusively by the VVEU. The execution and results of decontamination were given in an official report by SZU to the Ministry of Health. At the same time, VVEU carried out comparative tests of the effectiveness of Movidyn with that of chlorine preparations furnished by UNRRA, and of disinfecting agents and methods used by the US Army. It was ascertained that the chlorine preparations were greatly inferior to Movidyn and, in fact, against certain bacteria used by VVEU chlorine simply did not have any effect, or in some cases actually supported the growth of bacteria.

To observe and collaborate in these experiments the USSR sent a mission whose director, [b6], remained permanently in Prague after the conclusion of the operations in Pisek. After these operations were completed, similar work was started in Blatna and several other cities of southern Bohemia and in the territory of the Kyjev district. At the beginning of September, the sale of Movidyn to civilian consumers was prohibited. However, upon the intervention of the Ministry of Health, permission was granted to supply Movidyn in special cases, but with a max. effectiveness of 1:1,000,000. The Army, on the other hand, requested a preparation with a minimum effectiveness of 1:20,000,000. In view of

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the fact that dairies in particular needed large quantities of Movidyn, permission was granted to supply a quantity amount to 6,000,000 Kcs. in 1948. Practical results and laboratory tests showed that milk kept in dishes sterilized before hand by a strong concentration of Movidyn would keep, under the most unfavorable conditions, at least 7 hours longer than milk normally purified and kept in dishes sterilized with chlorine.

At this time, an authorized representative of the firm, [b6] met with General Schneider of the US Army and discussed the possibility of manufacturing Movidyn in the United States.

In the first half of October, a secret conference took place in the MNO (Ministry of National Defense) building which included representatives of the NMO, SZU, VVEU, the Minister of Health and myself. Also present at this meeting were a delegation from the Red Army, including [b6] [b6] in the uniform of Colonel of the Red Army, and representatives of the Bulgarian State Bacteriological Institute. At this conference a spokesman for the Russian delegation announced quite openly for the first time in my presence, that the Red Army would not hesitate, in the event of war, to use bacteria of various infectious diseases to infect the water sources on enemy territory. In the course of the 3-day conference photographic evidence was shown of the effects of these bacteria on the human organism. Of these, the most outstanding was the report on the effects of a culture designated DNA 73 which, according to the report, causes a bloody diarrhea and is fatal within 13 hours after the infection takes place. The conference was then given a report by spokesmen of the USSR and the VVEU confirming the fact that chlorine preparations, which were tried against the same infectious culture, were found to be effective only in occasional chance occurrences. They were quite ineffective against DNA 73.

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Army experts emphatically stated that none of the disinfecting methods used by the armies of the Western powers is effective as a defensive measure against the infectious agents of the UNA group because the latter cannot be observed under ordinary microscopes, and in water they can be detected only after a magnification of 70,000 or higher. At the same time, the results of tests conducted by VVEU within the confines of Pesik and Blatpa were given to the conference. The experts announced that they had tested the preparations and found that Movidyn with an effectiveness of not less than 1:20,000,000 always worked satisfactorily. Movidyn with an effectiveness of less than this amount was not particularly reliable against these types of UNA Bacteria and the tests gave results only in occasional chance cases. In view of this, orders were again given to continue the tests for increasing the effectiveness of the preparation. The conference concluded that Movidyn with an effectiveness of not less than 1:20,000,000 could be used to prevent the carrying out of a successful bacteriological campaign, and that in the event of an attack of this type on the Eastern Zone, ( of Germany) it would be possible to resist the bacteriological danger without losses to either civilian or military personnel.

In the month of September of that year, permission was granted to send samples of Movidyn of 1:1,000,000 effectiveness to Teheran and Egypt to help suppress the Cholera epidemic.

In Jan. 1948, it was suggested to the firm that attempts be made to produce Movidyn in solid form. Since, during meetings with the people concerned, the intended use of Movidyn by the Army became clear to me, I decided, together with the director of research work of the firm, to carry on future work in two directions, one the official research with falsified data, and the other the unofficial - i.e. with the genuine data. From this time on, the official research was deliberately sabotaged and no results were attained. The secret research carried on by the two of us

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resulted, in a short time, in the production of samples of Movidyn in solid form; in the month of February, samples which were effective in dilutions of 1:10,000,000 were produced.

After the Feb. 1948, events in Czechoslovakia which resulted in certain personnel changes in the firm, all further efforts to increase effectiveness of Movidyn were systematically sabotaged and the new samples submitted for testing did not reveal any successful tendencies. Also, the official research on the solid form of the preparation intentionally did not show any results, although by means of the unofficial research I succeeded privately in producing solid Movidyn which was effective in concentrations of 1:50,000,000. Through this work I was able to discover the basic key for arbitrarily increasing the effectiveness of liquid Movidyne, so that I was able to produce a preparation effective in concentrations up to 1:1,000,000,000. The verification tests on these samples were carried out secretly in the Bacteriological Laboratory of Masaryk University in Brno and, of course, no information was divulged on the results. At this time the firm became a national enterprise.

The lack of success in the official research caused b6 to view my work with suspicion and to question my trustworthiness, which resulted in a strict order to transfer without delay the production techniques, which had not been turned over heretofore on various pretences, and a list of necessary materials and formulas. During the next few days I was able to work over the material requested, whereupon I falsified the officially authenticated samples of Moidyn and transferred the material to the USSR Representative. In the factory, I altered the production formulas, took all the documentary material and placed them in trustworthy custody, whereupon, with the rest of my family, I proceeded to carry out a long-cherished plan--illegal departure from Czechoslovakia.

Regensburg, 3.10.48

b1

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brought to the interview a suitcase full of books and  
offering veterinary medicine in the Ukraine. From the suitcase in his possession,  
b6 exhibited the following:

a. Brucellosis and its treatment, published by the Soviet Agricultural  
Academy of Sciences, 1933. b6 stated that he was one of the authors of  
this book, after having been on a commission to study brucellosis in the foreign  
states that about 25% of the cattle and a large number of the sheep in the  
Ukraine were infected with brucellosis. The commission found that brucellosis  
was most likely to be spread from sheep more often than from cattle. He stated  
that the disease in humans was not very serious in the Ukraine, but the cattle  
suffered from the disease.

b. He also had a copy of a Ukrainian veterinary magazine which was  
devoted to the treatment of young cattle infected with anthrax.

c. In his another book, Soviet Apotechniques, 1933.

d. Book on the production of vaccines and serums, date 1935.

e. Proper Medicine for Cattle, 1939

f. In his book Microbiology, dated 1940, which was prepared by the  
Ukrainian Institute of Microbiology and Epidemiology. The author was a  
person called Professor Loshin was a co-author. This book was divided into  
three parts: Part I: General Microbiology of Bacteria and Fungi; Part II:  
Agricultural and Industrial Microbiology; Part III: Medical Microbiology. There  
were some eighty-two (82) pages of plates showing all the varieties of bacteria  
known in the Soviet Union up to 1940, according to b6 information.

g. In addition, he exhibited an organization chart showing the entire  
organization of the Ukraine, which existed up until the war. He had a copy of  
the veterinary institute in which he was head of the Department of Pathological  
Physiology. He had an album of pictures of all departments in this institute,  
showing the physical equipment and laboratory apparatus. It appeared to be a  
modern laboratory as well equipped as any such laboratory in the United States.

h. In the discussion with b6 he stated that the most serious disease  
of cattle in the Soviet Union was brucellosis; that the second was foot-and-mouth  
disease. However, outbreaks of hoof and mouth disease were not too common. In  
general, it was controlled by isolating or slaughtering the infected cattle. He  
stated that this was one advantage that the Soviet system had over other systems  
of government, because it was very easy to destroy infected animals during those  
such was decided. He said that tuberculosis in cattle was serious at one time in  
the Soviet Union, but in the Ukraine a program to eradicate it had been in progress.

i. Concerning the disease of horses, he listed Streptococcus as  
the most important disease. This disease was quite prevalent in the collective  
farms. About 50% of the horses were infected with it during 1929-31. Of the  
infected almost 20% died. He said most of the important scientists in veterinary  
medicine at that time were accused of sabotage in that they had artificially in-  
fected the horses because of their opposition to collectivization. Several of the  
scientists were executed for this by the government. Just before the war the  
disease, Staphylococcus, caused by Staphylococcus Staphylococcus, appeared among  
the horses. Many scientists were arrested and accused of sabotage. It was  
later ascertained that because the grain crop had been harvested before it was  
ripe, fermentation had set in on the grain, and the bacillus had grown in the  
fermenting grain, which caused the epidemic of the disease. This disease was  
transmitted to humans who worked with the horses. Many of the horses died from  
the toxin produced by the bacillus. However, there were no fatal cases among  
the humans.

He stated that Anthrax was no problem in the Ukraine because they have developed excellent vaccines. The Government required periodic vaccination of domestic animals subject to the disease. [b6] considers himself an expert concerning anthrax, having been the first person in the Ukraine to determine the meaning of the bacteriophage in the biology of bacillus anthracis and its vaccines.

He said that Teschani disease was unknown in the Soviet Union. However, he had heard of its occurring in Czechoslovakia.

Among fowl diseases he said that ventis was the most serious; that also aliphtheria and a kind of measles caused some trouble.

He said that in 1940 there were 1,352 veterinary surgeons in the Ukraine and 1,645 assistant veterinary surgeons. In his opinion, veterinary medicine was well developed and able to cope with all veterinary problems that arose in the Soviet Union. The Ukraine is divided into 25 veterinary districts. They have an experimental station at Sherkov. Each of the 25 districts is divided into areas of which, for example, the Odessa district has 12 areas in it and each area has 3 veterinary hospitals in which there are from one to three veterinary surgeons. Each hospital has two veterinary stations and two medical supply stations located within the area. There is a veterinary assistant for each collective farm.

5. When mentioned as to whether he knew anything concerning biologic warfare research in the Ukraine, he said that he did not; that all work on, so far as he knew, was carried on at a bacteriological station located on an island named Brododolia\* in Lake Pelliger, which is between Leningrad and Moscow. He said this was taken over by the military for bacteriological research in 1939, its facilities being modeled after those on the Island of Hulska in the Baltic Sea.

6. He said there was no national veterinary society in the Soviet Union because the Government was opposed to such organizations. The main periodical of the veterinarians was one published in the Ukraine, named veterinarian affairs. [b6] stated that he has acquired no knowledge of veterinary affairs in the Soviet Union since his departure in January 1941.

\* BOLD: "Brododolia", probably synonymous with Urodozolya

APPROVED BY:

b6

Chief, Plans, Trng & Int Div

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REPORT NO. 15-1-50

WDGS - INTELLIGENCE REPORT

SUBJECT: Survey of CW 200 and 10 5 PZIERLAND

FROM: AA, Bern, Switzerland

EVALUATION: B-2

DATE OF INFORMATION: 16, 17 Jan 50

DATE OF REPORT: 18 Jan 50

INCL 2

PREPARED BY

b6

SOURCE: Swiss Army officers

SUMMARY OR SID REPORT:

1. The enclosed report covers information obtained during the visit of b6 GSC, AAA, LONDON, to BERN, 16-18 January, 1950 as directed by letter CSOID-APA 470.7 (1 Nov 49) dated 23 November 1949.
2. Meetings were held with Swiss Army officials concerned with ~~W~~ and ~~W~~ research and development.
3. A prepared exhibit of current CW protective materiel was held at ~~BERN ARSENAL~~. The items displayed included most of the conventional items of CW protective materiel commonly considered necessary prior to the advent of nerve gases and ~~W~~. There were no features of novel interest in the equipment displayed.
4. Swiss officials are well aware and somewhat concerned over the increased protective problems introduced by the advent of nerve gases and ~~W~~ agents and a study of such increased requirements is under way. The study has apparently not yet reached the point where active development of items, such as detectors, improved gas masks, and improved protective clothing, can be initiated to meet the increased protection required.
5. Two service gas masks of current standard design were sent to the ID by 1st Indorsement A-261-49, 1 December 1949, from BERN.

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MANUFACTURED BY OLD TOOTH RUBBER & CARBON COMPANY, BROOKLYN, N.Y. JANUARY 10, 1949

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Biological Warfare

file in Biological Warfare

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1. In compliance with letter CSGID-APA 470.7 (1 Nov 49) dated 23 November 1949, the undersigned visited SWITZERLAND for the purpose of securing answers to the questions contained in the above cited letter and obtaining such other information in connection with recent developments in CW and BW in SWITZERLAND as might be possible.

2. My work was greatly facilitated by the excellent arrangements made by [b6], Army Attache, for me to meet the proper Swiss personnel, and by [b6] Assistant Army Attache, who attended all meetings with me and participated in the discussions.

3. The first meeting was held on 16 January in the office of [b6] and was attended by the following:

[b6], Chief War Materials Section, General Staff

[b6], Chief of Ammunition Division,  
War Technical Services

[b6] (Medical Doctor), a Chief of Section under the  
Swiss Surgeon General with staff supervision over CW and BW  
research

[b6], office of Swiss Surgeon General

[b6] GSC ( Doctor of Science), Section Chief,  
WIMMIS CW laboratory

[b6], AAA, American Legation, BERN

[b6] AAA, American Embassy, LONDON

4. On 17 January [b6] and I together with [b6] and [b6] visited BERN ARSENAL where we were joined by [b6] a technical official, and a civilian whose name was not determined. Here we examined the specially prepared display of Swiss chemical warfare equipment. This display included samples of the gas masks and the customary CW equipment and supplies to include gas mask repair kits, decontaminating materials and equipment, protective clothing, and CW medical chests. There were no items of unusual or special interest and no attempt was made to list each item displayed. All equipment was well constructed and kits and chests seemed to be completely equipped. The equipment was designed to meet standard requirements for defense against CW but did not include any equipment relating to BW. All chests were equipped for pack carry.

