

Chapter XI

Nuclear, Chemical, and Biological Weapons

by
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Introduction

Chapter 10 of *The Commander's Handbook on the Law of Naval Operations*¹ is concerned with nuclear, chemical, and biological weapons. While the extent that the use of these weapons, other than nuclear, will impinge on naval warfare (except in connection with naval surface and naval air bombardment of land objectives, riverine operations, etc.) is probably fairly limited, the draftsmen of the *Handbook* have deemed it appropriate to include a full chapter on these subjects - and rightly so. In addition to discussing the evolution and present status of the applicable rules of the international law of war with respect to each of those categories of weapons, this commentary will discuss the extent to which those rules affect naval warfare *qua* naval warfare and the extent to which they affect the operations of naval units against objectives on land.

Nuclear Weapons

When the first atom bomb exploded over Hiroshima on August 6, 1945, it began a new (and perilous) era for the planet Earth. It also began a controversy which has yet to be resolved to the satisfaction of a great many people.

Not unexpectedly, sometime after the facts with respect to the nature of the atom bomb and the extent of the casualties and damage inflicted at Hiroshima and Nagasaki became generally known, an issue was raised as to the legality or illegality of the use of the atom bomb - and, subsequently, the same issue was, of course, raised as to the use of its far more powerful and devastating successors. In the discussion which follows it must be borne in mind that while there are a number of conventions placing various types of restrictions on nuclear weapons,² there is no convention which specifically outlaws their use.³ In light of the complete failure of all of the practically endless efforts undertaken since 1945 to accomplish this result, to argue that

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the use of such weapons is prohibited by inference derived from the provisions of international agreements dating from 1868, from 1899, or from 1907, appears to be the equivalent of tilting at windmills. In view of the foregoing this writer concurs with the statement contained in the *Handbook* to the effect that, "There are no rules of customary or conventional international law prohibiting nations from employing nuclear weapons in armed conflict."⁴ Nevertheless, a brief analysis of the arguments pro and con appears to be warranted.

The 1868 St. Petersburg Declaration Renouncing the Use, in Time of War, of Explosive Projectiles Under 400 Grammes Weight⁵ contained a number of humanitarian preambular clauses:

That the only legitimate object which States should endeavour to accomplish during war is to weaken the military forces of the enemy;

That for this purpose it is sufficient to disable the greatest possible number of men;

That this object would be exceeded by the employment of arms which uselessly aggravate the sufferings of disabled men, or render their death inevitable;

That the employment of such arms would, therefore be contrary to the laws of humanity.

During the course of the drafting of what became the 1899 Hague Convention (II) With Respect to the Laws and Customs of War on Land⁶ and its annexed *Regulations*, several provisions were included which have often been cited as affecting the subject under discussion. These provisions were:

Art. 22. The right of belligerents to adopt means of injuring the enemy are not unlimited.

Art. 23. In addition to the prohibitions provided by special Conventions, it is especially forbidden:

(a) To employ poison or poisoned weapons; . . .

(e) To employ arms, projectiles, or material of a nature to cause superfluous injury; . . .

The cognate provisions of the 1907 Hague Convention (IV) Respecting the Laws and Customs of War on Land and its annexed *Regulations* are essentially identical with those quoted above.⁷

Realizing, however, that these and the other provisions that were to be included in the *Regulations* could not possibly cover all of the contingencies that might arise during the course of a war, the Russian representative at the 1899 Peace Conference, Martens, a noted international lawyer, proposed, and the Conference agreed, that a paragraph be included in the preamble which would read:

Until a more complete code of the laws of war is issued, the High Contracting Parties think it right to declare that in cases not included in the Regulations adopted by them, populations and belligerents remain under the protection and empire of the principles of international law, as they result from the usages established between civilized nations, from the laws of humanity, and the requirements of the public conscience.⁸

Assuming that these preambular provisions are law-making in nature, a number of questions arise. Did the use of the atomic bombs in 1945 weaken the military forces of the enemy? Did it uselessly aggravate the sufferings of disabled men, or render their death inevitable? Did it exceed the limits which a belligerent may adopt as a means of injuring the enemy? Did it constitute the use of "poison"? Did it represent the employment of a weapon "calculated to cause unnecessary suffering"? Did it constitute a failure to give the populations and belligerents "the protection and empire of the principles of international law, as they result from the usages established between civilized nations, from the laws of humanity, and the requirements of the public conscience" to which they were entitled? And, most important, if one or more of these questions is answered in the affirmative, does the particular principle apply if the alternative would have resulted in a million American military casualties and an even greater number of Japanese casualties, military and civilian? In other words, was the principle of proportionality applicable?⁹ While all of those questions have been posed here with respect to Hiroshima and Nagasaki, they will likewise have to be asked - and answered - before any future use of nuclear weapons.

Literally hundreds of books and articles have been written on both sides of the questions posed and it is doubtful that any proponent of either side of the argument has been successful in convincing anyone who disagrees with his position that it is correct and that the other person's position is incorrect. The present writer does not propose to draw himself into that quagmire. Suffice it to say that nuclear weapons are with us and at the present time there does not appear to be any possibility that they will disappear, at least in the foreseeable future. Under those circumstances we can only hope that neither side will make the mistake of using them and thus bring an end to civilization, and to life itself, on this planet.

There is, of course, an area of nuclear warfare in which navies would play an important role. A preemptive first strike by one side might possibly eliminate much of the other side's land-based nuclear deterrent force - but it could not reach the deployed naval-based force, the submarines of which are the ever-mobile carriers of nuclear ballistic missiles. Thus, this potential naval retaliatory force, maintained by both parties involved in the eyeball-to-eyeball confrontation which has more or less existed since shortly after the end of World War II, is a major factor in the policy of deterrence. Moreover, the strength and speed of these nuclear-powered and nuclear-armed submarines are reputedly such that there are experts who believe that

they can only be destroyed by nuclear weapons, such as nuclear-armed depth charges or nuclear-armed torpedoes. If such is the case, the use of these latter nuclear weapons becomes almost inevitable as during a period of active hostilities, whether we call it war or armed conflict, no nation and no navy is going to permit enemy nuclear-powered submarines armed with nuclear ballistic missiles to roam the seas unchallenged.

One problem which arises is whether successful conventional-weapons attacks on nuclear-powered and nuclear-armed submarines (and surface vessels) would adversely affect the waters of the oceans and the air of the atmosphere. While the United States has lost two nuclear submarines with no such adverse effects, this is far from conclusive as the two crews would probably have shut down the nuclear reactors and any nuclear weapons aboard the submarines would not have been armed; accordingly, the amount of radioactivity released by each of those vessels would have been minimal. How much environmental damage would be caused by the sinking of a nuclear-armed and nuclear-powered submarine with its reactor in operation appears to be a relative unknown. Moreover, should a war reach the nuclear stage, it is a virtual certainty that any naval engagement would include the use of nuclear weapons against the opposing enemy fleets. When this occurs the extent of the contamination of the oceans and of the atmosphere is incalculable as nuclear explosions would be taking place both in the atmosphere and in the water and nuclear-powered ships would be sunk with their reactors in operation.¹⁰ Of course, should a war reach the nuclear stage, such matters would be a small, and comparatively unimportant, part of the overall picture.

