

INTERNATIONAL COMMITTEE OF THE RED CROSS

**Conference
of Government Experts
on the Use of
Certain Conventional Weapons**

(Second Session—Lugano, 28.1-26.2.1976)

REPORT

**GENEVA
1976**

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JAG SCHOOL

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FOREWORD

The need to publish this report as soon as possible, because of the work of the third session of the Diplomatic Conference on the Reaffirmation and Development of International Humanitarian Law Applicable in Armed Conflicts (Geneva, 21 April-11 June 1976) is the main cause of a number of errors which will not escape the reader's attention. The ICRC would ask readers to bear with it.

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¹ COLU/201 is a glossary compiled by the ICRC.

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³ Takes account of documents COLU/205/Corr.1 to 3.

⁴ Takes account of documents COLU/207/Add.1 and Corr.1.

⁵ Takes account of document COLU/209/Corr.1.

⁶ Takes account of document COLU/211/Add.1.

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⁷ Takes account of document COLU/221/Corr.1. Documents COLU/221 and COLU/221/Corr.1 have been submitted after the end of work on small-calibre projectiles.

⁸ Takes account of document RO 610/4/Add.1.

INTRODUCTION

1. The second session of the Conference of Government Experts on the Use of Certain Conventional Weapons, convened by the International Committee of the Red Cross (or ICRC) in accordance with the broad agreement reflected in the conclusions of the first session of the Conference (Report, para. 282, 2) and endorsed by the *ad hoc* Committee at the second session of the Diplomatic Conference on the Reaffirmation and Development of International Humanitarian Law Applicable in Armed Conflicts (CDDH, Geneva, 3 February - 18 April 1975; Report, CDDH/220/Rev. 1, paras. 56 ff.), was held at Lugano, Switzerland, from 28 January to 26 February 1976. Participants in the second session of the Conference (hereinafter referred to as the Conference) included experts appointed by the Governments of 43 States, as well as representatives of the Secretary-General of the United Nations and of the Director-General of the World Health Organization. In addition, the Conference was attended by a technical expert representing the Stockholm International Peace Research Institute (SIPRI) and by representatives of the League of Red Cross (Red Crescent, Red Lion and Sun) Societies, of some National Red Cross (Red Crescent, Red Lion and Sun) Societies, the International Federation of Former Prisoners of War, and the Special Non-Governmental Organizations Committee on Disarmament. A List of the participants is annexed to this report (Annex B).

2. The Conference was governed by Rules of Procedure drawn up by the ICRC and presented to the *ad hoc* Committee of the CDDH, 2nd session (doc. RO 610/2 b). Essentially, the Rules of Procedure were the same as those that had governed the first session, these merely having been adapted to the requirements of the second session. In the course of the 4th Plenary Meeting, the President announced a modification to Rule 8 para. 2, where the words "or to the CDDH" were replaced by the words "especially to the participants in the CDDH". (For the final version of the Rules of Procedure, see Annex D).

3. At the opening session, the Conference heard addresses by the President of the ICRC, the President of the State Council of the Republic and Canton of Ticino and the Mayor of the City of Lugano.

4. In accordance with Rule 6, the Conference was presided by Dr. Jean S. Pictet, Vice-President of the ICRC. After new Vice-Presidents had been designated to substitute those elected at the first session who were not present at the beginning of the second session, the list of Vice-Presidents read as follows: Messrs. D. M. Miller (Canada), S. Anwar Abou-Ali (Egypt), P. M. Agbeko (Ghana), R. Chaspuri (Indonesia), C. A. van der Klaauw (Netherlands), R. Felber (German Democratic Republic), H. Blix (Sweden), J. Mena-Portillo (Venezuela). Mr. C. Pilloud acted as Secretary-General to the Conference and Mr. J. L. Cayla as Assitant Secretary-General.
5. Again in accordance with Rule 6, Dr. F. Kalshoven (Netherlands) acted as Rapporteur to the Conference, it having been decided by the Bureau that this time co-rapporteurs would not be necessary. The Rapporteur received in his work the assistance of Messrs. Y. Sandoz and B. Zimmermann, legal experts of the ICRC.
6. The purpose of the Conference, as described in Rule 1, para. 2, was to continue work on conventional weapons that may cause unnecessary suffering or have indiscriminate effects, in accordance with the work programme submitted by the ICRC and approved by the *ad hoc* Committee at the second session of the CDDH. The focus would be on such conventional weapons as had been, or might become, the subject of proposed bans or restrictions of use; the Conference would ascertain the essential facts on which international rules could be based, to the extent that such rules would appear desirable and possible, and would examine the possibility, contents and form of such proposed bans or restrictions. To this end, the Conference had at its disposal the documentation listed in Rule 3.
7. The Work Programme (doc. RO 610/1 b, see Annex C) included the following items:
 - brief review of the report of the first session and of the discussions in the *ad hoc* Committee
 - incendiary weapons
 - small-calibre projectiles
 - delayed-action weapons and treacherous weapons
 - blast and fragmentation weapons
 - other categories of weapons and new weapons
 - other questions
 - report and follow-up.
8. According to the Work Programme, the pattern for the discussion of each category of weapons would be as follows:

- introduction and consideration of new information, new facts and arguments
- study of the possibility, contents and form of any ban or restriction of use.