5. Also displayed was a large trailer equipped with a coal fire boiler to provide steam for decontaminating clothes, warm water for shower baths, and hot water and stationary tubs for laundering clothes. The clothes tubs are carried on an auxiliary trailer. The basis of issue for these trailers is two per division.

6. The information obtained is reported below by subject and not as specific replies to the questions listed in the above cited letter:

#### GAS MASKS

7. At the present time the Swiss have four types of gas mask:

- a) Type "A". This mask is for service personnel. The facepiece is made from a flat stockingette covered rubber blank and is shaped by the usual chin seam. It is equipped with a long corrugated rubber hose tube and a rather large canister carried in a waterproofed fabric carrier. Two samples of this mask were forwarded to the ID on 1 December 1949 under separate cover by Army Attache, b6 1st Indorsement A-261-49 of the same date. A copy of the Swiss Army manual A 46 f "Le masque a gaz" 1942, covering this mask is attached hereto as Enclosure 1.
- b) Type "B". This is a moulded rubber hood type facepiece with snout canister. It is very similar to the Russian hood mask. It was said to be intended for use primarily by wounded personnel. Further questions did not make it quite clear why this type was particularly suited for wounded personnel except that it does not have a head harness which might be unusable in the case of head wounds and does not require adjustments of straps.
- c) Type "C". This mask is for civilian use. It uses a fully moulded facepiece and snout canister. It was said that this facepiece is not entirely satisfactory and further work is being done to improve the moulds.
- d) A fourth facepiece, equipped with a large plastic window, was said to be intended primarily for use by patients in hospitals.

8. Natural rubber only has been used in Swiss facepieces. All examined were in perfect condition.

9. A carbon monoxide canister is provided for use when masks are used in fire fighting, in mines, fortifications and other places where carbon monoxide might be present in large quantities. It is about the same size as the regular canister and is placed in series between the regular canister and facepiece.

10. The present masks were said to provide adequate protection against nerve gases although it was appreciated that they would probably not be suitable against BW agents. This is now under study. Apparently the Swiss have not given much, if any, thought to the use of a hood for increased BW protection.

11. A sufficient supply of army and civilian gas masks was said to be on hand to equip each man, woman, and child. This seemed unlikely and the question was later repeated but substantially the same reply was given. Numbers were not quoted. No sample of child's or infant's mask was shown. Army masks are stored in steel drums from which the air has been evacuated; civilian masks are placed in ordinary storage. A special supply of masks is maintained for training purposes.

#### PROTECTIVE CLOTHING

12. Present standard protective clothing consists of a two-piece garment of rubberized fabric with pull-over boots, and gloves of the same material. This clothing is intended only for issue to army and civilian patrols whose duties might require them to run into large concentrations of gas and to decontamination personnel.

13. Protective capes are of two types, one made of a transparent plastic material and the other of water-proofed paper. The protective cape is carried in a readily accessible position in the top of the pack. The shelter-half was said to give some physical protection against falling CW or BW agents and could be used in an emergency for that purpose.

#### GAS DETECTORS

14. The Swiss have the usual detectors for mustard gas but are very much interested in detectors for nerve gases. They have a nerve gas detector for use

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in the laboratory but none for field use. They said that at present they would have to rely on the first appearance of symptoms of poisoning by nerve gases among the troops for indication that nerve gases were present.

#### NERVE GASES

15. The Swiss obtained samples of the German Tabun-filled munitions but said that since the war have made samples of SOMAN and SARIN in their laboratories based on their own research. They had checked their work by comparing their products with the formulas published in French literature. SOMAN is considered the most toxic and the most stable. A concentration of 1/10 milligram per cubic meter is considered lethal.

16. Bleach, or a 3% solution of soda are considered suitable decontaminating agents for TABUN. They know of no practical method for decontaminating SOMAN or SARIN.

17. It was said that paper impregnated with calcium sulfate and benzedene (?) gives an indication of the presence of TABUN in field concentrations.

18. ATROPINE, NOVOCAINE, and LOBELINE were mentioned as protective drugs against nerve gases.

#### OTHER CHEMICAL WARFARE AGENTS

19. Mustard gas is the only pre-war agent considered still of value and it is considered to be a highly effective agent.

#### BIOLOGICAL WARFARE

20. Although it was not possible to learn what the Swiss are doing in the way of biological warfare research it was evident that they were giving this subject considerable thought and believe it to be a serious threat. TULAREMIA, PSITTACOSIS and the TOXINS were mentioned as possible BW agents. It was said that there is a slight amount of foot and mouth disease in SWITZERLAND but no RINDERPEST which, therefore, makes SWITZERLAND particularly susceptible to RINDERPEST through having built up no natural resistance.

21. They believe mass immunization might be accomplished by subjecting groups of personnel to the immunizing agent in aerosol form in closed rooms.

#### SMOKE

22. No requirement exists for an oil-type smoke generator. If necessity arose for generating smoke from bulk agents they would attempt to improvise by some such method as adding calcium oxide to oleum. They have smoke grenades, apparently filled with HC smoke mixture, and shells filled with FS. It was said that white phosphorous was not considered as a smoke agent because of its toxic properties and they wished to use no munitions which would leave them open to the accusation of using toxic materials.

#### FLAME-THROWERS

23. The Swiss have no requirements for a carrier or mechanized flame-throwers, but do have a portable type which is apparently of more or less conventional design. They prefer thin fuel to thickened because of its greater morale effect. 50 meters is considered acceptable for the maximum range.

24. Flame-throwers are issued to the Grenadier company of each regiment. In addition four flame-throwers are issued to each infantry battalion.

#### TRAINING

25. Chemical warfare training is given to all personnel during their period of active duty. Gas officers are provided in regiments and above.

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26. One copy of the Swiss Army manual A 47 f "Le service antigaz" 1946, is attached hereto as Enclosure 2.

#### COLLABORATION WITH OTHER EUROPEAN COUNTRIES

27. Although [b6] was told during his visit to SWITZERLAND in June, 1949, that they were considering collaboration with SWEDEN, NORWAY, and HOLLAND, but not with BELGIUM and DENMARK, on BW research, they replied to me to a question on this subject to the effect that they did not plan collaboration with any European country. In their reply they vaguely referred to the ATLANTIC PACT. It is possible that their not being members of the ATLANTIC PACT has changed their attitude in this respect.

#### GENERAL

28. The Swiss were very friendly and cordial and went to considerable work to prepare the display of current chemical warfare equipment at BERN ARSENAL. However, there appeared to be some reticence and reserve in answering questions which did not seem to exist on my previous visit. This applied particularly to questions ~~asked~~ on other than current CW equipment and may well have been due mostly to the fact that with their limited resources and personnel they have not been able to go much beyond the initial thinking stages and were not prepared, therefore, to discuss new developments in any detail. They seemed to appreciate the existence of many new problems with the advent of nerve gases and BW agents, but do not have the answers. On the other hand, however, they would not approve the visit to the chemical warfare laboratory at WILMIS nor to a collective protective installation in their mountain fortifications, both of which visits were volunteered by the Swiss during my last visit upon the occasion of a future visit. Nor would they approve a meeting with [b6], DIRECTOR of the INSTITUTE OF HYGIENE, UNIVERSITY of ZURICH, who has been investigating BW for the Swiss Army, nor with [b6] ASSISTANT DIRECTOR, PHARMACOLOGY DEPARTMENT, CHEMICAL INDUSTRIES, [b6] who is understood to act as a scientific advisor to the Swiss Army on BW, both of whom were visited with Swiss Army concurrence during my previous visit. It was said that both these men now work, with respect to CW and BW matters, for the Swiss Army, and therefore any information obtainable from them would be more properly obtainable from Swiss Army personnel with whom meetings had been arranged.

APPROVED:

b6

Colonel, GSC  
Army Attache

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Indicated below are one or more statements which provide a brief rationale for the deletion of this page.

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Information has been withheld in its entirety in accordance with the following exemption(s):

---

It is not reasonable to segregate meaningful portions of the record for release.

☐

Information pertains solely to another individual with no reference to you and/or the subject of your request.

☐

Information originated with another government agency. It has been referred to them for review and direct response to you.

☒

Information originated with one or more government agencies. We are coordinating to determine the releasability of information under their purview. Upon completion of our coordination, we will advise you of their decision.

DELETED PAGE(S)  
NO DUPLICATION FEE  
FOR THIS PAGE

Page(s) 39

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U.S. DEPT. OF JUSTICE  
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REPORT

1. Stocks of Poison Gases in the USSR

When the USSR entered the war against Germany in 1941, she had already accumulated large stocks of poison gases. Soviet Army chemical warfare experts considered mustard gas and lewisite, especially the latter, to be the most effective agents in the group of persistent gases. Other gases, including phosgene, diphosgene and chloropicrin were also kept in stock, but were considered of secondary importance.

"Poisonous substances" (Otpoivnyye veshchestva) is the term used by the Soviet Army for poison gases. This designation also includes other poisonous agents.

2. Incident Involving the Use of Poison Gas

During the retreat of the Soviet Army from KURSK and KIEV in 1941, the Soviet press announced that the German Army had used poison gas in a certain battle area. The Soviet officer who was sent to investigate the incident reported that no evidence of a German gas bomb was found but that, on the contrary, what was found were fragments of a Soviet gas bomb.

3. Training of Soviet Troops in Defense Against Chemical Attack

Prior to and during World War II, officers and enlisted men of the Soviet Army were required to attend lectures on defense against chemical attack. These lectures were held according to a schedule prescribed by the War Ministry. Source states that after the war ended chemical warfare training in the Soviet Army was curtailed, but that it is still provided to a limited extent.

The medical, veterinary and chemical warfare branches of the Soviet Army work in close coordination on the problems of defense against all forms of chemical attack. This coordination is frequently tested during maneuvers and on field trips, when decontamination of a supposedly contaminated area is demonstrated.

4. Training of the Civilian Population in Defense Against Attack

In the period immediately preceding the war, an intensive campaign was conducted by the Soviet Government to train the civilian population of the USSR in methods of defense against chemical attack. The training program included lectures, assemblies and conferences by the Osoaviakhim,\* the Komsomol and other Communist Party Organizations. The chemical composition, physiological effects and means of defense against the various types of poison gases were taught in all public schools. Peasants and adult workers were encouraged to obtain all possible chemical warfare information and to attend lectures which were held on the subject in plants, clubs and other institutions. Posters designating the various types of poison gases and showing methods of defense were displayed in public places. Following the war, training of the Soviet civilian population in defense against chemical attack was continued on a limited scale.

\* (ECIU note: Osoaviakhim was formerly the Soviet organization in charge of civilian training in defense against chemical and aerial attack. It has now been replaced by three independent organizations: Dooarm (land defense), Doozlot (sea defense) and Dooav (air defense).)

~~SECRET~~

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RU-1532-49 (STI-2721)  
Page 2

5. Equipment Used by Soviet Troops for Defense Against Chemical Attack

Prior to and during World War II, the Soviet Army used two types of gas masks: the RN (combat, normal), and the RS (combat, secret). These masks, which were very similar in appearance, covered the entire head and extended down to about three inches above the shoulder-blades. A third type of mask, designated BO (combat, special) was issued for a short time during the war and was then withdrawn. This third type of mask covered the face only and was held in place by leather straps. The air tube and canister were of similar design on all three types. The masks were carried in canvas holders worn on the left hip. Impermeable paper capes were issued for use during exercises, maneuvers and actual combat. These capes afforded protection against mustard gas and Lewisite. They were effective only for one exposure and troops were instructed to destroy them after use.

Members of chemical warfare units were also supplied with impermeable coveralls made of heavy canvas. These coveralls were for use in decontaminating areas where persistent agents had been used.

6. Equipment for the Defense of Animals Against Chemical Attack

Immediately before and during the war the following articles were issued to all units of the Soviet army in which horses were used. These articles were kept in stock by the units but were never issued.

a. Thin impermeable cotton capes of various lengths which covered the horses to the first joint (ankle). In cavalry regiments the same capes served to cover the riders as well.

b. Dry type gas masks made of coarse rubberized canvas with built-in filters. These were to be drawn over the upper lip of the animal and fastened by leather straps. These masks were effective for two hours.

c. Improvised moist type gas masks, similar to the dry mask but constructed of two feed bags separated by a layer of a substance unknown to source. The animal's eyes were protected by gas-proof panels.

d. Foot covers of impermeable coarse canvas with heavy soles. These were to be drawn over the horse's hoofs to the first joint during passage through contaminated terrain.

7. Decontamination Equipment

The most common method of personal decontamination against poison gases in the Soviet Army is by means of the PKMP kit. During the war this kit underwent many changes. The first issued consisted of a gauze-wrapped tampon containing an ampule filled with a decontaminating preparation. When the ampule was broken the tampon was ready for use. Later glass containers were introduced, containing 25 to 100 grams of decontaminating fluid. This fluid consisted principally of grain alcohol, which the troops drank as soon as it was issued. To prevent this the alcohol was mixed with chlorinated lime. However, this did not discourage the drinkers, who merely filtered out the lime and continued to drink the alcohol. The PKMP kit for animals consisted of chlorinated lime powder. This kit underwent no changes during the war except for the packaging.