The ballistic missiles carried by nuclear-powered submarines, referred to above, would, of course, if used, be directed against objectives on land. It is doubtful, but not inconceivable, that in a nuclear war a naval bombardment of objectives on land might include nuclear-armed shells and missiles. However, should a war reach that stage, the results of any such bombardment would be miniscule compared to the results that could be expected from land-based nuclear ballistic missiles, from the nuclear ballistic missiles released from below the surface of the seas, and from the nuclear weapons dropped from the air.

It is probably necessary to conclude that if and when an armed conflict approaches the nuclear stage, law will play a very small role in determining the actions of the belligerents.

Chemical Weapons

Chemical warfare agents have been defined as "chemical substances, whether gaseous, liquid, or solid, which might be employed because of their direct toxic effects on man, animals and plants."¹¹

The earliest formal international attempt to prohibit the use of chemicals in warfare occurred at the 1899 Hague Peace Conference which drafted and adopted a Declaration stating, "The Contracting Parties agree to abstain from the use of projectiles the sole object of which is the diffusion of asphyxiating or deleterious gases."¹² This Declaration was of unlimited duration. All of the major European Powers, including France, Germany, Russia, and the United Kingdom, signed and ratified it. The United States neither signed nor ratified it.

The 1899 Declaration was in force during World War I. Despite this, Germany used gas against the Russians in Poland in January 1915. The gas was delivered by artillery shells but, because of the sub-zero weather, had little effect and the incident passed almost unnoticed.¹³ The first major, and well-documented, use of gas occurred in France, on April 22, 1915, when the Germans opened containers of compressed chlorine, permitting a favoring wind to blow the gas towards the Allied Ypres salient.¹⁴ The success of the operation far exceeded expectations¹⁵ and before the war was brought to an end more than three years later many other chemical weapons were being used by both sides and were being delivered by artillery, mortars, projectors, etc.¹⁶ The Treaty of Versailles, which legally terminated World War I as between Germany and the Allies, contained the following provision:

Article 171

The use of asphyxiating, poisonous or other gases and all analogous liquids, materials or devices being prohibited, their manufacture and importation are strictly forbidden in Germany.

The same applies to materials specially intended for the manufacture, storage and use of the said products or devices.¹⁷

The 1922 Washington Conference on the Limitation of Armaments, consisting of representatives of France, Italy, Japan, the United Kingdom, and the United States, drafted a treaty which was primarily concerned with submarine warfare but which included the following provisions:

Art. 5. The use in war of asphyxiating, poisonous or other gases, and all analogous liquids, materials or devices, having been justly condemned by the general opinion of the civilized world and a prohibition of such use having been declared in treaties to which a majority of the civilized Powers are parties,

The signatory Powers, to the end that this prohibition shall be universally accepted as a part of international law binding alike the conscience and practice of nations, declare their assent to such prohibition, agree to be bound thereby as between themselves and invite all other civilized nations to adhere thereto.¹⁸

To become effective this treaty required the ratification of all of the participants in the Conference. France refused to ratify it because of objections to some of the provisions with respect to submarine warfare.

Accordingly, the treaty never entered into force. However, three years later another conference, this one concerned with international trade in weapons and ammunition, drafted the 1925 Geneva Protocol for the Prohibition of the Use in War of Asphyxiating, Poisonous or Other Gases, and of Bacteriological Methods of Warfare.¹⁹ While much of its wording was taken almost verbatim from the prior draftings, its importance warrants the setting forth of its operative provisions in their entirety:

Whereas the use in war of asphyxiating, poisonous or other gases, and of all analogous liquids, materials or devices, has been justly condemned by the general opinion of the civilized world; and

Whereas the prohibition of such use has been declared in Treaties to which the majority of Powers of the world are Parties; and

To the end that this prohibition shall be universally accepted as a part of International Law, binding alike the conscience and the practice of nations;

Declare:

That the High Contracting Parties, so far as they are not already Parties to Treaties prohibiting such use, accept this prohibition, agree to extend this prohibition to the use of bacteriological methods of warfare and agree to be bound as between themselves according to the terms of this declaration.

Strange to relate, while the United States had ratified the Washington Treaty, with its provision prohibiting the use of poisonous gases, just two years earlier, and was the chief proponent of the 1925 Geneva Protocol, it did not ratify the latter until 50 years later, in 1975!

Many of the states which have ratified the 1925 Geneva Protocol have done so with a so-called "first use" reservation. Typical of those reservations is that of the United Kingdom: "The said Protocol shall cease to be binding on His Britannic Majesty toward any Power at enmity with him whose armed forces, or the armed forces of whose allies, fail to respect the prohibitions laid down in the Protocol."²⁰ It does not appear that this "first use" reservation has ever been invoked despite the not-infrequent use of the prohibited gases. For example, Italy, a party to the Protocol (as was Ethiopia), admittedly used poison gas in its 1935-1936 war with Ethiopia. Japan, although a party to the 1899 Declaration, did not ratify the Protocol until after World War II. On June 5, 1942, President Roosevelt warned the Japanese against the use of poisonous gas.²¹ While at that time Japan denied using such gas in China,²² it has never officially denied such use since the end of the war. Egypt, a Party to the 1925 Protocol (as was the Yemen Arab Republic), is alleged to have used gas in the civil war in Yemen. Iraq, also a party to the Protocol (as is Iran), has been accused of using gas in its recent war with Iran.²³ In none of these cases is there evidence of retaliation in

kind, probably because the victim of the gas attack was not in possession of a stock of chemical weapons.

During World War II Hitler on occasion considered the use of chemical weapons against England. However, he apparently realized, or his military advisers were able to convince him, that Germany's opponents were well able to reply in kind and that, in the long run, the use of such weapons would be self-defeating to Germany.²⁴ On June 5, 1943, President Roosevelt warned Germany that the use of chemical weapons by any Axis country against any one of the United Nations would result in "swift retaliation in kind," specifying that the targets would be "munition centers, seaports, and other military objectives throughout the whole extent of the territory of such Axis country."²⁵ With the possible exception of Japanese use in China, chemical weapons were not used by any belligerent during World War II.²⁶

The General Assembly of the United Nations has adopted a number of resolutions on the subject of chemical warfare.²⁷ A resolution adopted in 1968, among other things, requested the Secretary-General to prepare, with the assistance of experts, a report on chemical and bacteriological (biological) weapons.²⁸ This report, which was submitted to the General Assembly in 1969, found that "because of the scale and intensity of the potential effects of their use, they are considered as weapons of mass destruction."²⁹ The report contained the following statement:

The general conclusion of the report can thus be summed up in a few lines. Were these weapons ever to be used on a large scale in war, no one could predict how enduring the effects would be, and how they would affect the structure of society and the environment in which we live.³⁰

Upon the receipt of that report the General Assembly adopted a resolution to the effect that the 1925 Geneva Protocol "embodies the generally recognized rules of international law prohibiting the use in international armed conflict of all biological and chemical methods of warfare."³¹ Of course, this merely represented the political judgment of those nations which voted in favor of the resolution.