This would include examination and clarification of data, definitions related thereto, alternative weapon systems and conclusions as to what the data would suggest as desirable and possible:

9. The Report of the Conference consists of the following chapters:

- I. Report of the debate in Plenary;
- II. Summary records of Plenary meetings;
- III. Report of the General Working Group, with the final statement of its Chairman and the reports of the special working groups.

Annexed to the report are the proposals submitted to the Conference (Annex A), the list of participants (Annex B), the programme of work (Annex C) and the rules of procedure of the Conference (Annex D), and a statement of financial contributions (Annex E).

10. As in most cases the discussions on particular agenda items commenced in Plenary and were then continued in the General Working Group, it is necessary, for a correct understanding of the discussions as a whole, to read the reports of these two bodies in conjunction.

11. As to finance, the ICRC presented to the Conference a budget amounting to a total of 750,000 Swiss francs. This budget was considerably higher than that of the first session, and this mainly on account of the following factors: the presence throughout the Conference of two teams of interpreters and of a team of précis-writers, and the greater length of the Conference, all of which the ICRC had decided at the express request of governments. Taking into account that the net balance of the financing of the first session, to the amount of 85,009 Swiss francs, could be brought over to the second session, there remained to be covered an estimated 664,991 Swiss francs. Up to the moment of writing this report, contributions had been received from, or pledged by, governments and one Red Cross Society to the amount of 450,677 Swiss francs.

I. REPORT ON PLENARY MEETING PROCEEDINGS

Chapter 1 — General Debate

1. It was felt that much work had already been done at the first session of the Conference and that this constituted a sound basis for the work of the present session. The task of this session was to obtain further clarification, on an expert level, of the various issues involved, and to define the areas of agreement or disagreement that would become apparent with respect to the proposed prohibitions or restrictions of use of specific weapons or categories of weapon. The Conference had no mandate to lay down rules that would be binding on governments. It was emphasized by some experts, however, that the Third World, although less well represented at this session than at the previous one, which might be an indication of a loss of interest, expected positive results of this Conference. Some experts emphasized that this Conference should neither repeat nor prejudge the work being done at the CDDH. An expert added that, to his mind, humanitarian law was of little avail if it did not embody rules on the use of specific conventional weapons or categories of weapons.

2. There was some discussion whether the CDDH or a disarmament conference or a similar body would constitute the more appropriate forum for possible future negotiations on conventional weapons. While some held that these ought to be conducted in the context of disarmament talks (where the elements of humanity and security as well as the questions of production, stockpiling and so on, could properly be taken into account), others were of the opinion that the present discussions, envisaging as they did only possible prohibitions or restrictions of use, should be kept separated from the disarmament negotiations. They should be held in the context of humanitarian law, since the point of departure was a humanitarian concern. This did not preclude that security considerations were fully taken into account. One expert, who shared the latter view, added that prohibitions solely on the use of a given weapon could, provided they were complete bans, exert a moral pressure on arms producers to stop manufacturing the weapon in question, as the example of the dum-dum bullet went to show.

3. Many experts emphasized the need to find a judicious balance between humanitarian considerations and the requirements of military security. Some experts suggested that in so doing priority ought to be given to the humanitarian considerations. Another expert felt that there should be realism on both sides and that, while humanitarianism ought to be tempered by national security considerations, the latter ought to allow some leeway for the former. Put in different terms, a balance had to be struck between what appeared desirable and what appeared possible.

4. The element of military security in this equation was examined from various angles. It was pointed out that the requirements of military security often presented highly complex questions and could differ from State to State, and that the possibility to renounce the use of particular weapons might vary accordingly. In a similar vein of thought, the differences were set out between the various types of armed conflict occurring, or likely to occur, in the present world and notably in the developing countries; an economically weak people waging a guerrilla war against a technically superior enemy might have to rely on different means and methods of warfare than would be required in an armed conflict between, say, two highly industrialized and technologically developed countries.

5. To several experts, military security would always require that any proposed bans or restrictions of use of specific conventional weapons be examined in the light of possible alternatives for the weapons so affected. Some experts emphasized that such alternatives would themselves have to be lawful and to belong to the category of conventional weapons. An expert, taking issue with this view, said that at least for the present only a strictly limited list of weapons was proposed for possible bans or restrictions on use and that, therefore, the question of alternative weapons did not constitute a really serious problem as adequate substitute weapons could surely be found without difficulty within the range of existing armaments.

6. An expert, while recognizing the importance of the element of military security, stated as his view that all weapons ought to be banned from use which were not essential to the security of States. A distinction mentioned in this respect by another expert was between tactical and strategic weapons.