8. Attitude of the Soviet Army toward Future Use of Poison Gas

In the spring of 1948 source attended a lecture given by an officer of the Chemical Warfare Service of the Group of Soviet Armies of Occupation

~~SECRET~~



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RP-1392-49 (STI-2723)  
Page 3

in Germany. The subject of the lecture was, "Defense of the Soviet Army Against Possible Chemical Attack." The first question put by the lecturer was: "Will poison gases be used in the next war?" The answer he gave was: "Without any doubt, poison gases will be used in the next war." He maintained that Germany did not use poison gases in the last war only because at the beginning of the war she was outbursts by her successes and did not deem the use of poison gas necessary to win the war. Later when defeat became inevitable, the German High Command considered it contrary to its own interests to employ chemical warfare.

9. Current Developments in Poison Gases

Source is certain that up to June 1949 no new type of gas mask or other chemical defense equipment had been issued to Soviet troops. As the old type of mask was never used in actual combat, he cannot state whether it is effective against mustard gas. Source never heard of a chemical land mine. He heard at lectures that hydrocyanic acid might be used in the next war. He also heard a lecturer mention that during the past war the Germans had found a method of modifying hydrocyanic acid to increase its specific gravity by the use of a compound containing a high percentage of iron oxide. The lecturer also stated that carbon monoxide (CO) has been improved as to density and thus came into an effective chemical warfare agent. The lecturer claimed that Lewisite has been altered to increase its ability to form colloidal dispersions which will settle on objects and penetrate through all known gas masks.

To source's knowledge, up to June 1949 no new experiments in chemical warfare had been carried out and no new defenses had been found in the USSR.

10. Preparations for Bacteriological Warfare

Source has no knowledge of bacteriological warfare, but states that he heard unofficially of the existence of a stock of "top secret" serum and cultures which are kept in a laboratory in Moscow. The exact location of this laboratory is unknown to source. Source states that during the summer of 1949 the Soviet press conducted an intensive campaign accusing the United States of active preparations for bacteriological warfare. Source states that in the past such campaigns have been used as smoke screens to cover similar activities on the part of the Soviet Government.

b6

Continuing

All Army information contained  
herein was regraded

UNCLASSIFIED on 6 FEB 2008  
By USAINSCOM FOI/PA  
Auth Para 4-102, DOD 5200.1R

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42

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REPORT NO. RT-1382-49  
PAGE NO.

DISTRIBUTION BY ID, EUCOM: M/DI, GSUSA  
1 DI, HICOG  
1 A-2 USAFE  
6 7707 ECIO  
b1  
1 CHEM DIV  
1 MED DIV  
Referred  
4 ID, EUCOM

APPROVED FOR THE DIRECTOR OF INTELLIGENCE:

b6

Chief, Analysis Branch

~~SECRET~~

FBI

REPORT NO. 75-55-10  
 SUBJECT: Transmittal of Alleged CW Tubes Found Near FUERSTENWALDE.  
 FROM: ID, 30201  
 EVALUATION: G-3  
 DATE OF INFORMATION: December 1949  
 DATE OF REPORT: 9 February 1950  
 INCL: 8/5 (DA) REL: b6  
 SOURCE: S-2, Berlin Military

SECRET

SUMMARY OF SID REPORT:

1. With reference to letter ID/GSUSA, dated 27 October 1949, subject: Soviet Gas Mask Equipment, various chemical tubes found in a forest near FUERSTENWALDE are transmitted as inclosures to this report.

2. The material comprises two tubes containing brown absorbent chemicals, three glass filtering tubes, two test tubes containing a grey black residue, and several tubes containing chemicals. Many of the tubes are marked with colored bands.

3. German experts who were consulted state they have never seen equipment of this type in Germany. Although the origin of the tubes cannot be determined here, it is probable they are obsolete detection tubes.

NOTE: This document contains information affecting the national defense of the United States within the meaning of the espionage laws, Title 18, U.S.C. and 32, and its transmission or the revelation of its contents in any manner to an unauthorized person is prohibited by law.

~~SECRET~~

Rec'd from IDA  
 3-29-50 SWRjs

G.I.R-4

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 6 FEB 2008  
 by USAINSCOM FOI/PA  
 Auth para 4-102, DOD 5200-1R

NOT RECORDED

INDEXED - 129

100-93216 276  
 APR 4 1950  
 34

103-90216-129

Transmitted as inclosures to this report are the following boxes found in a trash can in the forest near FORSTENWALDE, December 1949.

1. Small corrugated cardboard box, containing 2 transparent plastic tubes, 6 x 1 cm. (2 3/8 x 3/8 inches).

a. One tube contains a layer of brown absorbent (22 mm.) and a layer of white crystalline material (7 mm.); above this are two thin glass capsules containing brown liquid. The capsules are separated by a paper disc. The tube has one yellow band around the section filled with brown absorbent material (clay).

b. The second tube contains a layer of brown absorbent (20 mm.) and a layer of white crystalline material (8 mm.); above this are two thin glass capsules, one containing white powder - the other, brown liquid (no separating paper disc). It has two green bands around the section filled with brown absorbent material.

2. Large corrugated cardboard box, containing:

a. Three glass filtering tubes about 8 cm. (3 1/8 inches) filled with pressed cotton. These tubes have the shape of a glass cylinder (17 mm. diameter) enlarged into five circular ridges (24 mm. diameter), about 7.4 cm. long, and having a conical funnel extension at the bottom end. The upper end is closed with an inserted cap and the lower with a rubber tubing which is again closed with a glass rod.

b. Two short test tubes (about 7.5 x 1.8 cm.) containing dry, black residue at the bottom and test paper stripes, whose lower part (about 1 1/2 cm. height) is dyed blackish-brown, going over into brownish-yellow color (leaving the greater part of the stripe unchanged).

c. About 180 - 200 glass tubes containing chemicals. These tubes are of 5 mm. diameter, of different lengths (7 - 11 cm.).

One type is conically closed on one end, having a pear-like shape on the other end; contains solid chemicals only.

The other kind is conically closed on both ends, squeezed in the middle to separate the part containing solid chemicals from the other part containing thin glass, cylindric vessels with brown liquid. Few of these tubes are open on both ends.

Some of these tubes are marked with stripes of different colors (yellow, green, blue, black, double brown, double red); the majority are unmarked.

d. Two pieces of copper wire.

e. Empty, wide test tube 10 x 3 cm.

#### ID Evaluation:

The text "~~German~~ Chemical Warfare Material" was used as a source of information.

1. According to Part IV, Section C (Gas Detection and Warning Equipment), it is possible to characterize the tube (l.a.) marked with one yellow band as the detector tube (Prüfröhrchen) for mustard gas.

The other tube marked with two green bands indicates the detector tube for chlorpicrin, cyanogen chloride and phosgen oxide.

45

These (probably detector tubes) are concerned. The laboratory of the HAPCO Chemical Corps Depot was consulted in this matter, but this laboratory has no printed information by which these devices could be identified. Two Germans working at the depot (b6) head of the Organic Section of the laboratory, and (b6) a foreman in the Maintenance Division, who have had considerable experience with German gas detection and identification equipment, were asked if they had ever seen the devices in question. Both of these people stated that they had never seen equipment of this type in the German Army or in Germany.

3. It is possible that the Camp Detrick Laboratory in Frederick, Maryland, may have printed information or even corresponding samples which would help in determining the origin of the devices in question - whether they are German or Russian.

4. These probable detector tubes seem to be antiquated and now obsolete, but the knowledge of the purpose or chemical content may be useful in tracing the development in this line in the country of origin.

DISTRIBUTION BY RD, ENCOM: M/DI, GSUSA

REPORTED BY: [REDACTED] OF INTELLIGENCE:

b6

Chief, Analysis Branch

Regraded UNCLASSIFIED on

6 FEB 2008

by USAINSCOM FOI/PA

Auth para 4-102, DOD 5200-1R

DEPARTMENT OF THE ARMY  
OFFICE OF THE ASSISTANT CHIEF OF STAFF FOR INTELLIGENCE  
WASHINGTON DC 20310

ACSI-CIP

TO: ☒ FBI Attn: LNO

DATE: 21 Nov 69

0  
ack  
p2

☐ Referred

☐ USSS Attn: LNO

☐ CIAB

☐ 902d MI Gp Attn: OPS OFFICER

☐ USAIRR

☐ USAINTC Attn: Dir of Inves

☐ USASA Attn: Dir of Security

☐

☒ Attached forwarded for your information.

☐ Attached forwarded for appropriate action.

☒ No further action contemplated by this office.

☐ Your office will be kept informed of status of this case.

☐

b6

Cys furnished:

Chief, Programs &  
Analysis Division

ACSI Form 343

28 May 69

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DATE 11/10/04 BY 60367 uc/ab/ab/ab/ab

56 DEC 11 1969

REC-93

100-93216-1120

DEC 1 1969

IX

47



DEPARTMENT OF THE ARMY  
HEADQUARTERS  
U. S. ARMY INTELLIGENCE COMMAND  
FORT HOLABIRD, MARYLAND 21219

ICDI-SO-O

NOV 21 1969

SUBJECT: Unsolicited Correspondence, Edgewood Arsenal, Maryland

Assistant Chief of Staff for Intelligence  
Department of the Army  
ATTN: ACSI-CIPR  
Washington, D. C. 20310

REC-102

1. (FOUO) Attached hereto is copy of a mimeographed letter addressed to the Director of Medical Research, Edgewood Arsenal, Maryland, one hundred-thirteen of which were received there during September and October 1969. They were received in separate envelopes, addressed by hand, all postmarked at Chicago, Illinois. Many of the signatures at the bottom of the letters appear to have been written by the same hands. The envelopes appear to have been addressed by hands other than those signing the letters.

2. (FOUO) Convenience files of the 113th MI Group contain nothing of significance concerning a representative sampling of the names appearing on the letters.

FOR THE COMMANDER:

b6

1 Incl  
as

Acting Assistant Adjutant General

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DATE 11/28/69 BY 60322 uc/pes/101/CP

11/28/69  
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to CIPR - info  
Lyons/Smith

The Protective Marking is Excluded  
From Automatic Termination

~~FOR OFFICIAL USE ONLY~~

(1) ENCLOSURE

100-93216 1120

b6

Director of Medical Research  
Edgewood Arsenal  
Edgewood, Maryland

Dear b6

ALL SCIENTISTS ARE NOT MAD!

Only those who believe that Chemical and Biological Warfare should be used against Humans are insane.

b6 Biologist of Harvard University--a Noble Prize winner for his research on vision--defies Hollywood's concept of the mad scientist.

b6 had the courage to dissent and to say NO to army researchers at your Edgewood Arsenal.

b6 said,

"NO. I will not work on a chemical that is a Blinding Agent. I would be happy to work on saving sight, not on harming it."

The United States now has the capability of killing every human being in the world 30 times over with Chemical and Biological Warfare (CBW).

ALL PHASES OF CHEMICAL AND BIOLOGICAL WARFARE SHOULD BE STOPPED NOW!

b6

Sincerely,

Name

b6

b6

Address

City & State

b6

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DATE 11/10/04 BY 60267 uc/nls/bj/mab

(2)

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6 FEB 2008  
by USAINSCOM FOI/PA  
Auth para 4-102, DOD 5200-1R

COPY

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COPY

POST INTELLIGENCE OFFICE  
Headquarters  
Presidio of Monterey, California

March 7, 1942

Subject: Possibility of Bacterial Warfare

To : AC of S, G-2, Headquarters WDC and 4th Army  
Presidio of San Francisco, California.

ALL FBI INFORMATION CONTAINED  
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DATE 11-13-03 BY 1047 u/s/nw/lj/

1. [b6]

a salesman for Eli Lilly Co., wholesalers of pharmaceutical preparations, reports that there has been a large increase in the sale of Typhoid Vaccine used by mouth or injection in the Japanese Colony around Salinas, California.

2. Attached herewith is a communication from [b6] Commanding Officer, 9th Corps Area Laboratory, and [b6] MC, Station Hospital, Presidio of Monterey, California relative the subject matter of this letter, in which they concur scientifically. In this connection particular attention is invited to Par. 8, and their recommendations. Although they did not include it in their recommendations, they recommended to me a check on Japanese research doctors and workers employed in state, Municipal and University laboratories, as it would be possible for those people to obtain Shiga Dysentery cultures, and cholera cultures. They further suggest such workers be eliminated as potential originators of Bacterial Warfare.

3. The following is a list of commercial pharmaceutical concerns that manufacture typhoid vaccines:

- \*Outler Laboratories  
Berkeley, Calif.
- \*Parke Davis  
350 Mission St., San Francisco, Calif.
- \*Sharpe Dohme  
132 2nd St., San Francisco, Calif.
- \*Eli Lilly Co.  
450 Mission, San Francisco, Calif.

The following is a list of retail drug stores in Salinas operated by Japanese in Salinas.

- \*Endo Pharmacy
- \*Savemore Drug
- \*Fuji Drug Store

4. In this connection the following is supplied upon reliable information reveals a subversive rumor is circulating in Alameda, Calif. that commercial rice has been poisoned. In consequence of this rumor civilians are refusing to purchase rice.

b6

Intelligence Officer

Distribution: Local FBI

100-93216-1

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NINTH CORPS AREA LABORATORY  
Presidio of Monterey, California

March 7, 1942

Subject: Possibility of Bacterial Warfare

To : Intelligence Officer  
Presidio of Monterey, California

1. Prior to 1935 and thereabouts publications with reprint references in the United States revealed active experimentation, both in Czechoslovakia and in Germany upon the possibilities of effective bacterial warfare against personnel, both military and civilian.
2. There is good evidence to indicate that certain enemy nations have already immunized their effectives against such possibility.
3. Based upon the known fact that massive contamination of either food, facilities, or water supply, will bread all immunity and cause active cases of disease such as typhoid. This evidence is of vital importance.
4. Despite the usual methods of purification of water by known amount of chlorination determined by laboratory checks on usual organisms present; not typhoid bacilli; purposeful contamination specifically with typhoid would not be revealed, such that massive infection of the water users can occur.
5. Reference to actual typhoid infections occurring in American Military Personnel, already actively immunized according to recognized standards is made with obvious implication in report, New York Medical Journal, July 31 and August 7, 1920, by [b6] and [b6] now director of 9th Corps Area Laboratory, covering actual experiences under field conditions, without purposeful effort, involved toward contamination.
6. The reported sharp increase in sales of immunization material, particularly of Oral Vaccine, utilized for producing peak-maximum immunity among an already immunized specific group of possible foreign agents is of obvious immediate vital importance.
7. The long life viability of the organism, in addition to the simplicity and ease of production of cultures of material, together with ease of massive contamination of foods eaten raw, is well known.
8. Public Health experience in communities throughout the world in attempting to control Typhoid, amoebic dysentery, Typhus, cholera, and bacillary dysentery reveal the great difficulty involved both in military establishments and among civilian population, and conversely the diabolical ease with which a purposeful act can produce a great and widespread result of immediate aid to the enemy.