The need to maintain a supply of chemical weapons for use in retaliation against a violator of the provisions of the 1925 Geneva Protocol, or any other "first user," has created the longtime problem of finding a safe method for the disposition of overage gas, with leaky containers adding to the difficulties of the possessor. One technical advance in this field, the so-called "binary" gases, will considerably alleviate this problem. These gases consist of two non-toxic chemicals which only become toxic when mixed, an action which is accomplished while, for example, an artillery shell is in flight. A representative of the Chemical Corps of the United States Army listed the advantages of binary weapons as including "improved safety during

production, transportation and storage; no requirement for high-cost toxic production facilities; and simplified low-cost demilitarization procedures.”³²

A number of problems have arisen with respect to the interpretation of the 1925 Geneva Protocol. One such problem is whether it includes within its prohibitions the use of smoke, sometimes a major weapon in naval warfare, and the use of riot control agents, such as lachrymatories, or tear gas. The argument against the use of smoke, that it at least temporarily incapacitates due to a type of asphyxia, is weak and is not very frequently advanced. Originally the British interpreted the provisions of the 1925 Geneva Protocol as covering lachrymatories.³³ However, deeming it an essential weapon for use in Northern Ireland, in 1970 the British Government took the position that “CS and other such gases” were not prohibited by the 1925 Geneva Protocol.³⁴ Practically all governments use lachrymatories domestically for the suppression of such events as riots and other civil disturbances. Nevertheless, the propriety of their use in armed conflict remains a matter of dispute.

A further problem of interpretation is whether the Protocol includes within its prohibitions the use of herbicides. This problem arose during World War II when the question was raised as to whether it would be in accordance with international law to use “crop-destroying chemicals” on the gardens being grown by Japanese units located on by-passed islands of the Pacific. Although the Judge Advocate General of the Army found no legal impediment to such action,³⁵ no action was taken, probably because it would have been a waste of resources. During the hostilities in Vietnam herbicides were used extensively, both for crop destruction and as a defoliant.³⁶ When the issue was raised in the Senate during the consideration by that body of the 1925 Geneva Protocol, the General Counsel of the Department of Defense arrived at the same conclusion the Army had reached in 1945.³⁷ Nevertheless, as will be noted below, the United States has renounced the first use of herbicides except for certain extremely limited purposes.³⁸

Another such problem of interpretation is whether incendiary weapons are within the prohibitions of the Protocol. The United States has long taken the position that there is no rule of international law prohibiting the use of incendiary weapons.³⁹ At a conference of experts convened in 1969 by the International Committee of the Red Cross, some of the experts were of the opinion that the use of incendiary weapons, and particularly napalm, was prohibited by the 1925 Geneva Protocol because, by burning the oxygen, it “causes a sort of asphyxia.” Others took the position that incendiary weapons were not prohibited but were subject to “discriminating” use. The ICRC concluded that “more extensive studies should be made of the consequences of incendiary weapons in order to reach a clear legal solution as to their employment.”⁴⁰ The U.N. Report with respect to chemical and

bacteriological (biological) weapons, published that same year, contains the following relevant statement:

We also recognize that there is a dividing line between chemical agents of warfare, in the sense in which we use the terms, and incendiary substances, such as napalm and smoke, which exercise their effects through fire, temporary deprivation of air or reduced visibility. We regard the latter as weapons which are better classified with high explosives than with the substances with which we are concerned. They are therefore not dealt with further in this report.⁴¹

Studies were subsequently made by a group of experts appointed by the Secretary-General of the United Nations, by the Stockholm Peace Research Institute (SIPRI), and by the ICRC itself in 1973, in 1974, and in 1976; and probably by other organizations and institutions. The U.N. experts found it appropriate "to bring to the attention of the General Assembly the necessity of working out measures for the prohibition of the use, production, development and stockpiling of napalm and other incendiary weapons"⁴²—a clear indication of their understanding that there was no such prohibition then extant. The author of the SIPRI report stated that "there was never any positive indication that the intention of the [1925] Geneva Protocol was to prohibit incendiaries."⁴³ The ICRC studies were inconclusive.⁴⁴ Finally, the subject was discussed by the *Ad Hoc* Committee on Conventional Weapons of the Diplomatic Conference on the Reaffirmation and Development of International Humanitarian Law Applicable in Armed Conflicts⁴⁵ and the Diplomatic Conference adopted a resolution in which it recommended the convening of a conference to draft agreements on certain conventional weapons.⁴⁶ Such a conference was held in 1980 and resulted in, among others, a Protocol on Prohibitions or Restrictions on the Use of Incendiary Weapons.⁴⁷ This Protocol does not prohibit the use of incendiaries; it merely places certain restrictions on the manner in which they may be used. The sum total to be derived from the foregoing survey is, of course, that incendiary weapons do not come within the purview of the prohibitions of the 1925 Geneva Protocol or, for that matter, of any other international agreement on the law of war.

The 1980 Protocol provides that it is prohibited "to make the civilian population, individual civilians or civilian objects the object of attack by incendiary weapons." (Of course, the law of war generally prohibits such attacks by *any* weapon!) Such a prohibition, and the accompanying restrictions on the use of air-delivered and other types of incendiary weapons intended to implement that prohibition, would obviously have no effect on naval engagements at sea. However, they would be applicable with respect to naval bombardments of land targets, either by warships or by aircraft, and with respect to the use of incendiaries by marines ashore.

Now let us see where the United States stands generally on the question of chemical warfare. It has already been mentioned that the United States did not ratify the 1899 Declaration and that the 1925 Geneva Protocol was

not ratified by it until 1975. During that 50-year interim period the position of the United States with respect to chemical warfare was well summed up in the predecessor to the *Handbook*, which contained the following statement:

The United States is not a party to any treaty now in force that prohibits or restricts the use in warfare of poisonous or asphyxiating gases or of bacteriological weapons. Although the use of such weapons frequently has been condemned by states, including the United States, *it remains doubtful that, in the absence of a specific restriction established by treaty a state legally is prohibited at present from resorting to their use.* However, it is clear that the use of poisonous gas or bacteriological weapons may be considered justified against an enemy who first resorts to the use of these weapons. [Footnotes omitted]⁴⁸

The United States has almost uniformly taken the position that there is no customary law prohibiting the use of these weapons.⁴⁹ During the hostilities in Vietnam the United States used two controversial types of chemical weapons – tear gas and herbicides.⁵⁰ Tear gas was originally used for humanitarian purposes⁵¹ but its utility as a non-lethal gas quickly became apparent and it was widely used for a number of purposes.⁵² This created considerable discussion both in the United States and elsewhere in the world with the result that on November 25, 1969, President Nixon issued a statement in which he said that he was resubmitting the 1925 Geneva Protocol to the Senate for its advice and consent to ratification and that the United States “Reaffirms its oft-repeated renunciation of the first use of lethal chemical weapons” and “Extends this renunciation to the first use of incapacitating chemicals.”⁵³

After extensive hearings and further commitments by the Executive Branch, the Senate gave its advice and consent to the ratification of the 1925 Geneva Protocol⁵⁴ and President Ford ratified it on January 22, 1975. The ratification was deposited, and the Protocol became binding on the United States, on April 10, 1975. On April 8, 1975, President Ford signed Executive Order 11,850 which provides:

The United States renounces, as a matter of national policy, first use of herbicides in war except use, under regulations applicable to their domestic use, for control of vegetation within U.S. bases and installations or around their immediate defensive perimeters, and first use of riot control agents in war except in defensive military modes to save lives such as:

- (a) Use of riot control agents in riot control situations in areas under direct and distinct U.S. military control, to include controlling rioting prisoners of war.
- (b) Use of riot control agents in situations in which civilians are used to mask or screen attacks and civilian casualties can be reduced or avoided.
- (c) Use of riot control agents in rescue missions in remotely isolated areas, of downed aircrews and passengers, and escaping prisoners.