7. There was widespread agreement among the experts that reciprocity would be an essential condition for the effective prohibition or restriction of the use of any given conventional weapon. An expert, speaking in this vein, expressly rejected that such prohibitions or restrictions would be brought about unilaterally.

8. There was, likewise, support for the contention that universality would be of paramount importance for agreements purporting to ban or restrict the use of particular conventional weapons. This would require a large number of ratifications, preferably including those of the major military Powers (or, as another expert stated, of the major arms-producing States). An expert warned against exaggerating this requirement; however, he felt that ratification by all States would not be necessary and that the recent treaties on disarmament and arms control provided a good example of what was required in this respect. Another expert, while recognizing the utility of the widest possible acceptance of the agreements under consideration, felt that universality was not indispensable for such agreements to be effective; after all, armed conflicts were often waged on a limited scale and if it was possible to avoid excessive suffering somewhere one should not wait till this could be avoided everywhere.

9. Several experts advocated the advantages of total bans over restrictions on the use of specific weapons. The practical effect of a total ban would be greater and its application less risky; the weapon in question would not be deployed in the event of an armed conflict and field commanders would not be obliged to decide, in the heat of battle, whether it could or could not justifiably be put to use. An expert preferred, in this light, that the efforts would be concentrated on those limited areas where complete bans seemed to be attainable. Another expert emphasized that, in his view, to achieve mere restrictions on use rather than complete bans would amount to a distortion of the humanitarian objectives of the Conference. Other experts, while not denying in principle the practical advantages of total bans, warned that these might for the time being be beyond reach and that progress, therefore, was most likely to be achieved if the Conference were to concentrate its efforts on restrictions of use.

10. Some experts expressed their preference for an approach of each weapon individually rather than entire categories of weapon. The weapon-by-weapon approach, they felt, would permit a better evaluation of each weapon, its properties and effects, in the light of existing criteria and the need to reconcile humanitarian considerations with the requirements of military necessity. This approach would therefore be the more promising one to achieve meaningful results. Another expert responded that, while this approach might facilitate the identification of areas of agreement, it was also bound to lead to problems of delimitation and definition.

11. Several experts expressed themselves on the question of the legal principles governing the permissible use of weapons in armed conflict and

which, hence, ought to be taken into account in the present discussions. A further clarification of these principles seemed necessary to some; thus, there was the long-standing dispute over the meaning of "unnecessary suffering", a term which some experts preferred to see replaced by "superfluous injury". It was pointed out that the competent commission of the CDDH had meanwhile, during its second session in 1975, adopted the text of a number of articles of Draft Protocol I (Articles 33, 34 and 46) which had a direct bearing on the work of this Conference as they contained an agreed formulation of several of the principles in question. Some experts felt that little stood to be gained by any attempt at further analysis of the legal principles; these could not of themselves provide a sufficient basis for specific prohibitions or restrictions of the use of particular weapons, and in any event it might be more profitable to revert to the question of principles after the discussion of the various categories of weapon had been brought to an end. An expert expressed the view that it was not the task of this Conference to create new rules but rather to apply and concretise existing rules of international law, viz., the prohibition to use weapons that cause unnecessary suffering, have indiscriminate effects, or are perfidious.

12. Some experts, who placed the question of legal principles in the wider context of general international law and international relations, mentioned the principle of equal rights and security of States; they also referred to the principle of disarmament, which according to them had by now been accepted as part of international law. In this connection, they pointed to the close inter-relationship between the questions of existing armaments and actual use of weapons in armed conflict. Reference was also made to the prohibition of aggression and the right of self-defence; an expert stated in this connection that in his view humanitarian law should primarily aim to protect the victims of aggression. Yet another expert put before the Conference an additional set of principles discussed at a recent symposium and which included the survival of mankind, the safeguarding of human environment, and the prevention of escalation.

13. Some experts expressed themselves on specific categories of weapon. The view was expressed that incendiary weapons deserved particular attention. An expert thought that the Conference should settle the question of whether these weapons cause unnecessary suffering or have indiscriminate effects. Another expert felt that the Conference possessed sufficient information and legal basis to proceed immediately to the legal stage, and offered to submit a draft Protocol on the total prohibition of the use of incendiary weapons.

14. Progress was thought possible in the field of mines and booby-traps. As for blast and fragmentation weapons and small-calibre projectiles, a readiness was expressed to discuss and examine these further. The category of small-calibre projectiles, in particular, was thought to deserve further study. An expert discussed in some detail the expected effects of the use of hydrogen bombs.

15. Several experts spoke of the need for having some sort of review machinery, the aim of which would be to exert some control over future weapon developments and, thus, to contribute to preventing the deployment and widespread use of weapons which would run counter to the requirements of humanity.