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6 FEB 2008  
by USAINSCOM FOIPA  
Auth para 4-102, DOD 5200-1R

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9. The immediate, first essential in any such effort is the prompt protective prior immunization of the enemy personnel.

10. Typhoid bacilli in natural waters may remain alive as long as 36 days, according to [b6]. In ice, according to [b6], "it may remain alive for three months or over". (Page 511, Textbook of Bacteriology, Zinsser and Bayne Jones, 8th edition 1939)

11. Lettuce, and other uncooked vegetables such as endives, garlick, onions, water cress, cabbage, celery, carrots, and others could be sprayed with live cultures of typhoid or the irrigation water could be purposely contaminated. The organism would not die. Persons eating such food at any time up to six months after the food was contaminated would contract Typhoid fever in an appreciable percentage, even though they had been inoculated with usual typhoid vaccine. The civilian population is not so protected.

12. There were 885 cases among the A.E.F. in 1917-20 with a rate of .53 per 1000. Quoted from "Military Preventive Medicine", Dunham, third edition, page 169. These cases had all received anti-typhoid inoculation before leaving the United States. Some had received more than one series of inoculations.

RECOMMENDATIONS

1. Recommend immediate thorough investigation into every angle of the report referred to.

2. Immediate steps at all Army Posts for excess chlorination of water supply.

3. Immediate routine investigation of all vegetable supplies to Army Posts. Preferably by wash cultures for quick report, with quarantine of those supplies till released by laboratory in local community, as are already equipped for such work.

b6

Commanding 9th CA Laboratory

b6

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Auth para 4-102, DOD 5200-1R

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Lacota, Mich. July 24-50

U. S. Bureau of Intelligence,  
War Department,  
Washington, D. C.

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DATE 10/20/89 BY 60322/UC/AC/STN/RNP

A Report of the Underground operation of The Soviet Cell in  
control of the operation of

FORT CUSTER VET HOSPITAL  
Battle Creek, Michigan.

The need is urgent that you act at once to prevent  
the opening of a Bacteriological Attack covering an area  
from Schenectady to Mollene. From Soo St. Mary to St. Louis.  
They are all set to start.

Four Doctors must be constantly watched.

b6

b6 is being framed as their goat.

All shipments of munitions of war over M.C.R.R.  
must be camouflaged.

It is being counted from the Hospital grounds  
and information Radioed and Telepathically Transmitted  
to Moscow.

There is hipodermic Needles and other Bacterial  
and surgical material on a small dump readily accessible  
to the public directly North West of the gate that  
is on highway leading down hill toward the farm buildings  
North West of Ward 14.

You must act at once within the week or further  
delay may cost the Lives of several innocent Drs. Nurses  
Attendants, and patients.

COPY de

Respectfully yours,

b6

Lacota, VanBuren Co.  
Michigan.

100-932160 FDAS pp 213-218

53



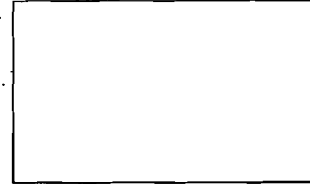
~~CONFIDENTIAL~~

DEPARTMENT OF THE ARMY  
GENERAL STAFF, UNITED STATES ARMY  
WASHINGTON 25, D. C.

Rec'd from G-2  
8-2-50  
CWB:js

Honorable J. Edgar Hoover  
Director, Federal Bureau of Investigation  
Department of Justice  
Washington 25, D.C.

AUG



b6

b7C

FBI rBI

Dear Mr. Hoover:

*Biological Warfare*

Transmitted herewith for your information and any action deemed desirable is a registered letter from an individual who signs himself as b6 of Lacota, Van Buren County, Michigan.

In the event your Bureau develops any information on the contents of the inclosed letter which would be of interest to this Division, it is requested that such information be made available to the Assistant Chief of Staff, G-2.

Sincerely yours,

*John W. Weckerling*

Incl:  
Ltr a/s  
w/envelope

JOHN WECKERLING  
Brigadier General, GSC  
Chief, Intelligence Division, G-2

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INDEXED - 104

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b7C

Per FBI

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6 Feb 2008  
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Auth: para 4-102, DOD 5200-1R

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54

Lacota, Mich. July 24-50.

~~U.S.~~ Bureau of Intelligence,  
War Department,  
Washington, D.C.

A

A Report of the Under ground operation of  
The Soviet Cell in control of the operation of  
FORT CUSTER VET HOSPITAL  
Battle Creek, Michigan.

The Need is urgent that you act at once to  
prevent the opening of a Bacteriological  
Attack covering an aerie from Schenectady  
To Moliene. From Soo St. Mary to St. Louis.  
They are all set to start.

Four Doctors must be constantly watched.

b6

b6

is being framed as their goat.

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HEREIN IS UNCLASSIFIED

DATE 10/20/04 BY 60263 UC/NLS/BJA/RNP

100 - 93216 - 323

55

All shipments of munitions of war over M.C. R.R.  
Must be camouflaged.

It is being counted from the Hospital grounds  
and information Radioed and Telepathically Transmitted  
to Moscow.

There is Hipodermic Needles and other Bacterial  
and surgical material on a small dump readily accessible  
to the public directly North West of the gate that  
is on highway leading down hill toward the farm buildings  
North West of Ward II.

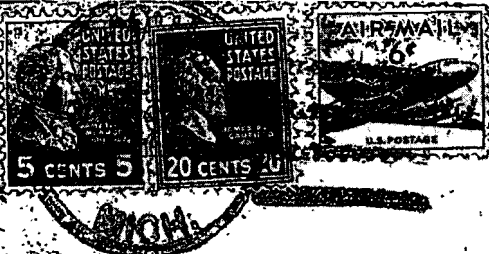
You must act at once within the week or further  
delay may cost the Lives of several innocent Drs. Nurses  
attendants, and patients.

Respectfully yours,

b6

Lacota, VanBuren/Co.  
Michigan.

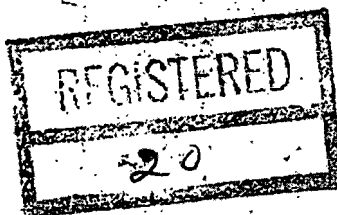
80/31  
Lacota, VanBuren Co  
Michigan.



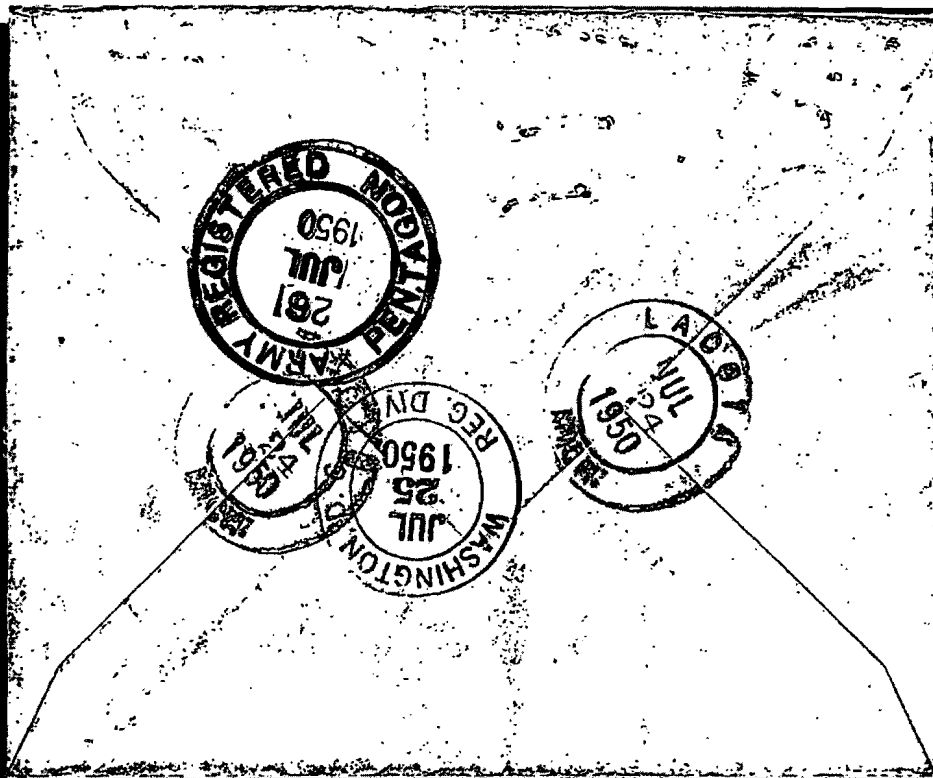
War Department, Bureau Of Intellig.  
Washington,

Special  
urgent report.  
AIR MAIL.

D.C.







~~CONFIDENTIAL~~

21 April 1949

Rec'd from B-2  
4-21-50 CWB:ja

MEMORANDUM FOR RECORD:

*gm* SUBJECT:

b6

*E. H. [redacted] Per FBI*

1. The following information was received informally from *ga* b6 Chemical Corps, concerning the SUBJECT:

a. ROZHIN reported to the staging area at Bremerhaven, Germany on 12 April 1950 as a DP for shipment to the US. He is being sponsored by Rev. b6 Congregational Church, Detroit, Michigan.

b. ROZHIN is approximately 60 years of age and by profession is a Veterinarian of international reputation. He is UKRANIAN and a former professor of the UKRANIAN UNIVERSITY in the USSR. During recent months, he has been teaching at MUNICH, Germany. He has an extensive library concerning Soviet veterinarian matters which he probably will bring to the US.

c. ROZHIN appears to be "pro-US" and has indicated that he has information which he will release when he gets here. b6 believes that SUBJECT can provide information on the USSR biological warfare potential and can fill gaps on information concerning the Soviet Veterinarian services. Chemical Corps desires to exploit the SUBJECT when he is settled in the US.

DECLASSIFIED BY 60267UC/NLS/ROD/RNP  
ON 10/4/04

*U. S. G. [redacted]  
Reg. [redacted]*

INDEXED - 25  
100-93216-285  
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All Army information contained herein was regraded UNCLASSIFIED on By USAINSCOM FOIPA Auth Para 4-102, DOD 5200.1R

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*no [redacted] [redacted]*

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SECRET

Translation of the inclosure to Army Attache, Rome, Report No.

R-88-50, dated 16 March 1950. ID No. 647577

Translation prepared by Chemical Corps.

28 JULY 50

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100-93216 © FDPS pgs 202, 204-207

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6 FEB 2008  
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Auth para 4-102, DOD 5200-1R

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A List of Military Institutes in the Soviet Union Which Are Working on  
the Production of Bacteriological Materials for Use in Warfare

As already noted, the Soviet Union has mobilized all its scientific potential and its secret service to obtain as quickly as possible the advantage in the production of the atomic bomb and other horrible weapons which would be used in a war against the United States or other countries of the democratic West.

All Soviet chemical institutions are working incessantly on the production of bacteriological materials which would be used, as said, in case of war.

Engaged in these institutions are all Soviet scientists and all German scientists brought to the Soviet Union from chemical factories and German institutions at the end of the war. According to rumor, the Soviet Union has an institution near MOSCOW in which Japanese scientists brought to the Soviet Union are also working. These Japanese scientists are working on bacteriological bacilli which they developed but which never found use during the war because the HIROSHIMA bomb destroyed this institution.

Here is a list of all institutes, arsenals, and chemical factories in the Soviet Union working on the production of bacteriological bacilli:

1. ISEVSK Chemical Plant

This is a large plant constructed in 1942. ISEVSK is located in the UIMRAJSKAJA region. Here there are about 25 German chemical specialists. Work is done in three shifts of eight hours each. The factory is at the southeast of the city but not easily observed because it is surrounded by a wall three meters high. About 1500 Soviets and more than a hundred German prisoners work here.

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2. Stalin Chemical Factory, ASTRAKAN

This factory situated at ASTRAKAN in the ASTRAKANSKA region devotes its full production to various bacteriological objects for war use. Here there are produced various poison gases which would be exploded together with bombs. 5,000 Soviet workers are employed. The plant is located at the east of the city. It is under military direction and chief of the factory is a colonel.

3. VOROSHILOVGRAD Chemical Factory

This, too, is a large factory working on the production of bacteriological materials. It was constructed in 1935 and worked to full capacity in war time. VOROSHILOVGRAD is at MOLOTOVSKA to the north of the town. The plant is also under military direction.

