

Chemical and Biological Warfare

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by Ann Syngé

In the 1930s there was a considerable interest in the possibility that chemical and biological weapons might be used in the war which many people realized was impending. When such weapons were not, in fact, used in the war, public interest in their potentialities died down and the use of thermonuclear weapons diverted the attention of those who would otherwise have been concerned with chemical and biological warfare by focussing it on the urgent need to prevent any further use of these catastrophic new armaments. From time to time there have been outbursts of indignation when reports of the use of gas or microbial agents have been made public but there has been little study outside military circles of the potentialities or implications of their use. During the past year or so, however, there has been a recrudescence of public interest in the subject. There have been many reasons for this but, undoubtedly, the international conference on chemical and biological warfare held in London last February under the auspices of the J. D. Bernal Peace Library had a stimulating effect. The contributors to this conference were able to speak authoritatively on various topics connected with chemical and biological warfare as they were mostly senior scientists, some with world-wide reputations, working in related fields, or else younger people who, for one reason or another, had made a special study of some aspect of the subject. Furthermore, the conference received considerable publicity on radio and television and in the newspapers and gave rise to questions in the House of Commons which, in turn, received publicity and helped to keep public interest alive. A further stimulus was given by the Open Day held at the Chemical Defence Research Establishment at Porton Down which took place on 24th October. By coincidence this was also the day of publication of the book entitled *Chemical and Biological Warfare* which contains the texts of the papers read at the conference together with summaries of the discussions which they provoked. They have been prepared for publication by Dr Steven Rose who has added some supplementary material which only became available after the programme and some thoughts of his own.¹

The book is divided into five parts dealing with different aspects of chemical and biological warfare, namely, the nature of the weapons, their effects and the means of delivering them; the weapons in use in the Yemen and in Vietnam; research policy on chemical and

¹*Chemical and Biological Warfare*, edited by Dr Steven Rose, Harrap, 1968, 224 pp., 30s.

biological warfare in the U.K., the U.S.A. and the U.S.S.R. and the ethical problems involved in research on and use of chemical and biological weapons. A serious effort was made by the organizers to make the conference as representative as possible by inviting the Chemical Defence Experimental Establishment and the Microbiological Research Establishment at Porton Down to send representatives. The Civil Defence organization and the U.S. Embassy in London were also invited to nominate speakers but all of these invitations were refused. As a result the views of those who believe that the use of chemical and biological weapons in preference to more conventional ones would make war less inhumane were grossly under-represented, which was unfortunate.

I attended the conference myself, not as a speaker but as a learner. Since then I have given some thought to the problems raised. No rational thought on the subject is possible, however, without some technical knowledge of the nature and effects of the weapons and this is clearly set out in the book. I shall therefore summarize this material here and also mention some of the legal arguments given before presenting any ideas about the implications of the use of such weapons.

1. *The Nature of the Weapons Involved*

Briefly, there are three main kinds of toxic *chemical* which are known to be immediately available for military use. These are (a) the irritants of the type being used in Vietnam, (b) the persistent agents like mustard gas and (c) the extremely powerful and lethal 'nerve gases' which have never yet been used in war.

The irritants range from the gases available to the police in the U.S. and other countries and used by them against unruly and violent crowds to choking gases like chlorine and phosgene which were used in the First World War and gave rise to such intense indignation in those countries which had not used them first. Any of these is a 'harassing agent' in small doses or low concentrations, causing a flow of tears, nausea, coughing or skin irritation or a combination of these effects. In higher concentrations they may be lethal. This has been demonstrated in Vietnam where the gases have been pumped into buildings, air raid shelters and caves, and in this way even relatively mild agents have built up lethal concentrations.

The persistent 'gases' such as mustard gas are not really gases at all but liquids which are absorbed through the skin and can remain effective for days or even weeks. They are used as an aerosol and if this is inhaled it is deadly even in very small quantities. If the aerosol is left to settle and the surfaces treated are then touched they will cause blistering of the skin and blindness, and lethal doses may be absorbed through the skin. By the use of such agents an enemy may be prevented from occupying his buildings, and other shelters, and so exposed to attack.