(d) Use of riot control agents in rear echelon areas outside the zone of immediate combat to protect convoys from civil disturbances, terrorists and paramilitary organizations.⁵⁵

Fortunately, since the issuance of that Executive Order, the United States has not been involved in any armed conflict which would make its application appropriate. However, the *Handbook*, issued in 1987, further illuminates the United States position with respect to the use of chemical weapons. It will be recalled that its predecessor, *The Law of Naval Warfare*, stated that it would be difficult to hold that use of such weapons was prohibited by customary international law.⁵⁶ In a complete turnabout, the *Handbook* says:

The United States considers the prohibition against first use of lethal and incapacitating chemical weapons to be part of customary international law and, therefore, binding on all nations whether or not they are parties to the 1925 Gas Protocol.⁵⁷

It will be interesting to record the reactions to this position of states which are still not parties to the 1925 Protocol and which have not committed themselves in the General Assembly of the United Nations.⁵⁸

As we shall see, there is in existence a Convention which supplements the 1925 Geneva Protocol by prohibiting the development, production, and stockpiling of biological agents and their delivery weapons.⁵⁹ Although separate proposals made in 1962 by both the Soviet Union and the United States included similar provisions with respect to chemical weapons,⁶⁰ both the United Kingdom and the United States later insisted on separating chemical weapons from the others. As a result, despite fairly continuous efforts, the only restriction on chemical weapons at the present time is the 1925 Geneva Protocol which prohibits *use* only.

In 1984 then Vice President Bush went to Geneva to attend a meeting of the Conference on Disarmament (CD) and to table a United States proposal which sought to accomplish for chemical weapons what had already been accomplished for biological weapons.⁶¹ It has since been under consideration in the CD, which subsequently drafted and studied a 1987 revision.⁶² In January 1989 a conference hosted by the French Government in Paris adopted a resolution calling for reaffirmation of the 1925 Geneva Protocol and stressed "the necessity of concluding, at an early date, a convention on the prohibition of the development, production, stockpiling and use of all chemical weapons and on their destruction."⁶³ In July 1989 the United States and the Soviet Union reached agreement on the key remaining issues⁶⁴ and currently (December 1989) the CD is working on a May 1989 version⁶⁵ with changes made up to 15 October 1989.⁶⁶ In view of the insistence of the United States on "anywhere-anytime" inspections, it is of interest to know that the Soviet Union has agreed to permit "surprise inspections" and that it is now the United States which has a problem in this respect in view of the Fourth

Amendment to the Constitution, prohibiting "unreasonable searches and seizures."⁶⁷

The wheels of diplomacy grind slowly (witness the years of discussion of the 1982 U.N. Law of the Sea Convention and of the 1977 Protocols⁶⁸), so there is still the possibility that in the not-too-distant future there will be agreement on a Convention which will prohibit the development, production, and stockpiling of chemical agents and their delivery systems, as well as providing for the destruction of all such chemical agents now in the arsenals of parties to such a Convention.⁶⁹

Bacteriological (Biological) Weapons

Bacteriological (biological)⁷⁰ weapons have been defined as "living organisms, whatever their nature, or infective material derived from them, which are intended to cause disease or death in man, animals or plants, and which depend for their effects on their ability to multiply in the person, animal or plant attacked."⁷¹ International restrictions on the use of biological weapons present far fewer legal problems than do those on the use of chemical weapons. In fact, the legal situation is so clear that the major problem is, once again, that of ensuring compliance.

It will be recalled that by the declaration contained in the 1925 Geneva Protocol the Parties agreed "to extend the prohibition [against the use of poisonous gas] to the use of bacteriological methods of warfare."⁷² The League of Nations Disarmament Conference discussed the matter and attempted, albeit unsuccessfully, to draft a treaty which would have prohibited the production and stockpiling of both chemical and biological weapons. During World War II considerable scientific research was done on biological weapons. However, no such weapons were used by either side, with one possible exception. The Soviet Union has long contended that during World War II the Japanese had a unit called "Bacteriological Detachment 731" located at Harbin in China and that this unit had conducted bacteriological experiments on several thousand Chinese, Koreans, Russians, and, perhaps, Americans. When the war ended, many of the senior officers of this unit were taken into Soviet custody and in December 1949 twelve of them were tried by a Soviet court at Khabarovsk, were found guilty of engaging in bacteriological warfare, and received sentences of confinement in a labor correction camp for terms varying from two to twenty-five years.⁷³ In 1982 the Japanese Government acknowledged that such a unit had existed during the war.⁷⁴ Assuming that the Soviet charges are correct, it would appear that the activities of the Japanese unit never passed the experimental stage, that it never reached the stage of actual use of biologicals against enemy military forces as a weapon of war.

In 1962 the Soviet Union tabled at the meeting of the Eighteen Nation Disarmament Committee (ENDC) a proposal for general and complete disarmament which included the following provision: "The prohibition, and destruction of all stockpiles, and the cessation of the production of all kinds of weapons of mass destruction, including atomic, hydrogen, chemical, biological and radiological weapons."⁷⁵

A few weeks later the United States submitted its counterproposal with a provision which called for "Elimination of all stockpiles of nuclear, chemical, bacteriological, and other weapons of mass destruction and cessation of the production of such weapons."⁷⁶

In view of the close similarity of the two proposals, it would seem that agreement with respect at least to chemical and biological weapons could have been quickly attained.⁷⁷ However, such was not the case. There were those who took the position that chemical and biological weapons should not be joined in the same treaty as there was experience with chemical weapons, but none with biologicals. While the relevance of this argument is far from clear, it was sufficient to delay the affirmative action which might otherwise have been taken. Finally, in 1969 the United Kingdom submitted a proposal which called for a complete ban on "microbial or other biological agents," but made no mention of chemical weapons.⁷⁸ When, in 1971, the United States and the Soviet Union tabled identical drafts⁷⁹ relating to biologicals only, the result was a foregone conclusion. Using that draft as a working document the Conference of the Committee on Disarmament (CCD, which had replaced ENDC) produced a Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on Their Destruction.⁸⁰ Its most important provision states:

Article 1

Each State Party to this Convention undertakes never in any circumstances to develop, produce, stockpile, or otherwise acquire or retain:

(1) Microbial or other biological agents, or toxins whatever their origin or method of production, of types and in quantities that have no justification for prophylactic, protective or other peaceful purposes;

(2) Weapons, equipment or means of delivery designed to use such agents or toxins for hostile purposes or in armed conflict.

It also contains provisions requiring each State Party to destroy all of the items specified in Article 1 within nine months of the Convention coming into force (presumably, for the State concerned); and an undertaking not to transfer to any recipient, or to encourage the manufacture of, any of the prohibited items.

It is thus evident that States Parties to the 1925 Geneva Protocol and to the 1972 Bacteriological Convention are prohibited from *developing, manufacturing, stockpiling, acquiring, retaining, or using* biological weapons. In view of the coverage of the Convention, nations have not made "first use" reservations. The two international agreements were intended to, and should, eliminate biologicals from the arsenals of all such Parties and should mean that in any future war, large or small, limited or unlimited, conventional or unconventional, biologicals would not be a factor. Unfortunately, events have already demonstrated that these expectations will not be met.