4. "KOLMILJAK" DZULF Chemical Plant

The city of DZULF is in the NEMICETSKAJA region and the plant (?) is about four kilometers from the city, just south of the railroad line. This plant was constructed in Tsarist Russia during the first World War. In 1941 it was renovated and refurnished with new machinery. At present German specialists are working with the Soviets on the production of organism which would be exploded with bombs in series. Among these tiny organisms there are buboi ad avilunera, typhus, and other diseases such as "Spanish cholera", etc. About 2,000 Soviet laborers work in three shifts of eight hours each.

5. "DZERZINSKIJ"-GROZNI Chemical Plant

This plant was constructed after the end of World War II according to German plans and using German prisoners and German engineers. It is

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under military direction with military post office address number 504. It uses this for communicating with the chemical department of the Ministry for Industry. Rumor has it that this concern is especially important since it is under strict military control.

6. IRKUTSK Chemical Plant

An old Soviet chemical factory constructed in 1928 which has been, according to rumor, modernized and refurbished with machinery brought from Germany. It is located to the south of the city and is easily recognizable because there is a stream nearby. The factory employs about 2,500 workers. It is not certain just what work is being done here, but it is certain that government work is being produced since it is under military authority with a military post office address number 504.

7. The "KRASNOJ SEMIK" Chemical Factory, LENINGRAD

Another large concern doing work for war industry. It is southeast of the city. During the war it was damaged in German raids but as soon as the war ended was repaired and put back into former operating condition. About 600 German prisoners work here. Chief of the concern is a Soviet colonel. Chief of the engineering department is a German colonel who was a certain b6 in civil life. It works three eight-hour shifts per day, producing special smoke screen gases for the navy and the army. This installation also has its military post office address (No. 15) through which it contacts civil and military authorities of the Soviet Union. Both Soviet workers employed in the factory and German prisoners held there used this address in their correspondence, but these numbers are changed every few months.

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2. "TRUNZE" Chemical Plant, MOSCOW

This is one of the most modern chemical concerns and was constructed very recently. It devotes its full production to bacteriological materials for war use. Six Japanese scientists and two German scientists are employed here. It is to the east of the city in a suburb. Military guards patrol the area and no civilians and even some military personnel cannot gain entrance without special permission from the Soviet Military authority. Military post office address number 36.

3. "KRASNII KABATAN" Chemical Factory, MOSCOW

To the northeast of MOSCOW and near another large metallurgical concern. It was constructed before the war. The concern produces various poison gases as well as artificial fog gases for the navy and army. About 2,500 men are employed. It maintains liaison with a small metallurgical industry for the production of various necessary objects such as containers for gases and artificial fog.

4. KALININ Chemical Factory

To the south of KALININ. It is recognizable by its two large chimneys and by a pond located to the southeast. It was constructed after the war since it had been completely destroyed by German air bombardments. It has now been reconstructed to twice its former size and employs about 3,000 workers in three shifts of eight hours each per day.

5. "KRASNII TROUDZONIK" Chemical Factory, Leningrad

This factory, too, has been reconstructed.

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Information originated with one or more government agencies. We are coordinating to determine the releasability of information under their purview. Upon completion of our coordination, we will advise you of their decision.

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**WAR DEPARTMENT**

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DATE 7-21-04 BY 60261 ucj/ufg/pjm

Headquarters First Army  
(Office of Headquarters)

Army Base, Boston 10, Mass.  
(Place)

11 December 1947

(Date)

Subject: Speech on Biological Warfare given by  
[b6], Littauer Center, Harvard, University,  
Cambridge, Massachusetts, on 9 December 1947.

Summary of Information:

0421506

The Boston - Cambridge Branch of the American Association of Scientific Workers (AASW) held a meeting, open to the public, at Littauer Center, Harvard University, at 2000 hours, on 9 December 1947. The purpose of the meeting was to present an address by [b6], Professor of Biology at Columbia College of Physicians and Surgeons, New York City, and Chairman of the New York Branch of the AASW, who talked on Biological Warfare (BW). The moderator of the meeting was [b6], Physics Professor, Harvard University.

[b6] prefaced his remarks with the statement that he was not going to discuss anything of a secret nature. In discussing BW, he mentioned botulinus, streptococcus, tetanus and psittacosis viruses as the agents that might be disseminated in BW. He compared the strength of these various viruses, pointing out that streptococcus is one of the strongest.

In discussing BW in general, [b6] stated that they had not as yet any positive proof of its effectiveness. This was due to the fact that it had not yet been used in actual warfare. But, he pointed out, they had enough information from tests given to animals and through accidents in the laboratory at Camp Detrich to indicate that it was a potentially powerful weapon.

He said that the various BW agents could produce many victims or few, depending upon the effect desired. [b6] claimed there are types that will merely sicken and others that will kill. In actual warfare, strategy would be modified by the possibility of the BW agent backfiring, but this would not prevent its use. He said that he believed if BW were used in a war between United States and Russia -- the two principals in all the current war talk -- it could be used without fear of backfiring.

He stated that the strategist might only use BW to affect a few of the enemy, relying on the horrible results to thoroughly demoralize the others. In this connection, he pointed out the smallpox scare of several years ago in New York City which so thoroughly scared the people that they were lined up by the thousands to get vaccinated.

Previous Distribution:

Distribution: *now*

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SUMMARY OF INFORMATION (Cont'd)

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11 December 1947

SUBJECT: Speech on Biological Warfare given by [b6]  
Littauer Center, Harvard University, Cambridge, Massachusetts,  
on 9 December 1947.

[b6] asserted that no one BW agent can affect all plants and men nor is there one that can affect men and all vegetation.

In speaking of the defenses against BW, [b6] pointed out that the spreading of disease through insects could be controlled through DDT and in the case of rodents, other powerful measures were already developed. He emphasized that there was little, if any, practical control of airborne BW agents. He said that the list of diseases that could be prevented through vaccination was small and that even some of these could be overcome by large dosages. As for protection through masks, he pointed out that anyone who has had anything to do with gas masks knows that it is impractical to wear them over long periods. According to [b6], another point making BW defense difficult is that detection of airborne viruses is practically impossible. Retaliation is the best defense, he claimed.

In stressing the point that any country could produce the necessary virus to wage BW, he pointed out that a small laboratory could easily produce one litter of psittacosis virus which, if injected, would furnish enough fatal doses for twenty million people. In addition, he pointed out, the materials are everywhere, they are cheap, and any country with competent biologists has the necessary personnel.

[b6] mentioned that it was necessary to sterilize by steam all the sewage at Camp Detrich, the BW post.

In the final phase of his speech, [b6] discussed what should be done about BW. In this regard he stated that BW did not lend itself to control like atomic weapons and added that there is not a scientist today who is naive enough to think any of the suggested atomic control plans are feasible. Russia is not the only country that is preventing the adoption of an atomic energy control plan, he declared.

[b6] stated that the problem of BW fell in a political rather than in a technological category. He said that he wasn't qualified to speak on the political aspect of it, but that he was going to discuss it any way. Our present "Get Tough" policy with Russia is not the right one, he contended. He brought up the point of whether it would be advisable to fight a preventive war with Russia now, and then raised the question whether such a war would not bring about the very thing we are trying to prevent. He also raised the question, without any definite conclusion, as to whether we would win a preventive war with Russia. He claimed the United States needs a new administration and a reversal of its foreign policy if we are to get along with Russia.

[b6] also criticized the Daniel Squire moratorium measure, which, according to him, would provide a twenty-five year moratorium on any research or further development of scientific weapons such as BW and atomic.

In further discussion, he stated that at present world government is not the solution nor is the solution in building up our armaments. The solution, he asserted, hinges on our block of countries getting along with Russia. This we can do without sacrificing our principles, he claimed. He suggested that the Boston - Cambridge Branch should get behind the national

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SUMMARY OF INFORMATION (CONTINUED) ~~CONFIDENTIAL~~

11 December 1947

SUBJECT: Speech on Biological Warfare given by [b6]  
Littauer Center, Harvard University, Cambridge, Massachusetts,  
on 9 December 1947.

organizations report on BW limitations which was submitted to the United Nations late in September 1947.

The meeting was then turned over to a question period. One young man asked if the people of this country were not too smug concerning their strength caused by the fact that we had never directly suffered the effects of modern warfare. He suggested that the people should be made to realize the fact that we were not invulnerable, which could be shown through the ease with which BW can be manufactured. [b6] gave a non-committal and indefinite answer. [b6] took exception to [b6] reply and stated that he thought the young fellow had a good point and that political action was necessary to make the people realize that there are possibly twenty-five countries with biologists who could produce BW. Another questioner asked if Russia had competent BW scientists. [b6] replied in the affirmative, but it was [b6] who gave the most emphatic answer. He arose and said that he knew there were competent Russian scientists in all fields despite the popular opinion that the Russians were lacking in scientific personnel. Another young man of student age asked if there was any reading material that [b6] would recommend. [b6] answered that the Association's report on BW, which they submitted to the United Nations late in September, listed about one hundred and twenty-five sources. He added that there were supposed to be copies of this report sent to the Boston - Cambridge Branch of the AASBW. Another person, evidently one of the officials of the Branch, stated that anyone who wanted a copy of the report could get one by writing to [b6] Branch Secretary. (It is interesting to note that although she goes by [b6] her full name is actually [b6] [b6]. She is married to [b6], a Communist, and one of the officials of the Samuel Adams School for Social Studies, Boston's Communist-dominated labor school.)

In answer to a question about informing the people on BW, [b6] replied that at the present time there are only two people telling the public about BW -- [b6] and himself. He recommended that the Boston - Cambridge Branch form a study group under one of the member biologists of the organization to learn about Bacterial Warfare so that they could inform others.

There were approximately one hundred and sixty people in attendance which is about two-thirds of the capacity of the auditorium in Littauer Center. Approximately one-third of those present appeared to be college students. Each member of the audience was given a mimeographed sheet outlining the qualifications for membership in the organization; a copy of which is included as the last page of this summary.

It was noted that there were several people present taking notes

SUMMARY OF INFORMATION (CONTINUED) -CONFIDENTIAL

11 September 1947

SUBJECT: Speech on Biological Warfare given by [b6]  
Littauer Center, Harvard University, Cambridge, Massachusetts,  
on 9 December 1947.

and one young woman wrote down the entire proceedings in shorthand.

After the regular question period [b6] was asked a question in private concerning the study groups which he mentioned during his speech. [b6] commented that these groups should actually study the technical side of BW and experiment with it, thereby gaining knowledge of just how horrible it could be.

Before the meeting a dinner was given for [b6] by [b6] [b6] at the Faculty Club, Harvard University. Among those present were [b6], head of the Geology Department at Harvard University, and a leader of many CP front organizations; [b6] [b6] Secretary to the Boston - Cambridge Branch of the AASOW, CP member in 1945, and wife of [b6] CP functionary; [b6] Professor of Physics at Harvard University, and long standing CP Member; [b6] CP member in 1945; [b6] recently discharged from the Army, no other information available; and [b6] prominent in Massachusetts Civil Liberties Union.

After dinner [b6] mentioned that a [b6] head of the Biology Department at Harvard, came to him and asked that the meeting be cancelled. [b6] according to [b6], said that BW was of a secret nature and should not be discussed publicly, and that if it were to be discussed, it should not be covered by [b6] who was not as well versed in the subject as he tried to make out. [b6] further stated that BW should not be sponsored by a group such as the AASOW because of its Communist leanings.

[b6] said he admired [b6] as a scientist and was sorry to hear of his remarks. [b6] contended that [b6] disapproval was based on a difference in political opinion regarding public discussion of BW. [b6] does not believe that BW should be discussed publicly because it involves national security and also because it might unduly alarm the public, [b6] explained, while he believes that if the public is not alerted to the menace of BW through discussions, they will never take any action to prevent its use.

After the meeting [b6] asked [b6] why he had not dwelt longer on the grave danger to the nation's farming if BW were used. [b6] explained that he had been particularly anxious in this public appearance not to unduly alarm the public or the War Department. He claimed that sometime during the next week (15 - 21 December 1947) [b6] and [b6] were publishing his treatise on BW, which had received the approval of the War Department. This work is filled with material which will provide a great deal of more sensational material for future talks. [b6] declared that he wanted to be sure and not talk out of turn until his work had been published for fear the Army would withdraw their approval and ask that the book not be sold. He said his speaking tour was to commence soon after Christmas and was to start in Chicago and continue throughout the nation.

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SUMMARY OF INFORMATION (CONTINUED) ~~CONFIDENTIAL~~ 11 December 1947

SUBJECT: Speech on Biological Warfare given by [b6],  
Littauer Center, Harvard University, Cambridge, Massachusetts,  
on 9 December 1947.

[b6] told a reporter from the Boston Herald, in an interview after the meeting, that "Many American Scientists are refusing to work on military developments", and that all branches of the United States Government were experiencing difficulty in staffing installations for weapons research.

In addition to those mentioned elsewhere in this report, the following persons were also recognized as being present at the public lecture: [b6] Professor of Electronics at MIT, and long standing member of the CP; [b6] no available information to identify; and [b6], Harvard Biology Professor, no known subversive connections.

It is important to point out that a good percentage of the Communists among the intellectual group were present or in a position to learn of what took place concerning this open meeting on BW. It is significant to note that this, the first public discussion of BW in New England, should be sponsored by a group which has definite Communist leanings.

Informed sources who are aware of the sympathies of many in this organization raise the following questions: Isn't it possible that this group may be merely trying to stir up interest in BW with the idea that if it is brought before the public more information, currently classified, will be learned which will in turn indicate how far this country has progressed in BW? If the idea of the study group suggested by [b6] was carried out, isn't it possible that this group would thus learn how to make the known BW agents and possibly develop others which could be used at a later date in a manner aimed to suit their own interests?