Chapter 2 — Incendiary Weapons

16. The question of incendiary weapons was debated by several experts. It was held by some experts that there was no denying the excessive suffering they may cause and which, some of them said, might well be considered to constitute unnecessary suffering. Particular stress was also laid by some experts on the aspect of indiscrimination that might well (although not necessarily in all cases) attend the use of incendiary weapons. Some other experts doubted that incendiary weapons were particularly injurious in all circumstances; rather, they believed that alternative weapons might easily be the more injurious. These experts also were not convinced that incendiary weapons were inherently indiscriminate. In general, this latter group of experts felt that the task at hand was to weigh these factors against the military utility of specific incendiary weapons.

17. As for military utility, experts referred to a wide range of situations in which incendiary weapons, or particular types of incendiary weapons, were thought to be especially useful or even indispensable. Such situations included self-defence, close air support, guerrilla and anti-guerrilla operations, and operations directed against pill-boxes and other similar material targets. As for the use in a situation of self-defence, it was pointed out that incendiaries would then usually be employed in combination with other weapons. It was also suggested that incendiary weapons, and napalm in particular, were especially important for the self-defence of small, or poor, countries as they could be obtained or produced at no great cost. In response to this suggestion it was pointed out that the effective use of, e.g. napalm required sophisticated, costly means of delivery and control which were not so readily available to the

poor countries. An expert remarked, however, that second-hand aircraft were available at low cost. Another expert pointed out that the countries which had most often used napalm were precisely those with the greatest air forces. It was also emphasized that the argument of costs was worthless where human life was at stake. An expert pointed out that no economically weak or small country had considered this weapon as indispensable to its defence.

18. Some experts, who did not deny the military utility of certain incendiary weapons in certain situations, nonetheless considered that suitable substitute weapons were available for all these situations, so that incendiary weapons were in no case really indispensable. Other experts doubted that this was true in all cases; they also thought that substitutes were likely to be significantly more expensive and might, moreover, have worse effects from a humanitarian point of view.

19. One particular aspect of the military utility of incendiary weapons was thought by some experts to reside in their demoralizing effect, especially in close combat situations. Man, it was said, fears fire and, when confronted with it, will feel a strong urge to flee and thus give up his position. It was held, on the other hand, that combat troops could be trained to protect themselves against the effects of fire.

20. Further effects of incendiary weapons were discussed from various angles: the casualty rate, medical aspects of burn wounds, and the effects on populated areas. As to the casualty rate of the use of napalm in particular, some experts thought on the basis of available information that this would result in fewer casualties, and also in fewer cases of grave injuries or fatalities, than would be the case with, e.g. fragmentation weapons. An expert presented the findings of a computer test in which napalm was compared with fragmentation munitions ejecting prefabricated steel balls; using as criteria the energy with which the target area was hit and the penetrating effect of the munitions used, the results of this test confirmed, he felt, the above thesis. Another expert, referring to the information presented at the Lucerne Conference concerning certain accidents with napalm firebombs (Report para. 96), had calculated that the proportion of casualties who died of wounds amongst the 51 victims involved in those accidents was about three times higher than the proportion of casualties who died of wounds from other weapons amongst soldiers of the same army. These data, he felt, did not warrant the conclusion that napalm had a low casualty rate.

21. On the medical side, reference was made to the characteristics of burn wounds. An expert emphasized that the treatment of these wounds keeps much personnel occupied and requires intensive care during long periods of

time, often lasting till after the end of hostilities. Another expert mentioned that in the last war in the Middle East 75% of all burn wounds were deep burns.

22. The effects on populated areas were discussed by several experts. The effects especially of massive use of incendiaries against densely populated areas were estimated by some experts to deserve close attention, and it was thought that such use could be made the object of a specific prohibition. Another expert, although far from being opposed to such a prohibition, stated that it would be totally inadequate from the point of view of curbing the use of incendiary munitions as weapons of warfare. Yet another expert, speaking on this question of effects on populated areas, pointed out that the structures contained in such areas differed according to the various regions of the world and that these differences also affected the vulnerability to attack with incendiary or other weapons.

23. As for the possibility, contents and form of proposals relating to the use of incendiary weapons, several experts emphasized once again the need for any agreement on this score to find the broadest support practicable. Experts were cautioned in this context against trying to ban forms of use of incendiary weapons that were considered essential from a military point of view.

24. At this stage of the Conference, only one proposal had yet been introduced (RO 610/4 b, see Annex A.22). The approach followed in this working paper, which was sponsored by some twenty governments, was to propose a categorical ban on the use of all means of warfare essentially falling within the category of incendiary weapons; a ban from which, according to most of the experts supporting this proposal, certain specific incendiary weapons with combined incendiary and other effects ought to be exempted, so as to take due account of security imperatives (or of the purely defensive character of the weapons in question, as one of the experts put it).

25. Other experts expressed doubts either about the desirability or about the feasibility of this line of approach. It was suggested that a more promising approach might consist in attempting to achieve restrictions on the anti-personnel use of incendiary weapons. An expert, responding to this suggestion, pointed out that many incendiary weapons had combined anti-personnel and anti-matériel effects and that, therefore, restrictions of the type proposed would be of little avail. Some experts stressed the need to achieve even a modest limitation of the use of incendiary weapons, if only to meet the demands of public opinion.