A catastrophe occurred in Sverdlovsk in the Soviet Union in 1980 in which more than 1,000 people died as a result of what appears to have been anthrax poisoning, although Soviet officials claimed that the deaths had been caused by meat contaminated by hoof-and-mouth disease.⁸¹ In addition, the United States has contended that the Soviet Union, either directly or through surrogates, has used biological (as well as chemical) weapons in Southeast Asia and in Afghanistan.⁸² If, as is generally believed, the Sverdlovsk incident involved anthrax, and if, as the United States contends, biologicals have been used by the Vietnamese in Kampuchea and Laos and by the Soviet Union in Afghanistan, then the Soviet Union is manufacturing and using biologicals, contrary to the provisions of the two agreements to which it is a party. Unfortunately, the 1925 Geneva Protocol contains no provision for verification and the only provision for verification contained in the 1972 Convention is a meaningless one providing for resort to the Security Council.

The predecessor to the *Handbook*, published at a time when the United States was not a party to the 1925 Geneva Protocol and when the 1972 Bacteriological Convention had not yet been drafted, stated:

The United States is not a party to any treaty now in force that prohibits or restricts the use in warfare . . . of bacteriological weapons. Although the use of such weapons frequently has been condemned by states, including the United States, it remains doubtful that, in the absence of a specific restriction established by treaty, a state legally is prohibited at present from resorting to their use. [Footnotes omitted.]⁸³

This was probably a fair statement of the United States position until November 25, 1969, when President Nixon, on behalf of the United States, renounced the use of biological weapons by this country.⁸⁴ Three months later he included toxins in this renunciation.⁸⁵ Then this country became a party to the 1972 Bacteriological Convention and in 1975 it finally ratified the 1925 Geneva Protocol with its ban on the use of biologicals. Once again, however, it appears that the *Handbook* may be going too far when it asserts:

The United States considers the prohibition against the use of biological weapons during armed conflict to be part of customary international law and thereby binding on all nations whether or not they are parties to the 1925 Gas Protocol or the 1972 Biological Weapons Convention.⁸⁶

Can it be that while at a particular point in time a principle may not necessarily be a binding rule of customary international law, it becomes such as soon as the United States ratifies a treaty containing that principle? Certainly, the United States did not consider itself bound by any rule of customary international law prohibiting the use of biologicals when it issued its military manuals in 1955 and 1956; nor did it consider itself so bound at any time thereafter, even when (and until) President Nixon made his 1969 and 1970 statements unilaterally renouncing the use of biologicals and toxins. Would the 50 or more nations which are not parties to the 1925 Geneva Protocol and the 50 or more nations which are not parties to the 1972 Bacteriological Convention agree with the quoted statement? Or is this statement, and the similar one with respect to chemical weapons quoted above, inserted in order to convince non-parties that they might just as well ratify the agreements as they are bound by them in any event?

In view of the mobility of naval forces, it has always been considered unlikely, but not impossible, that naval vessels at sea will have to meet the problem of defending themselves against an attack using biological (or chemical) weapons. Should such an attack occur, for example by guided missiles which succeed in penetrating the vessel's defenses and dispense the lethal item, the attack would have a devastating effect because air-intake systems would quickly disseminate it throughout the interior of the vessel, or because concurrent high-explosive ordnance would have pierced the shell of the ship. Items such as masks, special clothing, etc., available for the protection of the individual members of the crew, would greatly impede the functioning of the crew, even if there was time to don them. In addition, naval vessels, naval guns and naval aircraft might well be among the weapons systems used for the delivery of biologicals against land targets, should biologicals ever be used in wartime. Thus, in a field trial, a ship sailing 16 kilometers offshore travelled a distance of 260 kilometers parallel to the coastline discharging a harmless powder. The resulting aerosol covered an area of over 75,000 square kilometers. Had the material disseminated been a biological "depending on the organism and its degree of hardiness, areas from 5,000 to 20,000 square kilometers could have been effectively attacked, infecting a high proportion of unprotected people in the area."⁸⁷

Conclusions

There is no law in force, conventional or customary, which prohibits the use of nuclear weapons. However, there can be no winners, but only losers, no victors, but only vanquished, in the event of a nuclear war. Whether or not a war in which nuclear powers are involved becomes a nuclear war will depend upon the wisdom and leadership of the political leaders of those powers and upon the extent to which the desire to win the war outweighs a reluctance

to bring disaster not only upon the enemy, but also upon their own people and upon the peoples of neutral nations.

Chemical and biological weapons, like nuclear weapons, are weapons of mass destruction. Once released they are beyond the control of the user and, like nuclear weapons, their effects can come back to haunt the user. The use of certain chemicals can have widespread, long-lasting, and severe consequences for the environment and for the populations. This is even more true with respect to the use of many biologicals. The use of either of these types of weapons is prohibited by an international agreement to which more than two-thirds of the nations of the world community are parties. The very existence of biological weapons is prohibited by an international agreement with a similar amount of participation. Hopefully, there will, in due course, be an identical prohibition with respect to chemical weapons.

In view of the tremendous lethal and destructive capabilities of nuclear, chemical, and biological weapons one might almost regret our inability to turn the clock back to the nineteenth century, when nuclear, chemical, and biological weapons, as we now know them, were not even a gleam in a scientist's eyes.

Notes

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1. *The Commander's Handbook on the Law of Naval Operations*, Naval Warfare Publication 9 (NWP 9) (1987) [hereinafter cited as *Handbook*]. It replaces the *Law of Naval Warfare*, Naval Warfare Information Publication 10-2 (NWIP 10-2) (1955).

2. See, e.g., Treaty Banning Nuclear Weapon Tests in the Atmosphere, in Outer Space and Under Water, August 5, 1963, *United States Treaties and Other International Agreements* [hereinafter U.S.T.], v. 14, p. 1313, T.I.A.S. No. 5433, *United Nations Treaty Series* [hereinafter U.N.T.S.], v. 480, p. 43, reprinted in *International Legal Materials* [hereinafter I.L.M.], v. 2., p. 883 (1963); Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies, Jan. 27, 1967, U.S.T., v. 18, p. 2410, T.I.A.S. No. 6347, U.N.T.S., v. 610, p. 205, I.L.M., v. 6, p. 386 (1967); Treaty on the Prohibition of the Emplacement of Nuclear Weapons and Other Weapons of Mass Destruction on the Seabed and the Ocean Floor and in the Subsoil Thereof, Feb. 11, 1971, U.S.T., v. 23, p. 701, T.I.A.S. No. 7337, I.L.M., v. 10, p. 145 (1971). The *Handbook*, par. 10.2., lists six multilateral treaties and a number of bilateral treaties on the subject.

3. Resolutions of the General Assembly of the United Nations, such as Res. 1653 and Res. 2936 (United Nations, General Assembly, *Official Records: Resolutions adopted by the General Assembly during its Sixteenth Session 19 September 1961 - 23 February 1962*, Resolution 1653, A/5100 (New York: 1962), p. 4 and *id.*, *Twenty-Seventh Session 19 September - 19 December 1972*, Res. 2936, A/8730 (New York: 1973), p. 5) are nothing more than pious, and sometimes self-serving, declarations having no legal significance.

4. *Handbook*, par. 10.2.1. In Myres S. McDougal and Florentino P. Feliciano, *Law and Minimum World Public Order* (New Haven: Yale University Press, 1961), p. 659, the authors state, "The continuing attempts, however, by various governments and groups to 'outlaw' nuclear weapons tend to sustain the impression that such weapons are regarded as permissible pending the achievement of agreement to the contrary."