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(Following is an exact copy of a mimeographed sheet applied to each member of the audience at the lecture)

# AMERICAN ASSOCIATION OF SCIENTIFIC WORKERS - BOSTON-CAMBRIDGE BRANCH

The American Association of Scientific Workers is a national Association of scientists devoted to the following purposes.

1. To promote and extend the applications of science and the scientific method to all problems of human welfare.
2. To promote better understanding of pure and applied science by the general public and greater cooperation between scientists and the general public.
3. To secure adequate financing and more effective organization of scientific work.
4. To safeguard the intellectual freedom and professional interests of scientists.

Some of the ways in which the Association furthurs these purposes are by presenting speakers, holding discussion meetings, making publicity releases, writing congressmen, and cooperating with other groups interested in the same problems. Some matters with which the Boston-Cambridge Branch has concerned itself with during the past year are, the international control of atomic energy, the organization of a World Federation of Scientific Workers, cooperation with UNESCO, injustices to scientists in Argentina and Greece, the support of legislation for a National Science Foundation and for a National Health Organization, and the question of the civil liberties of scientists.

The Association has branches in New York (where the national office is), Philadelphia, Chicago, Minneapolis, and Salt Lake City as well as Boston.

The Association welcomes to membership anyone in accord with its purposes. The following types of membership are provided for.

Regular membership (open to college graduates, or those having an equivalent in professional experience, in natural or social science or engineering).  
Annual dues.....\$2.50  
(income under \$1500.....\$1.00)

Student membership (for undergraduates in the sciences or engineering, no voting privileges).  
Annual dues.....\$0.75

Members receive the National Newsletter and the Branch Newsletter monthly, and may attend the meetings of the Executive Committee as well as the open meetings.

Persons interested in joining the Association or in having more information concerning it should fill out the form below and turn it in following the meeting. Or they may be sent to the Branch secretary, b6

b6

Name \_\_\_\_\_

Address \_\_\_\_\_ 421526-6

I wish to join \_\_\_\_\_

I wish more information  
about the AASW \_\_\_\_\_

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Director, FBI

December 23, 1947

SAC, New York

AMERICAN ASSOCIATION OF SCIENTIFIC WORKERS  
INTERNAL SECURITY - C

① BACTERIOLOGICAL WARFARE  
INTERNAL SECURITY - R

REFER 5 IS

Reference is made to letter to the Director, December 3, 1947 from Boston, concerning the captioned matter, which requests the New York office to furnish Boston with a summary of derogatory information concerning

b6

In this connection reference is made to the report of b6 New York, dated December 20, 1947 entitled, GINRAD, a copy of which has been furnished to Boston. This report on pages 6 and 7, sets forth information from the files of the New York office concerning

b6

The following appeared in the ED SULLIVAN's column in the "New York Daily News", December 20, 1947:

"At Boston, University of Illinois proxy GEORGE D. STODDARD said, 'Technology called national defense is mobilizing and monopolizing U. S. scientists, who are afraid to decline'. Same day, at Cambridge, bacteriologist Dr. THEODORE ROSEBURY announced that 'U. S. scientists are flatly refusing to work on military developments, preferring fundamental research.'"

For the information of the Boston office THEODOR ROSEBURY and b6 b6 bacteriologists at Columbia University, College of Physicians and Surgeons, New York City, in 1942 wrote a report on Bacterial Warfare which was released for publication in 1947 and appeared in the May 1947 issue of "Journal of Immunology". Photostatic copies of this article were forwarded to the Bureau on November 8, 1947 in connection with the case entitled "IGNACY ZLOTOWSKI, INTERNAL SECURITY - R".

Inquiry by the New York Office has determined that b6 b6 mentioned in referenced Boston letter, is an associate editor of the "Journal of Immunology" published by Williams & Wilkins, Baltimore, Maryland.

The New York office considers this matter RUC'd to Boston by this letter.  
cc: Boston

JMS:ja

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Page(s) 81-89

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From "Informations Militaires, No. 141, Oct. 10, 1949.

FBI

SUBJECT

New Prospects for the Vet. Corps in Technical Military Biological Work

Rec'd from IDA  
2-14-50 SWRjs

NEW PROSPECTS FOR THE VETERINARY CORPS  
IN TECHNICAL MILITARY BIOLOGICAL WORK.

*File in Biological Warfare*

b6 Veterinary Corps.

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DATE 9/9/01 BY 60367UC/STW/STW

BIOLOGICAL WARFARE

The prospects that b6 of the Veterinary Corps suggests to us for the first time here, while they are not the expression of an official doctrine, constitute, nevertheless, an interesting and highly constructive suggestion.

In an era of radar, self-propelled weapons, and nuclear explosives, the role of the military veterinary officer may seem completely eliminated to poorly informed people. Certain persons have shown a tendency to believe that the veterinary Corps will disappear with the motorization of the Army, but such a belief would indicate ignorance that the intellectual and scientific training of veterinary officers makes it possible for them to adapt themselves to numerous special lines of work very different from that in which they have traditionally been engaged.

While it is well to recognize that the horse is employed to only a limited extent in modern warfare, and that the part played by the Veterinary Corps has been considerably affected by this fact, it is, on the other hand, important to emphasize the fact that the employment of preventive medicine in troop units thru the sanitary treatment of food products, and the use of prophylaxis with regard to diseases of animal origin, and above all, the study of means of

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defense against scientific weapons, necessitate the development of the Army veterinary Corps along a new line. With the idea of "total war", this orientation now finds its proper application in the use of means of protecting the country's live-stock from modern war chemicals, bacteriological, and radioactive agents.

Ever since the outbreak of World War II, the "Blitzkrieg" waged by the Reich has appeared to be indisputably linked with a mobility hitherto undreamed-of, together with a crushing superiority in the air. The Wehrmacht, however, while attributing its successes in Poland and France to its armored divisions, was also equipped with a large nucleus of horse-drawn units and had also employed, in its rear, a great system of horse-drawn transport, cavalry platoons, and reconnaissance battalions, which are estimated to have comprised 250,000 horses during the campaign in Poland and 750,000 during the campaigns that followed it.

In the attack against Russia, the horse, which had hitherto played a secondary part, participated actively in both the defensive and the offensive operations. In November, 1941, near Rostov, the Cossack cavalry inflicted their first crushing defeat on the armored German forces. The Russian cavalry, taking the initiative, employed the tactic consisting in surprise attacks or raids deep within the enemy's lines, upon his communications and rear.

The German Army then continued to win successes until the Battle of Stalingrad, where the Russian Army used the combination of cavalry with tanks on a large scale for the first time. In these operations, which terminated with the encirclement and destruction of the 6th German Army, 3 cavalry corps representing 3 cavalry divisions cooperated with 2 armored corps and 1 mechanized corps. This new idea made it possible to penetrate the German defenses by dealing rapid and powerful blows, to disorganize the enemy's lines

of communication and encircle huge masses of troops, literally stupefying the enemy.

The Wehrmacht, realizing the advantages to be gained thru the combined employment of horses and motors, organized formations identical with those of the Red Army, but it was too late, and all the units thus formed were successively crushed by the Russian thrust. According to b6, the lack of cavalry was one cause of the German failures in Russia.

The Russian Command therefore believed that mounted cavalry employed in large formations could be a decisive factor in a success and need not fear the enemy tanks because of its powerful fire weapons, which included, particularly in the cavalry division echelon, AA defense weapons, a separate air umbrella, organic artillery, and a shock element composed of armored cars. It has been apparent ever since that time that the millions of horses employed on the Eastern front undoubtedly had a share in the victory of the Red Army.

During this time the experience gained in the War enabled the AngloSaxons to perfect a military doctrine taking into account the extraordinary ~~military~~ strength of the U.S.A. in material and its distance from the theaters of operations. In spite of the considerable development of the motorized, amphibious, airborne, or air forces, however, we must once more emphasize the role reserved in certain cases for the cavalry formations and mule-drawn convoys.

In the Pacific theaters of operations, in particular, the use of horses and mules was found indispensable by the American and Australian forces in the marshes and dense jungles that reduced the importance and effectiveness of the motorized units.

Horse-drawn transport companies were employed by the British on a large scale in Eritrea, and we also know the part played by animals in Burma, where the military operations sometimes necessi-

tated the transportation of animals by air.

As in the other theaters of operations, the employment of the horse and mule likewise became important in Tunisia and during the invasion of the European Continent, especially in Sicily and Italy. The mountainous terrain, the obstructed roads, and the blown-up bridges made it practically impossible to continue to use the armored forces on a large scale. In order to maintain contact with the retreating Axis forces and bring up mountain guns and supplies to advanced positions it was necessary to employ animals. When the invading troops confronted the Apennines, this problem<sup>therefore</sup> became of crucial importance. Accordingly, during the campaign in Italy, also, where both the Allied and the [b1] at first used only motorized material of the most varied types, it soon became necessary to resort to the employment of mule-drawn companies and horse-drawn mountain units. Thus, thanks to its mules, working in the midst of armored cars and motors, the [b1] in Italy was to cover itself with glory in those rugged and difficult regions by dislodging the enemy from the natural fortresses in the mountains.

These results could not have been obtained without a remarkable organization and adaptation of the [b1] Veterinary Service of the [b1] and subsequently of that of the 1st French Army, which was assigned the task of assembling and the animals and getting them to the theater of operations. The animals were placed at the disposal of the different Arms, according as they were needed, and in order to facilitate their arrivals at the scene of operations at a speed equal to that of modern troop movements, they were generally transported in trucks. As a general rule, it was necessary to use animals that were perfectly trained, were in excellent physical condition, and formed a complete group of effectives, so that they could

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render effective service within the shortest possible time. Since animals that have been put out of action soon become a heavy burden on the units, their evacuation necessitates their simultaneous replacement.

Ever since this time the Veterinary Corps and the Remount Service have been combined. This is because the operations of evacuation and replacements of animals are so intimately connected that they cannot be executed under optimum conditions except under a single direction. Since such operations originate in evacuations, the instructions for which may be issued only by the Veterinary Corps, experience has quickly shown that the mobile Remount depots should be subordinate to the veterinary hospitals or ambulances. These organizations, which are characterized by flexibility and mobility, and are equipped with modern material and numerous and powerful motor vehicles, are capable of rapidly executing a veritable "Standard Exchange" of unusable animals while continuing to function as a veterinary treatment and "maintenance" center. The centralization of all matters pertaining to the maintenance and utilization of the effectives in the Veterinary Corps also makes it possible to coordinate the needs of the units and supply them to the satisfaction of the Command.

It is interesting to emphasize the fact that a similar development has occurred in the b1 since Jan. 1941, in which the Veterinary Corps and the Remount Service have been placed under a single Command (that of the Veterinary Corps).

As a result of these different considerations the relations between the cavalry units properly so-called and the motorized or mechanized units forming a part of the Armed Forces has varied greatly according to which belligerent was involved. In addition to the ideas of the different High Commands concerning the employ-

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ment of shock troops, other factors such as the quantity of motor and fuel available or the number of horses available, the geographic nature of the theater of operations, have had a decisive influence on the role assigned to the mounted troops. Consequently, the organization based on the Soviet conception and adapted to a continental theater of operations was linked to a lower degree of industrialization than that to which the organization of the Anglo-Saxons was geared. Since, on the other hand, the road net was not adapted to a high degree of mechanization (and could be used only by materiel equipped only with tracks or with both tracks and wheels), the horse could be employed under well-defined conditions to a much greater extent than was possible in Western Europe, and could thus retain an important military role.

It is also interesting to report the role assigned to army dogs in the different foreign armies, side by side with the use of mounted units. These dogs were used in Great Britain both for the usual purposes and ~~for~~ in searching for the victims buried under the debris of bombed houses, and in the USSR as means of antitank combat (1) or for detecting mines; their mobilization as an auxiliary of the Red Army also seems to have been provided for had there been danger of an chemical attack from the air.

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(1) The antitank dogs - veritable "dynamiters" - are trained to slip under enemy tanks to blow them up. These animals carry an equipment containing a double pocket filled with explosive charges; a special projecting device hits the bottom of the tank and by rocking to and fro causes the explosion.

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In short, the horse, the mule, and the dog, regarded as means of combat, have retained their place during this highly mechanized War. The employment of masses of cavalry, however, can no longer be conceived of under the conditions prevailing in modern warfare, and we must regard it as proven that the era of long cavalry marches and heroic cavalry charges has ended, never to return. The animal (and especially the pack-animal) will continue to be a valuable and indispensable auxiliary under certain critical conditions, and the country's live-stock will always constitute a reserve to be called upon in case of a possible shortage of motor fuels due to a blockade or to the destruction of supplies.

Consequently, since it may become necessary during the course of conflicts to call for mounted formations, horse-drawn transport units, or pack-mule units, it seems advisable to maintain a nucleus of carefully selected animals capable of being rapidly increased to cope with any eventuality. The pack-mule units, in particular, seem hard to replace in construction operations or combats waged by "maquis", and they could probably be used effectively in hawking areas devastated by atomic weapons. With regard to Colonial campaigns, the operations being conducted in Indo-China prove that animal traction, and especially transportation on pack-animals, continue to be indispensable factors in the mobility of modern troops.

Side by side with the horse or mule, the army dog will be used for special combat missions (commandos, airborne troops) or missions of detection (of mines, chemical, and perhaps atomic weapons). Moreover, owing to the always possible extension of theaters of operations to the Arctic regions, the use of trained dogs may become of capital importance in combats waged in the Far North.

The new conditions under which animals are employed in combat should henceforth increase the powers and duties of the veterinary

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officer, who has become the technical expert on all questions relating to horses. For this reason, the direction of the military remounts and that of the <sup>"</sup>Equine Establishments<sup>"</sup> was entrusted to the Veterinary Corps in February, 1946.