The new nerve gases are the most toxic of the chemical agents. A particle so small as to be scarcely visible can cause death when placed on a man's skin. Some are persistent while others are ephemeral. They kill their victims very quickly by their action on the nervous system but, in small doses, they could be used as incapacitating or harassing agents causing pain in the eyes and impairment of vision, nausea and vomiting, cramps and involuntary urination and defaecation. The difference between the lethal dose and the incapacitating dose is not, however, great and it is most likely that any commander using such a gas for incapacitation would, to be on the safe side, use a dose which would kill quite a large proportion of those exposed to it.

Efforts have also been made to produce agents which will either cause a temporary, reversible paralysis or will affect the victim's mind so that he either becomes apathetic and unwilling to resist or even accepts suggestions made that he should co-operate with those whom he would otherwise regard as his enemies. Analogues of LSD and cannabis have been studied with this in mind but it seems unlikely that either physically or mentally incapacitating agents have yet been developed to the stage where they could be used as weapons of war. However, considerable effort is being devoted to this end and it seems likely that it is only a question of time before they are perfected.

Microbial agents, like chemical agents, may be used to harass an enemy or to incapacitate him for a short period or to kill him outright. They are of two main types, those which produce disease in the victim but are not likely to be passed from one person to another and those which spread through a community like a naturally occurring epidemic. In the latter case the organism used would probably not be a naturally occurring one, but one specially bred for the purpose, and in both cases the first side to use such weapons would be likely to derive a greater benefit from their use than would the retaliator. Microbial agents are also relatively cheap and, in the case of those producing epidemics, a little goes a long way. Furthermore, they do not require very sophisticated means of delivery and lend themselves to secret use.

There is one further type of agent which has been used in Vietnam and might be referred to as either chemical or biological since it is chemical in nature and biological in action. I am referring to the defoliants or herbicides. These agents cause perennial plants including trees to shed their leaves and a single treatment is unlikely to damage them permanently, though repeated treatments may well do so. Annual plants such as rice may be killed outright. These weapons present a special problem and attempts to pass them off lightly as being the sort of weedkiller you can buy in your local hardware shop and use on your garden path are irresponsible. In the first place, although some of the agents being used are just this, others are far

more poisonous to people and animals. In the second place, the way in which an agent is used can have an important effect on the results it produces. Fears have been expressed by American scientists that the killing of soil organisms by the chemical, combined with the removal of the forest leaves which protected the soil from baking by the sun and erosion by wind and rain, are having an irreversible effect on the soil of parts of Vietnam, turning it into a desert. Furthermore, the use of chemicals to destroy crops is also destroying the community life and traditions of the areas sprayed. If the inhabitants move out into the model villages and hamlets prepared for them they do not settle down and form a new and thriving community but become displaced persons. If they remain in the sprayed area they are liable to death from starvation or from poisoning by the herbicides which have contaminated all the food. This may be an exaggerated picture of the effects of defoliants and herbicides, but nobody can be sure. It is certain, however, that far-reaching changes in the ecology of the area have been caused and nobody can say where they will lead. A report prepared by the Midwest Research Institute shows that the relevant research on these topics has been very scanty and states that 'the extent and pattern of herbicide treatment in Vietnam have no precedent. Therefore it is difficult to predict the effects with any accuracy.' The disastrous effects of attempts to clear areas of the rain forests of Brazil for agriculture suggests, however, that they may be severe.

2. *Legal Regulations in Force*

These are the weapons available or under consideration now. Others will, no doubt, be discovered. There are, in existence, a number of international declarations, agreements and resolutions banning the first use of 'asphyxiating, poisonous or other gases and all analogous liquids, materials or devices' and the best known of these, the Geneva Protocol of 1925, extends the prohibition to 'the use of bacteriological methods of warfare'. Some authorities maintain that the United States is not bound by the Geneva Protocol because it was not ratified by the United States Government. Others maintain that, in so far as the document refers to chemical weapons, it is a declaration of the state of international law at the time when it was drawn up and not something which individual nations could adopt or reject at will. It is also of interest that a resolution passed by the General Assembly of the United Nations in 1966 'Calls for strict observance by all States of the principles and objectives of the Protocol signed at Geneva on 17th June, 1925, and condemns all actions contrary to those objectives'. This resolution was passed by 101 to 0 votes, only three nations abstaining. The United States voted in favour. Although such resolutions are not necessarily binding, this resolution assumes that the Geneva Protocol is now international law rather than merely a contract between the parties

who signed it. If one accepts this view then the much-quoted statement that 'the United States is not a party to any treaty, now in force, that prohibits or restricts the use in warfare of toxic or non-toxic gases . . . or of bacterial warfare' though literally true is misleading unless the United States Government regards itself exempt from international law altogether.