26. It was suggested that incendiary weapons might usefully be divided into munitions with a heavy payload (of some 400 litres or more) and those with a light payload (of 10-50 litres); while the former belonged to the class of exceptionally lethal conventional weapons, the latter were comparable to conventional high explosive or fragmentation weapons of such a reduced calibre.

Chapter 3 — Delayed-Action and Treacherous Weapons

27. At the outset of the debate on this item of the agenda, a working paper was introduced (COLU/203, see Annex A.2) which put forward detailed proposals concerning the regulation of the use of mines and booby-traps. It was explained that these proposals sought to achieve an improved protection of the civilian population against the dangers ensuing from the use of such means of warfare (which were becoming ever more sophisticated) while at the same time maintaining a correct balance between humanitarian ideals on the one hand and the realities of armed conflict upon the other. Essential in the proposals was: that recorded minefields should be made public upon the cessation of hostilities; that remotely delivered mines should be equipped with a neutralizing mechanism, or that the area in which they were delivered should be marked; that civilians going about their daily business in populated areas not immediately forming part of the combat zone should not be exposed to the risks posed by mines, booby-traps and suchlike devices; and that the use of certain especially perfidious booby-traps, whether explosive or not, should be specifically prohibited, as should non-explosive traps specifically designed to cause cruel or lingering death or injury.

28. The introduction of this working paper was widely welcomed as a valuable contribution to the discussion. The various proposals which it contained attracted both general and specific comments. A general comment was that the proposals rightly laid emphasis on the element of protection of the civilian population; another merit was seen in the treatment of mines and booby-traps in one single paper, thereby avoiding problems of demarcation. An expert suggested that a distinction should be drawn between defensive and offensive use of mines and minefields, and that the defensive use should not be made the object of a prohibition.

29. Specific comments were offered on many aspects of the proposals. While some of these were simply in support of particular proposals, others were in the nature of queries or suggested amendments. Comments of the latter type were discussed further in the General Working Group.

30. Several experts, in commenting upon the proposal concerning remote delivery of mines, referred to the proposal already contained in document CDDH/IV/201 (see Annex A.21) which sought to prohibit the laying of anti-personnel landmines by aircraft. They continued to prefer this proposal to the one put forward in COLU/203; delivery from the air of such mines, they felt, presented the greatest risks to the civilian population and, one expert added, was most likely to take place in asymmetrical conflicts between a poor people fighting in self-defence against a technically superior enemy. Experts of this group nevertheless expressed their readiness to give close consideration to the proposal contained in COLU/203.

31. An expert, who thought that the detailed list of uses of booby-traps singled out for prohibition in COLU/203 was not, and never could be, complete and that the attempt to draw up such a list was misguided, stated as his view that a general formula was to be preferred. He introduced a proposal to that effect (COLU/206, see Annex A.5). This proposal received the support of some other experts. An expert commented, however, that the language chosen (providing that the camouflage of explosive devices in objects in general use among civilians be prohibited) posed difficult problems to the commander in the field; he also objected to the fact that only explosive devices had been singled out for prohibition. Another expert replied that the use of non-explosive booby-traps was already prohibited.

32. An expert pointed to an aspect of the problems posed by the use of mines which had not been dealt with in the proposals mentioned above, viz., the maximum charge of anti-personnel mines. This constituted an important aspect to which attention should be given. This expert also saw the need to distinguish between anti-personnel and anti-tank minefields, which had very different technical characteristics.

Chapter 4 — Small-Calibre Projectiles

33. At the Lucerne Conference, “small-calibre projectiles” had been understood to be “those having a substantially smaller calibre than the 7.62 mm rounds which had been in common use since the turn of the century” (Report, para. 118). Several experts now preferred the term “small-calibre projectiles” to apply to any projectile with a calibre not greater than 0.50 inch, i.e. 12.7 mm thus comprising all rifle, carbine and pistol rounds in current use and even machine-gun ammunition up to that calibre. They also thought that the concept of “high velocity” should be put aside, most current military small-arms rounds having high velocities. Some experts introduced, as a more

adequate terminology, the terms “assault rifle” for the whole family of small arms under consideration, and “light assault rifle” for those of 5.56 mm and others with similar properties.

34. It was widely acknowledged that the category under discussion raised complex problems which could not easily be resolved. There could be no question of simply banning the use of “small-calibre projectiles”; the task at hand, some experts felt, was rather to ensure that bullet wounds did not become more serious than at present. Several experts took the view that it was possible to design small-calibre projectiles which fulfilled the modern military requirements but had no worse injuring effect than the most common small-calibre projectiles in current use, in particular the 7.62 mm rounds. An expert stated that he was not prepared to agree that the present degree of seriousness of bullet wounds could be regarded as a universally accepted standard. An expert gave as his opinion that, as a result of the diminishing of combat ranges with the attendant tendency for weapon manufacturers to reduce the quantity of energy available on impact at the end of that range, non-fatal wounds inflicted at the greater ranges of engagement had become less severe over the years and that it would be a fortunate development if this tendency could be made to continue. It had been claimed that 5.56 mm bullets caused wounds out of proportion with military requirements owing to their high muzzle velocity and their tendency to tumble. On the basis of the data presented at the Göteborg Symposium and in the Working Paper submitted by certain experts, he thought that that assertion did not correspond to the facts.