The military veterinary, on departing from his traditional role, was appointed to execute this mission, for in this era of mechanization he continues to be a qualified specialist, a horseman, and a sportsman who continues to hold the pure Saumur traditions, as is shown by the prizes he has won in horse races.

In virtue of his authority over remounts, the military veterinary will therefore henceforth play a part in determining the manner in which horses are to be bred, and he should, in his capacity as a biologist, make a valuable contribution in the zootechnic realm thru the application of modern knowledge concerning genetics.

The Army, faithful to its traditions, will thus continue to play a part in maintaining the magnificent French breeds of horses so highly prized abroad, and in improving, by applying the latest scientific knowledge, the capital that the horse continues to represent in the National economy.

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The lessons taught by the War have also shown that as a result of the sanitary work done by the Veterinary Corps in inspecting food products of animal origin and in the prophylaxis against diseases of animals transmissible to Man, this Corps constitutes an essential element in military preventive medicine and is making an increasing contribution to the solution of the problems posed by military biological or medical research.

For this reason, the Corps continues to be indispensable on the technical level in completely motorized armies. The American Army, for example, comprised veterinaries not only in the large units

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ground landing units but in the air forces as well. The Veterinary Corps of the American Army, which is attached to the Medical Corps, is trained in a common center combining the various medical activities and is prepared for its wartime duties in the Field Medical Service School.

Thus, owing to the development necessitated by modern warfare, the Veterinary Corps of the Army has followed a well-defined line of development which has been confirmed by an important event characterizing this development, namely, the attachment of the Veterinary Corps to the Medical Corps in October, 1944.

On the purely scientific level, the liaison between human and veterinary medicine has made it possible to seal the bonds of intellectual kinship ~~xx~~ by which they were already united from the viewpoint of experimental physiology and comparative pathology. Moreover, in studying biological or medical problems, physicians, pharmacists, and veterinaries form an inseparable trinity within which <sup>mutually</sup> they derive ~~mutual~~ benefits from their special training. Their activities supplement one another, and military veterinaries occupy a highly respected position in the recently organized establishments of the Army Medical ~~Service~~ <sup>Corps,</sup> namely, the Antibiotic Production Plant and the Blood Transfusion Center.

On the practical plane, the danger represented by the infectious diseases of animals that are transmissible to Man, and by germ-carrying animals, which becomes increasingly evident as our knowledge concerning epidemiology increases, requires the joint action of the physician and the veterinary in the field of preventive medicine. This role would become much more important if chemical, ~~warfare~~ <sup>biological</sup>, or atomic warfare were to be waged, in view of the complexity of the problems posed with regard to the protection of the man-power potential.

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Military veterinaries are also making an important contribution to the work of the Quartermaster Corps. In this field, also, the necessities of modern warfare have considerably modified the conditions under which the troops in the field are supplied with food. While utilization of the local supply of provisions and, in particular, (and therefore the formation of herds of live-stock) the supply- ing of fresh meat to the troops, is, indeed, still possible during a period of stabilization, this is not true during operations in which, in addition to the use of emergency rations (canned food products), the system of cold-storage plants becomes of capital importance.

Thus, the importance attached to food products preserved by either heating or cooling processes, as well as the normal inspection of meats, necessitates the participation of military veterinaries both in the technical supervision of the industrial establishments working for the Quartermaster Corps and in the scientific inspection of the food products themselves, or in the various investigations of the nutritional value of the foods (rations of treated or vitaminized foods) conducted in the Subsistence Laboratories. On the other hand, the conditions under which the food products are stored and transported and their protection from modern war chemical, biological, or radioactive agents continue to be linked with the problems relating to the preservation or quality of the food products, and require the intervention of the technical and sanitary experts.

However, an even more extensive ~~field~~<sup>realm</sup> is greatly enlarging the field of action of the military veterinaries, namely, that of military biology. We know how much more important biological research has become thru the employment of modern weapons, and the role in the production of scientific weapons - whether they are chemical, biological, or atomic - clearly illustrates the new powers that

Science is trying to place at Man's disposal.

Owing to their complexity, the field of these investigations is limited to animals, and this gives military veterinaries a certain advantage from the experimental viewpoint.

From the strictly professional viewpoint, it is also well to recall the increasingly important place occupied by veterinaries in the different biological research institutes or laboratories, where, because of the world-wide <sup>reputation</sup> ~~reputation~~ of their work, <sup>they</sup> ~~they~~ have reflected, and continue to reflect, great honor upon French Science. Thus, quite recently the entire veterinary profession celebrated the 25th anniversary of the discovery of anatoxins by honoring the great scientist b6

For these reasons, the laboratories of the technical services of the Army General Staff and of the Powder Administration are requesting the services of a constantly increasing number of military veterinaries specialising in the study of special problems of a bacteriological, biochemical, or physiological character that are closely related to the methods employed in modern warfare. Moreover, the fact that military veterinaries are specialising in research concerning radioactivity and "tracer atoms" now opens the way for them to study means of protection against atomic weapons.

This integration of the Veterinary Corps with the scientific services emphasizes the importance of its role in the Army, where it seems evident that in view of certain militarily urgent problems the role of the biologist is tending to become as important as that of the engineer.

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Modern weapons are no longer represented solely by those of the traditional type, but are coming to consist more and more of

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ARMS  
that will be used in a "total war". Future conflicts will make it necessary for the whole Nation to be on its guard, and, as General J. Breuillac has expressed it, "the military mobilization will be only one element in the transformation of the whole country, moved by a powerful defensive reflex." (1)

In this mobilization of the National resources, the protection of live-stock may become of capital importance. Accordingly, problems relating to defense against scientific weapons to be used solely in attacking different species of domestic animals are included among the great problems relating to National defense, and present a three-fold aspect: military, economic, and sanitary.

Military - as a result of the immobilization or extermination of the animals in the Army during campaigns, and especially because of the disorganization of the agencies supplying food products of animal or vegetable origin destined for the troops.

Economic - as a result of this extermination, which will immediately cause a shortage of the food products of animal origin destined for the civilian population, and a great reduction in animal traction that will greatly affect farm work and urban transportation; it will also put an end to commercial relations with foreign countries owing to the application of sanitary measures, especially if bacteriological weapons are employed.

Sanitary - as a result of the danger that the meat of animals contaminated by war chemicals or radioactive agents or infected by microbial agents may be eaten by human beings, and because of the role played by the diseases of animals that are transmissible to Man, many of which constitute a menace to public health.

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(1) Gen. J. Breuillac: "The Nations Must be Taught to Defend Itself". Revue de Defense Nationale (#36, 1949).

Contamination of the animal effectives in the institutes of serotherapy (by war chemicals, or infection by microbial agents), may also reduce and disorganize the production of serums and pose problems of the utmost gravity with regard to protection of the power potential.

It will therefore be well to examine successively the problems posed by the use of chemical, bacteriological, and atomic weapons.

Altho the chemical arsenal was not utilized during World War II, the threat thereof weighed heavily upon the belligerents and there is no reason for believing that it will never be used in a future conflict. The employment of weapons of long range and great power, by causing the combatants and the personnel of war industries to burrow more and more deeply into the ground, might even promote the use of chemical weapons, owing to their insidious character and their persistence. On the other hand, nuclear chemistry, by producing a whole series of new substances (radio-elements), is increasing the possibilities and field of action of such weapons to an extraordinary extent. New and terrible products in this field have already seen the light of day in the laboratories of the Third Reich Reich.

It is known that war poisons are classified as irritants, vesicants, and general poisons. The new German poisons, Trilons belong in the latter category: tabun (ethyl diethylarsine phosphite) and sarin (isopropyl ether of the fluoride of arsenic phosphoric acid) are the most dangerous of these substances. The general toxicity of tabun is about 2 to 3 times as great as that of hydrogen cyanic acid.

Tabun is not a vesicant and exerts only a moderate action on the lungs, but its <sup>dermic</sup> ~~transdermic~~ toxicity, which seems debatable in view of the results of experiments, is considerable than a slight

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abrasion of the skin is present, and it invariably penetrates readily the <sup>exposed</sup> ~~skin~~ mucous membranes.

In Man, war chemicals of the "tabun" type cause a whole series of pathological troubles, depending on the concentration used, including the following:

Fatal results within a more or less long period, accompanied by neuro-psychiatric troubles of an impressive character;

They quickly put the victim out of action after absorption of a very small quantity of the poison, owing to persistent pupillary contraction resulting in impairment of the visual acuity; they also cause violent headaches and weakness.

The Anglo-Americans have discovered in their respective occupation zones projectiles charged with tabun and representing a heavy tonnage. Projectiles having a total weight of from 100,000 to 120,000 tons have been recovered, and they contain war chemicals of the standard type as well as tabun. These tonnages are very slight when compared with the total output of war chemicals during World War I, which amounted in 1918, on the French side, to about 20,000 tons.

Thus, while these gases were not utilized, intensive preparations for chemical warfare were made in the Reich, and also, doubtless, by the belligerents of the Allied group. It therefore seems probable that the Germans failed to use this weapon, not for humanitarian reasons, but of because of their respect for international agreements, but rather because they did not believe that it would give them any decisive advantage, and above all because they believed that their enemies possessed powerful weapons with which they could retaliate at once.

At any rate, the dangers created by ~~the~~ chemical weapons still exist and therefore make it necessary to begin the use of the ~~same~~

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of protection and defense even during a time of peace.

As far as veterinary problems are concerned, the means of tactical defense are comparable to those whose use is considered for defense against atomic weapons. There are special problems to be considered here, however, namely, how to protect food products of animal origin. In a general way, the problem involved in the protection of meat produced on an industrial scale may be regarded as solved without more ado by the establishment of chains of cold-storage plants or depots, provided they are rendered air-tight. In case they are damaged by direct attacks, a problem of ~~decontamination~~ decontamination is posed, necessitating, in particular, a close liaison between the Veterinary Corps and the Chemical Service. The most important feature of this problem is how to salvage or decontaminate the slaughter animals and meat contaminated with chemicals; this can be done, and the details relating to these operations are included in the methods generally used in meat inspection.

The term "biological warfare" is applied to the employment of bacteria, viruses, or other microorganisms, their toxins, or certain synthetic agents (hormones) in order to cause the death or the temporary or permanent neutralization of men, animals, or plants.

Altho the idea of the ~~transmissibility of diseases~~ possibility of transmitting diseases for military purposes ~~has been conceived~~ have been conceived prior to the Pasteurian era, it has not been proven that bacteriological agents were used in the past. Biological warfare consequently remains a new weapon to be used for the first time. In spite of its condemnation by most of the nations of the world, it is possible, nevertheless, that this weapon may be used. The belligerents <sup>that</sup> participated in World War II ~~can~~ affirm that pestilence-causing biological agents constitute a

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gressive weapon that is on an equal footing with the atomic bomb.  
fact that had been studied

The ~~study of~~ this weapon ~~concentrated~~ with a view to its use as a rival of or in conjunction with the atomic and chemical weapons was revealed, as far as Germany is concerned, during the trials at Nuremberg in 1946, and more recently by that of the Nazi physicians responsible for the experiments on exiles.

The most sensation<sup>al</sup> reports, however, come from beyond the Atlantic. The research work begun in 1942, reached its maximum development in 1944, when the U.S.A. became certain that the Germans were preparing to use biological agents.

The information coming from the East is much less specific. Articles in the press periodically emphasize the fact that biological weapons are being studied in the USSR, and we are even told that such weapons will constitute one of the means of retaliation used by the Soviet Union if the atomic bomb is used by its enemies.

The ~~arm~~ agents used in biological warfare are comparable to war chemicals; all of them are capable of being disseminated throughout vast areas, are of different degrees of visibility, and have an insidious action.

The biological weapon is, ~~above~~ first of all, a weapon of mass destruction, capable of penetrating the heart of the enemy.

Next, it is an economically employed weapon requiring only a limited amount of equipment and capable of being produced in any country, large or small, irrespective of its wealth or economic power. A distillery of average size would be to biological warfare what the plutonium pile in Hanford is to atomic warfare.

Lastly, it is a psychological weapon the publicity concerning which, if exploited by the enemy, would quickly impair the Nation's morale, which would be further impaired by the resultant disorganization of the administration and <sup>sanitary</sup> ~~the~~ services.

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From the tactical viewpoint, it would be difficult to employ this weapon when the opposing armies are in contact, owing to its retroactivity, that is, to the possibility that after it had caused an epidemic in the enemy's ranks the epidemic might spread among those who had started it. It would therefore be necessary to first immunize the effectives of the army taking the offensive.

It therefore seems that owing to the danger that would threaten the attacking army, this weapon would be of only limited importance in a war between adjacent nations. On the other hand, there is reason to fear that it is not adapted to the very long-range combats that might characterize certain phases of future intercontinental conflicts.

The essential problem posed by biological warfare is connected with the mass production of the biological agents, the methods of disseminating them, and the means used in doing so.

The typical biological agent, the ideal type of which is represented by a sporulated microbe, must possess great virulence and resistance; these qualities determine the choice of the agent to be used, its preparation, and the conditions under which it is stored and disseminated. The key to this problem, however, is found mainly in the "epidemicity" of the biological agent; when this is present, it is the entire system of what the ancients called the "epidemic spirit" that is involved.

It also appears possible to produce biological agents characterized by increased virulence and epidemicity, and to create new varieties of pathogenic agents by bringing about genetic mutations due to the effect of radiation or of certain chemical agents, which would extraordinarily complicate the problems relating to protection.

From the viewpoint of dissemination, the diversity in the

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tion of the pathogenic agents enables us to imagine the use of a great variety of methods of artificial dissemination involving the utilization of the natural channels of infection (the skin or mucous membrane, the respiratory tract, the alimentary canal) and the ~~para-~~<sup>channels</sup> ~~teral agents~~ (carrier insects, combined agents), as well as methods of direct inoculation.