One may well ask oneself why chemical and biological warfare should have been singled out for special prohibition. I believe, myself, that this was largely fortuitous. It happened that, at the time when attempts were first being made to lay down international law, chemical weapons were new and almost untried and therefore frightening. Also, because they were so there were no vested interests involved in their manufacture or use. This meant that the obstacles to reaching an agreement to ban them were relatively slight. By 1925 chemical weapons had already been used on a considerable scale and, being new, caused widespread panic. Furthermore, the agents used were mainly chlorine and phosgene which, in lethal doses, caused prolonged and excruciating suffering before the victim died. These facts were played upon in the Allied press and used to reinforce anti-German feeling, so it was easy, in 1925, to get the banning of chemical weapons reaffirmed in the Geneva Protocol. Bacteriological weapons seem to have been thrown in for good measure because nobody had any, so nobody was giving anything up in renouncing their use and the idea was frightening, especially coming so soon after the great post-war epidemic of influenza.

The situation has now changed considerably and it has been claimed that the prohibition of the use of chemical and biological weapons is a piece of old-fashioned sentimentalism and would make war even more inhumane than it would otherwise be. Ideas of this sort have been expressed by J. B. S. Haldane and more recently by J. H. Rothschild. Rothschild's argument is, in brief, that although war is horrible, there seems to be no immediate prospect of preventing it altogether. The best that can be hoped for is the avoidance of the use of those weapons which cause the greatest suffering in relation to their military effectiveness and of those which are so indiscriminate in their effects as to be described as weapons of mass destruction, especially thermonuclear weapons. Although some chemical and biological agents might be described as inhumane or as weapons of mass destruction, others certainly are not, and these others could be used to achieve military objectives with very few casualties on either side. If their use were renounced, these same objectives would be achieved by other means such as high explosives, anti-personnel weapons and napalm which would cause far more deaths and far greater suffering. I have no doubt that such situations do exist. I also have very little doubt that, on the average, it is less unpleasant to be the victim of attack by chemicals or microbes than to be the victim of other, more conventional weapons.

Nevertheless, I would align myself with the representatives of the 101 nations which urged that the provisions of the Geneva Protocol should be strictly observed and should like to see the scope of the Protocol extended to cover defoliants, herbicides and any other weapons aimed at changing the plant and animal life of an area in a way deleterious to its inhabitants. This needs some justification and, to a commander in the field who is directly conscious of what he is doing, my arguments may well sound far-fetched and cold-blooded. He feels the urgency of attaining his objective and very likely his own life and those of his men may be endangered by failure to do so, yet he may recoil from the killing which its achievement by conventional means would entail. Chemical or biological incapacitation of the enemy must seem the ideal solution.

3. *Arguments against the use of CB weapons*

Let us now turn to the arguments against the use of these weapons. First there is the temptation to escalate. If one agent is not powerful enough the next most powerful is used and this can be repeated. It is already happening in Vietnam, the 'riot control agents' and defoliants being used now are often more toxic than would have been acceptable to public opinion if they had been the first to be used and I have little doubt that if the American army does not leave Vietnam and its lack of success there continues, even more toxic weapons will be used. It does not seem possible to draw a line between what is permitted and what is not, and in a situation in which an enemy was retaliating in kind the danger of escalation would be greater. Thus, although some chemical and biological weapons are non-lethal and could be used to cut casualties, others such as the plague bacillus could certainly be used as weapons of mass destruction and to permit the use of some is to open the door to all. It may also be pointed out that the use of 'non-lethal' weapons in Vietnam has not noticeably reduced the casualties as they have been used to 'flush out' people taking refuge in caves, air raid shelters, cellars and other places. When they are forced into the open by the gas they can be killed by conventional means. As many of those who take refuge in these places are not soldiers but non-combatants and it must be hard to distinguish the one from the other as they run from their refuge, one cannot avoid the feeling that those who pride themselves on only using 'non-lethal' gases are quibbling. These gases cause the death of those who are shot as they emerge from their shelter just as much as if they were poisoned inside it. They kill indirectly instead of directly. That is the only difference.