35. Reference was made to the military requirements which had led to the development and production of lighter rifles. An expert commented in this connection on the requirement of “stopping power”, in the sense of instantaneous incapacitation. He emphasized that an enormous amount of energy would have to be imparted on the target to achieve this in all cases and that even then no watertight guarantee of instantaneous incapacitation could be expected. This expert also pointed out that, although from a military point of view it was in general desirable to possess weapons superior to those of the enemy, this need did not exist in the small arms field where it would suffice to have weapons not inferior to those of the enemy. There was, therefore, no need for an arms race in this field, which would only be costly and would lead to an escalation in brutality.

36. Several experts recognized the need to ensure that small arms projectiles would not be unnecessarily injurious. Reference was repeatedly made to the Hague Declaration of 1899 prohibiting “the use of bullets which expand or

flatten easily in the human body, such as bullets with a hard envelope which does not entirely cover the core or is pierced with incisions”, and it was emphasized that this prohibition ought to be respected both in the letter and the spirit. The best approach would therefore be to concentrate on the inhumane effects which the use of certain projectiles could entail, and to try to reduce those effects.

37. Several experts referred in this connection to document CDDH/IV/201 (See Annex A.21) which enumerated four effects (projectile break-up or deformation, tumbling, shock-wave, and secondary projectiles) thought to be particularly relevant. They were, however, open to other suggestions as to possible factors to be taken into account here. Other experts put forward some such suggestions.

38. With respect to the proposal contained in document CDDH/IV/201, some experts felt that the use of projectiles producing the effects described in the document should be prohibited out of hand. Several other experts considered that this would be premature and that a considerable amount of research was still needed before any definitive conclusions could be drawn. There was a general readiness to continue such research. The suggestion that this should be organized on an international basis met with some favourable response. Some experts, speaking on this question, said that it would be desirable to arrive at a standardization, on the international plane, of the testing methods used in the various countries.

39. Some experts presented data resulting from tests that had been conducted in their respective countries, and that had consisted in the firing of bullets into the legs of anaesthetized pigs, blocks of soap and of gelatine, and water.

40. One expert presented data resulting from tests where several kinds of rifle ammunition had been fired at anaesthetized pigs and soap blocks. The data strongly suggested that the severity of the missile wound was mainly dependent on the release of energy per unit length of the wound track. Whereas the velocity of a projectile contributed much to its kinetic energy, the tumbling behaviour of the bullets seemed more decisive for the wound formation in the tests performed. Most tested 5.56 mm bullets tumbled very early in the wound track, causing three times as many large wounds than did the 7.62 mm ones. Tumbling further placed such strain on the tested 5.56 mm bullets that a high proportion broke or deformed even in soft tissue. None of the 7.62 mm bullets tested showed signs of break-up or deformation.

41. A second expert submitted the results of tests carried out with projectiles of 7.62 and 5.56 mm fired into blocks of soap from distances varying from 50 to 1,000 m; the results of these tests showed that 5.56 mm rounds at all distances lost a greater percentage of energy in the air, transferred less energy to the soap and caused lesser cavities than the 7.62 mm ones. The enlargement of the neck of the cavity occurred sooner with the smaller calibre projectiles; the thickness of the object penetrated by the bullet played an important role in the formation of cavities for both types used.

42. A third expert presented data resulting from experiments which aimed at clarifying the behaviour of projectiles shot vertically into a dense medium such as water. Two sets of experiments had been carried out, one with Dynamit 50 rounds fired from a K-22 Masterpiece Revolver, model 17, Smith & Wesson and hitting the water with a velocity of 290 m/s and the other with normal rounds of the old Japanese Model 38 Infantry rifle and brass-made rounds of equal shape and size and fired from the same rifle. The first series of experiments had led to the results that the rounds in question began to tumble immediately after entry into water and that a small angle of yaw on impact might decisively affect the yaw angle of the bullet in the water. In the second set of experiments, projectiles had been fired into the water at impact velocities ranging from 420 to 840 m/s. In these experiments, an increase in penetration proportionate to the increase in impact velocity was observed up to the point where the bullets disintegrated. A comparison between the results obtained with normal and brass bullets seemed to show that penetration was a function of the mass of the bullets at any given impact velocity. Break-up of the normal, though not of the brass, bullets appeared to occur at an impact velocity over 750 m/s; at somewhat lower velocities, projectile deformation was observed, especially among the centre of gravity and the tail end; this suggested that probably the force of break-up did not work at the nose of the bullet. This expert mentioned an estimate to the effect that break-up of the nose part would occur at impact velocities exceeding 1,300 m/s.