5. *American Journal of International Law (Supp.)* [hereinafter A.J.I.L. (Supp.)], v. 1, p. 95 (1907); Dietrich Schindler and Jiri Toman, *The Laws of Armed Conflicts: A Collection of Conventions, Resolutions and Other Documents*, 3rd ed. (Dordrecht, Netherlands: Martinus Nijhoff Publishers, 1988), p. 101 [hereinafter cited as Schindler & Toman]. The United States is not a party to this Declaration and apparently does not consider that it has become customary international law. In the U.S. Army's FM 27-10, *The Law of Land Warfare* (Washington: U.S. Govt. Print. Off., 1956), par. 34, there is a list of various illegal weapons.

Those covered by this Declaration are not included in that list. Nevertheless it would be difficult to quarrel with the quoted preambular provisions.

6. U.S. Statutes at Large, v. 32, p. 1803, reprinted in A.J.I.L. (Supp.), v. 1, p. 129 (1907).

7. U.S. Statutes at Large, v. 36, p. 2277, reprinted in A.J.I.L. (Supp.), v. 2, p. 90 (1908). Unfortunately, when the Department of State made its official translation from French to English in 1907, the translators did not refer back to the 1899 translation, with the result that there are some small but unimportant differences in wording between the two English versions.

8. See *supra* notes 6 and 7. When preparing the working document for the Diplomatic Conference which was to meet in 1974 in an attempt to bring the 1907 Hague Convention (IV) and the 1949 Geneva Conventions up to date, the International Committee of the Red Cross [hereinafter referred to as ICRC] included a version of the Martens clause in the preamble. *Official Records of the Diplomatic Conference on the Reaffirmation and Development of International Humanitarian Law Applicable in Armed Conflicts* (Bern: Federal Political Department, 1978), v.1, part III, p. 3 [hereinafter *Official Records*]. The Diplomatic Conference moved this provision to a more prominent place, as Article 1(2) of the 1977 Protocol Additional to the Geneva Conventions of 12 August 1949 Relating to the Protection of Victims of International Armed Conflicts (Protocol I). *Official Records*, v. 1, part I, p. 126, reprinted in I.L.M., v. 6, p. 1396 (1977), and Schindler & Toman, *supra* note 5, p. 621 at p. 628 [hereinafter cited as Protocol I].

9. There were an estimated 80,000 casualties at Hiroshima and 65,000 at Nagasaki. The potential casualties referred to in the penultimate question were the estimates of what would occur in the event of armed landings on the home islands of Japan. These estimates appear, among other places, in Henry L. Stimson, "The Decision to Use the Atomic Bomb," *Bulletin of Atomic Scientists*, v. 3, no. 2, p. 40 (1947), and in Winston S. Churchill, *The Second World War*, v. VI, *Triumph and Tragedy* (Boston: Houghton Mifflin, 1953), p. 638, where he estimates one million American dead and one-half million British dead.

10. Such an engagement would, of course, be fought in an area isolated from the civilian population and civilian objects—but the reactor accident at Chernobyl, in the Ukraine, in April 1986 demonstrated the distance which radioactivity can travel. It was detected in the Scandinavian countries a few days after it had occurred (Serge Schmemmann, "Soviet Announces Nuclear Accident at Electric Plant," *New York Times*, April 29, 1986, p. A1:6) and was subsequently detected as far west as the United Kingdom (Francis X. Clines, "Chernobyl Cloud Keeps Welsh Lamb Off Table," *id.*, July 3, 1986, p. A1:2). In addition, one recent newspaper article states that "many studies indicate the radiation released by a nuclear anti-aircraft missile would disable the radar gear on which the U.S. surface navy increasingly relies, and the shock waves sent through the sea from a nuclear antisubmarine rocket could disable any U.S. subs in the area." *Boston Globe*, Dec. 18, 1989, p.3:8.

11. United Nations, *Chemical and Bacteriological (Biological) Weapons and the Effects of Their Possible Use: Report of the Secretary-General, A/7575/Rev. 1* (New York: 1969), par. 19 [hereinafter cited as *U.N. Report*]. There are many types of poisonous and asphyxiating gases (choking, blister, nerve, blood, etc.) and many different such gases within each type (chlorine and phosgene are both choking gases; mustard and lewisite are both blister gases). Nerve gases were developed by Germany before World War II but, happily, were never used. Since then even more effective nerve gases have been developed.

12. A.J.I.L. (Supp.), v. 1, p. 157 (1907); Schindler & Toman, *supra* note 5, p. 105.

13. S.L.A. Marshall, *World War I* (New York: American Heritage, 1971), p. 157.

14. *Id.*, pp. 163-66. Actually, the reason for the rather unusual method of delivery was that the amount of gas that could be delivered by the available types of artillery shells was so small that they could only be used for very limited objectives. The effect of gas as an offensive weapon was probably not fully appreciated because of the lack of results three months earlier in Poland.

15. It has sometimes been argued that the German action at Ypres did not violate the 1899 Declaration because no projectiles were used. The Commission on the Responsibility of the Authors of the War and on Enforcement of Penalties established by the Diplomatic Conference, which was drafting the Treaty of Versailles, refused to accept this thesis and listed the use of poison gas as one of the war crimes committed by Germany during the course of the war. See A.J.I.L. (Supp.), v. 14, p. 115 (1920).

16. According to the *U.N. Report*, *supra* note 11, par. 3, during World War I "gas casualties numbered about 1,300,000, of which about 100,000 were fatal."

17. A.J.I.L. (Supp.), v. 13, p. 151 at p. 230 (1919).

18. Treaty Relating to the Use of Submarines and Noxious Gases in Warfare, Feb. 6, 1922, A.J.I.L. (Supp.), v. 16, p. 59 (1922); Schindler & Toman, *supra* note 5, p. 877 at p. 878.

19. U.S.T., v. 26, p. 571, T.I.A.S. No. 8061, *League of Nations Treaty Series* [hereinafter L.N.T.S.], v. 94, p. 65, Schindler & Toman, *supra* note 5, p. 115.

20. L.N.T.S., v. 94, p. 69; Schindler & Toman, *supra* note 5, p. 126. As of January 1, 1989, there were 135 parties to the 1925 Geneva Protocol, of which 50 had made reservations, many of the "first use" variety. U.S. Department of State, *Treaties in Force - January 1, 1989*, pp. 311-12.