It is therefore well to make a distinction between:

- Diseases transmitted by ~~contact~~ means of food and water;
- Diseases transmitted by ~~contact~~ indirect or infectious contact with sores;
- Diseases transmitted by the air;
- Diseases transmitted by carrier insects.

The methods that can be used are:

- Sabotage actions by shock troops, or by secret agents performing special missions;
- The insertion of pathogenic agents in projectiles;
- And above all, dissemination from the air.

The sabotage is designed to affect small vulnerable or critical points, supply docks, and large concentrations of animals (markets, fairs, and institutes of ~~serum therapy~~ serotherapy).

Pathogenic agents should be inserted only in projectiles to be used in close combat.

The dissemination of pathogenic agents from the air, on the other hand, appears to be the ideal method of employing the biological weapon, thanks to aviation and its "bombers". This method appears much more capable of causing widespread epizootics than is sabotage.

The dissemination of a mixture of war gases and microbes from the air may become very important. We know, indeed, that poisoning prepares the way for infection, and a very slight degree of gas-

poisoning may prepare the soil for effective action by the biological agent.

For the same reason, the emission of radioactive products capable of lowering the resistance of the organism might also be a predisposing cause of the effectiveness of microbial agents disseminated from the air.

Lastly, carrier insects can also be disseminated from the air.

In order to ~~prevent~~ prevent the excessively rapid dissemination of pathogenic agents thru the air, it appears possible to employ as vehicles of the microbial agents, hygroscopic substances serving as excipients or as a smoke screen.

The biological weapon, however, will <sup>find</sup> more sensational support when Man finally learns how to cause rain to fall at will. Will he try to scatter microbial <sup>1</sup>cultures or toxic hygroscopic substances over the ~~rain~~ clouds, or to coat the ground with a microbial aerosol previously formed under the cloud to be precipitated? The secrecy with which investigations of artificial rain-making are being conducted in the U.S.A. leave us with no reply to these distressing questions.

We must now make a list of the war chemical, biological, and radio-active agents, and describe each of them. The opinions held with regard to this subject are, moreover, very contradictory.

Three agents, namely, the viruses of "aphthous fever", <sup>(foot and mouth disease)</sup> cattle plague, and equine ~~encephalomyelitis~~ encephalomyelitis, would be capable of causing widespread epizootics among live-stock. The latter two diseases, which are not endemic in France, are especially to be dreaded.

It is well, ~~and~~ moreover, to emphasize the fact that some of the biological agents cause diseases in animals that are also transmissible to Man; these include the bacillus of Malta fever, the

ders bacillus, the anthrax bacillus, the virus of psittacosis, the bacillus of tularemia, and that of botulism (1), to mention only the most important of them.

The very nature of biological warfare emphasizes the extreme difficulty of applying the means of protection - a difficulty which is all the greater because it is possible to conceive that several simultaneous attacks may be made in the same sector, thereby creating numerous sources of infection with different pathogenic agencies.

In addition to the scientific information obtained from the enemy, the general preventive measures include police measures against sabotage, the special and constant surveillance of vulnerable and critical points, a special lookout service designed to discover the missions of lone airplanes, and prompt examination of the projectiles dropped or discharged.

As far as projectiles are concerned, the measures of immediate protection <sup>would</sup> ~~consist~~ consist in covering the points where they have fallen with sand or dirt.

On the technical plane, the use of the means of detection is

(1) One of them which is most frequently mentioned by journalists is Clostridium botulinum, which could be used in two ways: either thru direct contamination of the food with spores, or thru dissemination of the toxin itself.

It is mainly the employment of the botulines that might cause the most terrible danger, owing to their high degree of infectiveness. The types A and B have been obtained in the form of crystallized proteins; <sup>the</sup> hypothetical numerical limits given by American authorities permit us to believe that 1 gram of the toxin contains, on the average, 8,000,000 of the minimum doses fatal to Man.

identification requires, first of all, close cooperation between the medical or veterinary sanitary services and a medical meteorological service.

These problems indicate that the Veterinary Service should comprise, even in time of peace, a regional bacteriological laboratories and biological laboratories for the inspection of food products, the great animal-slaughtering centers and in the slaughter-houses of large cities.

Since the collective protection of live-stock can be effected only within the framework of the prophylactic work in general, the protective measures should consist mainly in the effort to forestall the propagation of the epidemic by means of prophylactic action in the infected area.

The application of these measures consequently necessitates:

- In time of peace, the accumulation of reserve stocks (of vaccines, anatoxins, serums, and antibiotics);
- In wartime:
  - The mobilization and conversion of the different biological centers (serotherapeutic establishments, distilleries, etc.) into plants producing vaccines;
  - The organization of veterinary sanitary squads within the framework of the regional biological units.

These extremely mobile units, having motorized field laboratories at their disposal and constituting outposts (antennae) of the regional laboratories, would have the task of applying the first measures of detection and identification and of employing the first remedial measures, consisting in the immunization and localization of the sources of disease.

As far as the atomic weapon is concerned, the bombs dropped on Hiroshima and Nagasaki, supplemented by the experiments at Hitler

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and Eniwetok, have made the effects of nuclear explosives sufficiently clear so that we can realize the revolution caused thereby in offensive or defensive military operations and the transformation of both the organization and the weapons of armies which it ~~present~~ necessitates. One can therefore say that the entire art of war will henceforth be completely dominated by the atomic weapon.

The biological effects of the atomic bomb are, on the one hand, directly due to the explosion of the bomb itself (effects of the blast, burns, effects of the irradiation due to the direct action of the explosion), and, on the other hand, are caused by radiation resulting indirectly from the explosion (contamination with radioactive products).

~~The~~ effects of irradiation are essentially characterized by the diversity of the reactions observed in different human beings and in the same species by the same dose of irradiation. In Man, the fatal dose for a total irradiation of the body is about 500 r(1).

The "radiation sickness" is essentially characterized by an attack upon the blood-corporuscle-forming centers (bone marrow, spleen), the alimentary canal, ~~sexual~~ glands, and skin. The changes in the blood are indicated by severe anemia, hemorrhagic lesions, and the contracting of infectious diseases due to the lowering of the organism's resistance. Lastly, lesions of a genetic nature constitute a factor of exceptional gravity with respect to the problem of

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(1) The international roentgen or r is the quantity of X or gamma radiation produced in one cc of dry air under normal conditions of the ions charged with one electrostatic unit of electricity, irrespective of the sign. In practice, 1 milligram of radium irradiating a surface with an area of 1 square cm placed at a distance of 1 cm from it produces 8 roentgens per hour.

heredity.

The effects of ionizing radiations are classified according to the <sup>w</sup>three following zones in which they were produced:

- The 1st zone: centering in the site of the explosion and having a radius of 1 km; every one is killed both by the effects of the blast and the heat and by those of the radiation;

- The 2nd zone: having a radius of 1,000 to 1,250 meters from the foregoing center; the severe and often fatal forms of radio-lesions are observed, and the total irradiation is estimated to be from 100 to 800 r for unprotected victims;

- The 3rd zone: having a radius of from 1,250 to 1,500 meters from the foregoing center, in which the dose of irradiation can be estimated to be from 300 to 500 r.

These facts, which are based on observation of the first atomic bombardments, are obviously merely an approximation, and even more terrible effects could be attained by increasing the <sup>effective and</sup> ~~possibility~~ of the fissionable material. It is known that all research concerning the atomic weapon is dominated by this problem of the power of the bomb, to judge from the experiments at Eniwetok in the spring of 1948.

The degree and extent of the danger from irradiation depend on the altitude of the detonation, the climatic and meteorological conditions affecting the dispersion of the products in a given area, and also on the nature and composition of the soil. It is therefore necessary to take into account the danger due to the nature of the products remaining in the bombed sector and the danger at a distance from this sector due to radioactive aerosols or the contamination of the water.

In case of an explosion in the air over a ground site, the products of the fission of the bomb are largely carried up in the

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mushroom-shaped column of gases, so that the <sup>residual</sup> radioactivity induced is very slight in this case, and is rapidly attenuated.

This vaporization by the high temperature produced by the explosion is followed during the second period by a condensation in the form of solid particles of dust. If the atmosphere is humid, the condensation of its moisture ~~xxxxxxxxxxxxxxx~~ on the nuclei formed by these particles tends to create a fog. The cloud formed under these conditions may be quite stable.

If the bomb explodes on the ground, the radioactivity induced would probably be greater and would cause the prolonged contamination of all the neighboring objects. Moreover, the radioactive particles of dust, mixed with the fissional products of the bomb, could, in dry weather and depending on the composition of the soil, be blown away and scattered a long distance by the violent blast of the explosion.

In addition to this distant action exerted by the radioactive clouds, another important factor consists in the contamination of the water: when the explosion occurs near a body of water, in particular (a river, lake, or dam), a large part of the radioactive ~~elements~~ <sup>products</sup> formed may lead to the prolonged activation of the entire mass of water, causing the contamination of all the water in the bombed sector and the regions situated below it.

Lastly, in the coastal regions, an explosion in ~~xxxxxx~~ or over the sea may render a large area dangerous after dispersion of the radioactive products.

Thus, radiobiologic effects may be produced at a distance - at least within a region near the bombed target - creating vast areas in which contamination may be brought about both by tegumentary contact and by inhalation (of aerosols), or by ingestion (of liquids or foods) (1).

(1) See foot of next page. Translator.

The radiobiologic action of a nuclear explosion may therefore manifest itself under two forms:

- An immediate action (by gamma rays or neutrons) taking the form of external irradiation of an intensity varying with the distance from the source;
- A deferred action exerted in a radioactively contaminated sector and taking the form of either an external (beta or gamma radiations) or an internal danger (alpha, beta, or gamma rays); <sup>as</sup> these radioactive products act like war gases of a special type.

In view of these different dangers, the prompt delimitation of a radioactive sector will constitute a problem of capital importance necessitating the perfection of techniques of rapid detection and of warning signals for giving the alarm. In order to enter the contaminated sector it will be necessary to require that every person who has to enter it carry a standard individual detection device. This also applies to every product coming from such a sector, such as arms, equipments, and food products, all of which must be examined with the detector.

The detection devices must therefore be made as simple to use as possible, so that the combatants and passive defense squads can be equipped with them.

To this end, devices of two types may be used, according to which is preferred:

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- (1) A sector may also be contaminated by using radioactive products obtained as by-products of the functioning of an atomic <sup>arm,</sup> ~~arm,~~ This new ~~weapon~~ the radioactive weapon, might conceivably produce a rain or cloud charged with radioactive elements as a result of the burst of a bomb causing negligible mechanical destruction above a target.

- The actual or instantaneous intensity of the radiation can be measured with an instrument of the Geiger-Müller counter type.

- The total quantity of irradiation received during a given period can be measured with an electrometer.

In addition to these means, the photographic method may also be of great assistance in measuring radiation.

On the defensive plane, the objects to be attained should have a tendency to cause the ~~maxim~~ coordination of the measures of active and passive defense by every possible means.

The latter measures, which are designed to keep at a distance, disperse, and protect from the chemical, biological, and radioactive weapons, must also be supplemented by means of a veritable psychological preparation of both the combatants and the civilian population, thus making it possible to prevent any surprise effect and spread a knowledge of the measures that must be adopted for their protection.

In the veterinary field, the effects of radiobiologic action upon the different species of animals should be considered not only because of their immediate results, which take the form of economic losses and danger that human beings may be contaminated, but also because of the additional danger of infection thru the spread of either a natural or an artificially caused epidemic.

As far as food is concerned, all food products that have remained in a bombed or contaminated sector should be considered dangerous, for they may be characterized by varying degrees of induced radioactivity.

The veterinary protective measures will thus tend to bring about the creation of a sanitary organization on a National scale (regional biological units) and will comprise measures of a tactical nature (limitation of large concentrations of animals) and the application of suitable police regulations.

In the absence of means of protecting slaughter animals, protective measures alone can ensure the protection of meat in the great urban centers. These measures consist in making provision in time of peace for:

- The decentralization of the great animal-slaughtering centers;
- The construction of a chain of cold-storage plants throughout the National territory in order to facilitate the storage and transportation of meat;
- The fitting up of cold-storage plants protected from radiation in the cities.

These ~~various~~ measures, which are also applicable to attacks of other types, should be carried out jointly with the fitting up of shelters reserved for the storage of the food reserves designed for the troops and the civilian population.

As far as the protection of bodies of water contaminated by radioactive products is concerned, this is a general problem and necessitates close cooperation between the different sanitary services and the physico-chemical services. It is well, in particular, to remember that the usual chemical methods of disinfection or decontamination are inoperative and that the use of only physical means of decontamination or disinfection (methods involving filtration or precipitation) can be considered.

\* \* \*

These few observations concerning modern chemical, biological, and radioactive agents show, above all, the imperative necessity, for a nation which, like France, desires peace and security, of the great effort that must still be made in order to preserve the integrity of its territory in case of a conflict and to ensure the protection of its population and National resources.

Therefore, since the problems posed by scientific weapons affect the Army, they have brought about the creation of a ~~Committee for Veterinary Prophylaxis Against Modern Warfare~~ within the ~~Committee for Scientific Action on Behalf of National Defense~~. This mixed Committee (composed of civilians and Army officers) has objects that go far beyond the specifically veterinary field.

✓ The importance of the results obtained emphasizes the timeliness of the work of the Veterinary Corps in the field of military biology and thus ensures its development along the modern lines expressed by a new title - the Veterinary and Biological Service of the Army.