43. A fourth expert, who mentioned that a shooting demonstration would be organized, presented some data concerning firing tests into soap blocks. The tests had provided the following results. At a distance of 30 meters, there seemed to exist a clear relation between the impact velocity and the volume of the cavity created by the projectile. At a distance of 100 meters, this relation was not certain. At both distances, high velocity projectiles with a calibre of 5.56 mm had shown a tendency disintegrate.

Chapter 5 — Blast and Fragmentation Weapons

44. No general ban on blast and fragmentation weapons as a class having been proposed or being contemplated from any side, experts concentrated their attention on specific weapons falling within this category. Weapons so singled out for discussion were the following: certain anti-personnel fragmentation weapons and fléchettes, weapons producing non-detectable fragments, and fuel-air explosives. Attention to these weapons was directed first and foremost, so it was indicated by several experts, by their anti-personnel effects.

45. A proposal concerning certain specific anti-personnel fragmentation weapons was contained in document CDDH/IV/201 (see Annex A.21); it sought to prohibit the use of anti-personnel cluster warheads and similar devices. Proponents of this prohibition explained that the weapons under consideration had a wide area coverage and, hence, could easily affect combatants and civilians without discrimination; they also caused unnecessary suffering, ensuing *inter alia* from the multiple wounds they often inflicted. Another ground advanced was the public concern which the use of these weapons had aroused.

46. Both experts of this group and other experts dwelt on the reasons that had led to the development of pre or controlled-fragmentation weapons. An expert of the former group said there was no denying the military utility of weapons of this class; the only prohibition sought, therefore, was on the use of specifically anti-personnel fragmentation weapons, thus leaving both anti-matériel fragmentation weapons and those with combined effects unaffected. Experts of the latter group said they were not at all convinced of the reprehensible characteristics of the weapons at issue; rather, they were convinced that weapons of this category represented an improvement from the humanitarian point of view over weapons with random fragmentation. An expert of this group stressed the point that there was a specific need for anti-personnel weapons with large area coverage especially in defence operations.

47. An expert of the first-mentioned group laid particular emphasis on the aspect of area coverage, and he enquired whether a rule limiting the maximum permissible to, say, 1 km² might perhaps have the preference of other experts over the criteria of “many bomblets” and “a great number” of fragments suggested in CDDH/IV/201. Another expert, while expressing some interest in the area coverage approach, added that it might be of little avail as the number of cluster warheads delivered on the target area would probably be simply increased. Yet another expert pointed out that discrimina-

tion depended on the mode of using particular weapons rather than on their properties. Several experts referred in this connection to the criteria for indiscriminate attacks, embodied in Article 46(3) of Draft Protocol I as adopted by Commission III in the course of the second session of the CDDH; they considered that the question of indiscriminate use also of fragmentation weapons had best be assessed in the light of those criteria.

48. Document CDDH/IV/201 also contained a proposal to prohibit the use of munitions releasing a number of fléchettes. While the reasons given for this proposal were the same as those behind the proposed ban on the use of certain anti-personnel fragmentation weapons, there was little specific reference during the debate in plenary to this particular type of weapon. An observer, who expressed concern at the superfluous injury that the use of fléchettes might cause, provided technical information on the properties and modes of delivery of these devices.

49. The topic of weapons producing non-detectable fragments was taken up in document COLU/212 (see Annex A.11). It was explained that the proposal contained in this document sought to preclude the use of weapons which, being wholly or mainly composed of substances consisting of light atoms which did not differ appreciably from those of the human body as far as the absorption of X-rays was concerned, would leave in the body fragments that could not be detected by the medical methods in current use in battlefield conditions. The use of such weapons would cause unnecessary suffering, and it was immaterial whether the incriminated effects were brought about intentionally or not. The term “usual medical methods”, used in the proposals, was vague, and intentionally so; but the expert introducing the proposal was prepared to consider any suggestions that might lead to an acceptable solution.

50. This proposal was widely welcomed as a most valuable suggestion. Specific comments concerned the vagueness of the term “usual medical methods” (which could cover different standards of medical methods) and the description of the weapons under consideration as “weapons producing fragments...” (and so on). An expert introduced an amendment, contained in COLU/216 (see Annex A.15) which would replace the word “producing” in this formula by “which rely for their injurious effect on”. That amendment, he explained, sought to exclude from the proposed prohibition weapons which, because of the necessary inclusion of plastic components, could produce a few fragments of low density plastic materials which might be difficult to detect in the human body but which, because of their number and characteristics, would be unlikely to be capable of causing significant injury.

One expert pointed out that prohibition on the use of fragmentation weapons should be directed at both detectable and non-detectable fragments, as in war surgical intervention is dictated on the basis of the effects of these fragments.