21. "Warning to Japan Regarding the Use of Poisonous Gases," *Department of State Bulletin*, June 6, 1942, v. 6, p. 506.
22. "Tokyo Denies Using Gas," *New York Times*, June 9, 1942, p. 2:3.
23. A list of the "Instances and Allegations of CBW, 1914-1970" will be found in Stockholm International Peace Research Institute, *The Problem of Chemical and Biological Warfare*, v. 1, *The Rise of CB Weapons* (Stockholm: Stockholm International Peace Research Institute, 1971), pp. 125-230.
24. In a conference with a number of American officials and military officers in October 1941 concerning a possible German landing in England, Churchill said, "The enemy may use gas, but if so it will be to his own disadvantage, since we have arranged for immediate retaliation and would have admirable concentrated targets in any lodgments he might make on the coast. Gas warfare would also be carried home to his own country." Winston S. Churchill, *The Second World War*, v. III, *The Grand Alliance* (Boston: Houghton Mifflin, 1950), p. 425. See also Marjorie M. Whiteman, *Digest of International Law* (Washington: U.S. Govt. Print. Off., 1968), v. 10, pp. 464-65.
25. "Use of Poison Gas," *Department of State Bulletin*, June 12, 1943, v. 8, p. 507.
26. Lynwood B. Lennon, "Defense Planning for Chemical Warfare," in Matthew Meselson, ed., *Chemical Weapons and German Arms Control* (New York: Carnegie Endowment for International Peace, 1978), p. 1; Barton J. Bernstein, "Why We Didn't Use Poison Gas in World War II," *American Heritage*, August-September 1985, p. 40.
27. E.g., United Nations, General Assembly, *Official Records: Resolutions adopted by the General Assembly during its Twenty-First Session 20 September - 20 December 1966*, Res. 2162 B, A/6316 (New York: 1967), pp. 10-11.
28. United Nations, General Assembly, *Official Records: Resolutions adopted by the General Assembly during its Twenty-Third Session 24 September - 21 December 1968*, Res. 2454 A, A/7218 (New York: 1969), p. 11.
29. U.N. Report, *supra* note 11, par. 369.
30. *Id.*, par. 375.
31. United Nations, General Assembly, *Official Records: Resolutions adopted by the General Assembly during its Twenty-Fourth Session 16 September - 17 December 1969*, Res. 2603 A, A/7630 (New York: 1970), p. 16. The vote was 80-3-36 with the United States casting one of the three negative votes. United Nations Office of Public Information, *1969 Yearbook of the United Nations* (New York: 1970), p. 30.
32. U.S. Congress, House, Committee on Foreign Affairs, Subcommittee on National Security Policy and Scientific Developments, *U.S. Chemical Warfare Policy*, Hearings, 93rd Cong., 2nd Sess. (Washington: U.S. Govt. Print. Off., 1974), p. 29.
33. Memorandum on *Chemical Warfare Presented to the Preparatory Commission for the Disarmament Conference by the Delegation of the United Kingdom*, Cmd. 4, no. 3747 (1930).
34. Anthony Lewis, "Britain Asserts CS Gas is not Banned," *New York Times*, Feb. 3, 1970, p. 3:6. "CS" was the tear gas originally used by the United States in Vietnam. It has been the standard tear gas used by police throughout the world. Presumably the term "other such gases" as used by the British refers to CS-1 and CS-2, the later versions of CS.
35. Judge Advocate General Myron C. Cramer to the Secretary of War, SPJGW 1945/164, March 1945, "Memorandum concerning Destruction of Crops by Chemicals," I.L.M., v. 10, p. 1304 (1971). It should be borne in mind that at the time this memorandum was written, the United States was not a party to the 1925 Geneva Protocol.
36. Howard S. Levie, "Weapons of War," in Peter D. Trooboff, ed., *Law and Responsibility in Warfare: The Vietnam Experience* (Chapel Hill, N.C.: University of North Carolina Press, 1975), p. 153 at p. 158 [hereinafter cited as Trooboff].
37. Letters from the General Counsel, Department of Defense, to the Chairman, Senate Committee on Foreign Relations, April 5, 1971, reprinted in I.L.M., v. 10, pp. 1300 and 1303 (1971).
38. See Executive Order 11,850, *infra* note 55 and accompanying text.
39. The predecessor to the *Handbook*, *supra* note 1, stated, "Weapons of chemical types which are at times asphyxiating in nature, such as white phosphorus, smoke, and flame throwers, may be employed." *The Law of Naval Warfare* (NWIP 10-2), par. 612a (emphasis added), reprinted in the appendix to Robert W. Tucker, *Naval War College International Law Studies, 1955: The Law of War and Neutrality at Sea* (Washington: U.S. Govt. Print. Off., 1957), p. 410. To the same effect, see the U.S. Army's Field Manual, *The Law of Land Warfare*, FM 27-10 (1956), par. 36.
40. ICRC, *Reaffirmation and Development of the Laws and Customs Applicable in Armed Conflict: Report to the XXIst International Conference of the Red Cross* (Geneva: 1969), pp. 61-62.
41. U.N. Report, *supra* note 11, par. 19.
42. United Nations, Department of Political and Security Council Affairs, *Napalm and Other Incendiary Weapons and All Aspects of their Possible Use: Report of the Secretary-General*, A/8303/Rev.1 (New York: 1973), par. 193. See also United Nations Secretariat, *Respect for Human Rights in Armed Conflicts: Existing Rules of*

International Law Concerning the Prohibition or Restriction of Use of Specific Weapons, A/9215 (New York: 1973), v. 1, pars. 20-21 and 59-86.

43. Stockholm International Peace Research Institute, *Incendiary Weapons* (Cambridge, Mass.: Massachusetts Institute of Technology Press, 1975), p. 24.

44. ICRC, *Weapons that May Cause Unnecessary Suffering or Have Indiscriminate Effects: Report on the Work of Experts* (Geneva: 1973), pars. 182-223; *Conference of Government Experts on the Use of Certain Conventional Weapons: Lucerne, 1974* (Geneva: 1975), pars. 43-117; *Conference of Government Experts on the Use of Certain Conventional Weapons: Lugano, 1976* (Geneva: 1976), pars. 9-12 and 104-112.

45. *Official Records*, *supra* note 8, v. 16, *passim*.

46. *Id.*, v. 1, part II, p. 52.

47. *United Nations Conference on Prohibitions or Restrictions of Use of Certain Conventional Weapons Which May Be Deemed to Be Excessively Injurious or to Have Indiscriminate Effects: Final Report of the Conference to the General Assembly*, A/CONF.95/15 (1980), Annex I, Appendix D, Protocol on Prohibitions or Restrictions on the Use of Incendiary Weapons (Protocol III), Schindler & Toman, *supra* note 5, p. 190. The United States has, as yet, taken no steps towards the ratification of the Convention to which this Protocol is attached.

48. *The Law of Naval Warfare* (NWIP 10-2), *supra* note 39, par. 612b (emphasis added). The footnote to that statement is even more definite, stating, "[I]t is difficult to hold that the use of these [chemical] weapons is prohibited to all states according to customary international law."

49. "Almost" because of such occasional statements like that contained in the 1945 Memorandum of the Judge Advocate General of the Army, *supra* note 35, to the effect that, "An exhaustive study of the source materials, however, warrants the conclusion that a customary rule of international law has developed by which poisonous gases and those causing unnecessary suffering are prohibited."

50. "Controversial" because, as we have seen, there is no general agreement as to whether lachrymatories and herbicides are included within the prohibitions of the 1925 Geneva Protocol.

51. Stewart Blumenfeld and Matthew Meselson, "The Military Value and Political Implications of the Use of Riot Control Agents in Warfare," in Carnegie Endowment for International Peace, *The Control of Chemical and Biological Weapons* (New York: 1971), pp. 64, 67-68.

52. Howard S. Levie, "Weapons of Warfare," in Trooboff, *supra* note 36, p. 154. During the conflict in Vietnam the North Vietnamese took the position that all chemical warfare, including both tear gas and herbicides, was prohibited by international law. Nguyen Khac Vien, ed., *Chemical Warfare*, Vietnamese Studies No. 29 (Hanoi: 1971), *passim*. They appear to have departed from this position in recent years, at least insofar as it applies to their own use of both chemical weapons and toxins. U.S. Department of State, *Chemical Warfare in Southeast Asia and Afghanistan: Report to the Congress from Secretary of State Alexander M. Haig, Jr.*, Special Report No. 98, March 22, 1982; U.S. Department of State, *Chemical Warfare in Southeast Asia and Afghanistan: An Update: Report from Secretary of State George P. Shultz*, Special Report No. 104, November 1982.