A second argument concerns the unpredictability of living communities. I have already mentioned the danger that large tracts of agricultural land in Vietnam may have been set on the road to becoming deserts and be irreclaimable in the immediate future. I do not imagine that this was anyone's intention. It was the result of

an ill-thought-out response to an urgent demand from the men on the spot whose lives were threatened. The results of attempting to initiate an epidemic might be just as far from what was intended. We know from experience of various 'flu epidemics how hard it can be to control the spread of a disease caused by an unaccustomed strain of organism even in a country where most people are well fed and not overcrowded, and where the medical services are well organized. The post-war epidemic of 1919 gives a hint of the way in which such an epidemic is likely to affect a population debilitated by war, and the myxomatosis epizootic gives another indication of the devastating effects which can be caused by deliberately introducing a new disease-causing organism into a community. This danger is all the greater because the reaction between an infective agent and the host community is affected by many factors including the genetic characteristics of microbe and hosts, the living conditions and habits, age composition and state of nutrition of the host community, the climate and the means of delivery and weather at the time of delivery of the microbe. If we add to this the fact that studies of the effect of microbes results obtained on laboratory animals are of no value in predicting their effects on man; and if we realize that testing on human beings is only possible on an extremely limited scale both because it would outrage public opinion and because it might reveal to a potential enemy the nature of the agent being tested and give him the opportunity of developing a vaccine against it, then we shall see what a hit and miss affair bacterial war would be in the present state of our knowledge. Bacterial weapons are, however, the only ones with which a small, under-developed country could inflict major damage on a large and powerful one which it regarded as an oppressor. This might be regarded by some as an advantage in that it might deter the strong from oppressing the weak. There does not, however, appear to be any evidence of such deterrence.

Finally, I should like to point out a characteristic which is shared to a greater or lesser extent by all the more modern weapons but which is perhaps more obvious with biological weapons than with any others except nuclear weapons, and this is the way in which they insulate the user from the results of his actions. He does not take any risks, neither do his colleagues. He never sees those he is killing, they are just units in a casualty list, members of an enemy group. As a result he can kill on a scale which would appal him if he could see what he was doing. What is more, he can kill people who represent no threat whatsoever to himself or his country, all in the name of an ideology or a way of life.

These are some reasons for trying to bring about the international prohibition of the use of chemical and biological weapons. At present all nations show a considerable reluctance to use chemical weapons and none has used biological weapons with any success, if at all.

There is, in fact, a widespread feeling that the use of such weapons is exceptionally wicked and barbarous. While it lasts the danger that such weapons will be used is diminished; so, if we do not wish to see them used in every quarrel between neighbours, it is wise to foster and reinforce that feeling and not to do anything which might undermine it. I do not think that the banning of chemical and biological weapons will make wars any less nasty, nor do I think that such a ban would prevent a nation which was determined to use them from doing so, but I do think it diminishes the risk of our drifting unintentionally into microbial war, the results of which would be unpredictable. Public awareness of the nature and effects of nuclear weapons has made their immediate use less likely than it would otherwise be and the same can be done in the case of chemical and biological weapons. This staving off will, however, be of little value if the time gained is not used to create the conditions for a just peace instead of the uneasy state, half peace, half war, in which we are now living.

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(except perhaps for Mr Taylor, at p. 175, and Mr Raymond Williams himself, at p. 305), he shows that the issue is *not* the individual *versus* society, taken in some gross, collectivist sense, but the *sort* of relationship that should obtain between individual and society: listening or stopped, connected or isolate, collaborative or exploitative. No, the issue is far more between individualism and a true personalism.

Evidently, once the issue is posed in such terms, a great deal of work and thinking remains to be done—and, incidentally, much more agreement may be found than polemics might suggest. But, as lawyers know, to have brought grave and complex questions ‘to issue’ is already no mean achievement. For this alone we should be grateful to the authors and publishers.

P.L.