53. "Statement by President Nixon," *Department of State Bulletin*, Dec. 15, 1969, v. 61, p. 541. A correction to this statement containing omitted paragraph appears at *Department of State Bulletin*, March 2, 1970, v. 62, p. 272, reprinted in A.J.I.L., v. 64, p. 386 (1970).

54. For a brief summary of the legislative history of this action, see "Introduction," in Trooboff, *supra* note 36, pp. 242-43, note 37. The U.S. ratification included the typical "first use" reservation.

55. Gerald R. Ford, Executive Order 11,850, "Renunciation of Certain Uses in War of Chemical Herbicides and Riot control Agents," *Federal Register*, April 8, 1975, p. 16,187, reprinted in I.L.M., v. 14, p. 794 (1975).

56. See *supra* note 48 and accompanying text.

57. *Handbook*, *supra* note 1, par. 10.3.2.1.

58. It will be recalled that U.N. Resolution 2603 A, *supra* note 31, was adopted with three votes against (including the United States) and 36 abstentions.

59. See *infra* note 80.

60. See *infra* text accompanying notes 75 and 76.

61. "Bush, in Geneva, Offers Chemical Arms Ban," *New York Times*, Apr. 19, 1984, p. A13:1; "U.S. Proposes Banning Chemical Weapons," *Department of State Bulletin*, June 1984, v. 84, p. 40.

62. Draft of April 27, 1987, *1987 Arms Control Reporter* 704.D.105.

63. *1989 Arms Control Reporter*, 704.B.338.2.

64. Robert Pear, "U.S. and Moscow Settle Key Issues on Chemical Arms: Agree on Ban in 10 Years, but Constitutional Questions Are Raised by Accord on Surprise Inspections," *New York Times*, July 18, 1989, p. A1:6. This sudden agreement may well have been prompted by the public reaction to the construction by a West German chemical concern at Rabta, Libya, of a plant capable of manufacturing large quantities of mustard gas. *1989 Arms Control Reporter*, 705.B.339-354.2.

65. "Outline of the Rolling Text and Principal Remaining Issues—1 May 1989," *1989 Arms Control Reporter*, 704.D.131-137.

66. "Changes of the Rolling Text and Principal Remaining Issues—15 October 1989," *id.*, 704.3.139-144.
67. Pear, "U.S. and Moscow Settle Key Issues on Chemical Arms," *supra* note 64. For a discussion of the constitutional problem, see, Dennis S. Aronowitz, *Legal Aspects of Arms Control Verification in the United States* (Dobbs Ferry: Oceana Publications, 1965), pp. 104-14.
68. United Nations Convention on the Law of the Sea (New York: United Nations, 1983), Sales No. E.83.V.5. The negotiation of this Convention took from 1973 to 1982; Protocols Additional to the Geneva Conventions of 12 August 1949 and Relating to the Protection of Victims of Armed Conflicts, I.L.S., v. 16, p. 1391 (1977), Schindler & Toman, *supra* note 5, pp. 621 and 689. The negotiation of these Protocols took from 1974 to 1977, preceded by several years of preliminary negotiations.
69. In September 1989 an International Government-Industry Conference Against Chemical Weapons, consisting of representatives of more than 65 Governments and of the world's major chemical manufacturers, meeting in Canberra, Australia, endorsed a chemical warfare convention and sought ways to assist in bringing the Geneva negotiations to a successful conclusion. Department of State, *GIST*, November 1989. On September 23, 1989, at Jackson Hole, Wyoming, the Soviet Union and the United States signed an *Agreement Regarding a Bilateral Verification Experiment and Data Exchange Related to Prohibition of Chemical Weapons*, reprinted in I.L.S., v. 28, p. 1438.
70. For the sake of brevity, the broader term "biological" is hereinafter used alone. It is intended to include toxins.
71. *U.N. Report*, *supra* note 11, par. 17.
72. *See supra* text accompanying note 19.
73. *Materials on the Trial of Former Servicemen of the Japanese Army Charged with Manufacturing and Employing Bacteriological Weapons* (Moscow: Foreign Languages Publishing House, 1950).
74. Henry Scott Stokes, "Japan Looks at Grisly Side of its Past," *New York Times*, July 13, 1982, p. A3:1. *See also* John W. Powell, "Japan's Biological Weapons, 1930-1945," *Bulletin of Atomic Scientists*, Oct. 1981, v. 37, pp. 44-52; "Japan's Biological Weapons, 1930-1945: An Update," *Bulletin of Atomic Scientists*, Oct. 1982, v. 38, p. 62. The Germans may well have engaged in similar experimentation or employment during World War II, but, if so, the usage was not for military purposes, their victims being German or Jewish civilians.
75. United States Arms Control and Disarmament Agency, *Documents on Disarmament* (Washington: U.S. Govt. Print. Off., 1962), p. 104 [hereinafter cited as *Documents on Disarmament*].
76. *Id.*, p. 279.
77. One might question the seriousness of the two proposals as far as they related to nuclear weapons.
78. *Documents on Disarmament*, *supra* note 75, pp. 324-25 (1969).
79. *Documents on Disarmament*, *supra* note 75, pp. 456-57 (1971).
80. U.S.T., v. 26, p. 583, T.I.A.S. No. 8062, reprinted in I.L.M., v. 11, p. 310 (1972). This Convention was opened for signature in Washington, London and Moscow on April 10, 1972. As of January 1, 1989, 110 states had either ratified or acceded to it, including all of the major powers. U.S. Department of State, *Treaties in Force - January 1, 1989* (Washington: U.S. Govt. Print. Off., 1989), pp. 284-85.
81. Bernard Gwertzman, "Soviet Mishap Tied to Germ-War Plant," *New York Times*, March 19, 1980, p. A1:6; Bernard Gwertzman, "Soviet Lays Outbreak of Illness to Bad Meat not Germ-War Plant," *id.*, March 21, 1980, p. A1:1; "Soviet Now Mentioning Foot and Mouth Disease," *id.*, March 27, 1980, p. A11:1.
82. *See* Department of State Special Reports, *supra* note 52.
83. *The Law of Naval Warfare*, *supra* note 39, par. 612B. The Army's *The Law of Land Warfare*, *supra* note 39, par. 38, is to the same effect.
84. Statement of President Nixon, "Chemical and Biological Defense Policies and Programs," November 25, 1969, *Weekly Compilation of Presidential Documents*, December 1, 1969, *Department of State Bulletin*, December 15, 1969, v. 61, p. 541. (A correction to this statement containing omitted paragraphs appears at *id.*, March 2, 1970, v. 62, p. 272.)
85. White House Press Release, "U.S. Renounces Use of Toxins as a Method of Warfare," February 14, 1970, *Department of State Bulletin*, March 2, 1970, v. 62, p. 226.
86. *Handbook*, *supra* note 1, par. 10.4.2.
87. *U.N. Report*, *supra* note 11, pars. 39-41. Chemical weapons used in the same way would have to be disseminated in much greater quantities and, even so, would cover a considerably smaller area. However, the result would still be devastating and would establish beyond doubt that they are, indeed, weapons of mass destruction.