51. Two proposals dealt with fuel-air explosives. One, contained in COLU/202 (see Annex A.1) sought to prohibit "the anti-personnel use of weapons which for their effects rely exclusively on shock waves in the air". According to the other (COLU/209, see Annex A.8), it should be prohibited "to detonate for military purposes gas-air and dust-air mixtures which release gas pressure". Proponents of these prohibitions admitted that, even after the Lucerne Conference, only limited information continued to be available concerning these means of warfare. Initially, they had been used to make clearings in forests for helicopter landing-pads and to clear minefields. The means in question had, however, also been reported to have been used in an anti-personnel capacity and, owing to the low pressures caused by the explosion and which lasted longer than the explosion itself, they could then produce extremely severe and, indeed, utterly inhumane effects. The weapons being still in the development and introductory stage, this might be the right time to discuss them with a view to possible proscriptions.

52. While several experts welcomed the suggestions contained in the above proposals, several others felt that the information available was still insufficient to warrant any conclusions at this stage.

Chapter 6 — Other Categories of Weapon and New Weapons

53. At the outset of the debate under this item of the agenda the President of the Conference, speaking in his capacity as Vice-President of the ICRC, addressed the meeting on the work of the Conference and that which yet remained to be done. His statement is reproduced in full in the summary records of the 10th plenary meeting.

54. An expert gave a detailed technical description of the possibilities and potentialities of laser weapons. In his opinion, laser weapons would appear at the beginning of the eighties, and this expectation would necessitate a watch to be kept on the military use of the laser beam, especially in an anti-personnel capacity, so as to prevent its causing a greater incidence of casualties among combatants.

55. Another expert discussed various recently perfected or developed weapons such as fuel-air explosives, flame rockets with a particularly great radius and certain other combined blast and flame munitions using alu-

minium-based pyrophoric substances. New weapons, he concluded, should be accorded due attention.

Chapter 7 — Other Business

56. At its eleventh and twelfth plenary meetings on 25 and 26 February the Conference discussed the introduction to the report and also the part of the report covering the plenary meetings. The various changes asked for and approved are included in the present version of the report. The Conference took note of the report of the General Working Group and the statement, also included in this report, by an informal working sub-group of medical experts on unnecessary suffering (see III. (e) 8 below).

57. Referring to paragraph 17, one expert stressed his conviction that it was the countries with the greatest air power which most frequently used napalm.

58. On the question of follow-up to the work, an expert submitted a proposal that the Conference of Government Experts on the Use of Certain Conventional Weapons be vested with permanent status (see IV. A. 9 below). Another fully supported that motion, whereas others, whilst commending the spirit underlying the proposal, doubted that it was practicable or feared that it was premature.

59. In their final statements several experts stated that the many proposals submitted were all to the good. Some deplored the failure to reach general agreement on any one of them. Other contended, nevertheless, that considerable progress had been achieved in comparison with the first session (Lucerne, 1974) and the *ad hoc* Committee of the CDDH. All who spoke affirmed that the work should be continued by the *ad hoc* Committee during the third session of the CDDH. One expert wished the *ad hoc* Committee to start its proceedings after the other Committees in order to give it and governments time enough to consider the results of the Lugano Conference.

60. The Chairman of the Conference made a statement which may be found in the plenary meeting summary records (see II below, twelfth meeting).

II. SUMMARY RECORDS OF PLENARY MEETINGS

First Meeting

Organization of Work

1. The CHAIRMAN announced that the Bureau, as constituted at the Lucerne session of the Conference, remained unchanged. Those persons absent from the present session had already been replaced. The Rapporteur did not require any assistants.

The Regulations required that the Conference refrain from discrimination or polemic. The Work Programme required that the experts devote their attention to conventional weapons with a view to prohibiting or limiting their use and to study the form and tenor of any prohibitions or limitations. Since the Lucerne Conference, which had produced contradictory conclusions, further research and experiments in certain countries had produced useful results. It was desirable that the present meeting of experts should produce concrete results, albeit of a partial nature. To that end, the work of the Conference needed to be properly organized.

One expert proposed that each working group be allocated a separate field of study with all its legal and military aspects; the specialists in each subject being detailed accordingly.

The CHAIRMAN invited discussion of the proposal.

Two experts seconded the idea of interdisciplinary groups.

It was then suggested that the General Working Party would set up sub-groups to study specific matters.

The General Working Party would do the basic work. A plenary session should be convened to discuss each of the items on the agenda. The order of the items "Small-Calibre Projectiles" and "Mines and Booby-traps" should be reversed so that the reports on small-calibre projectiles currently being prepared could be completed. The convening of a group of doctors to discuss the effects of small-calibre projectiles and the Göteborg report was a

good idea, but technical experts should also participate in such a discussion. The final Göteborg report and other specific texts would be available by the end of the coming week.

An expert pleaded for flexibility in the organization of work and wanted at least two meetings to be held simultaneously, that is to say, a General Working Party and an *ad hoc* group. There could also be more plenary sessions. While the overlapping of efforts should be avoided, each group should approach its work from an interdisciplinary angle.

The foregoing proposals were seconded by one expert who felt that, at the beginning of the Conference, all efforts ought to be focussed on specific matters which should be discussed in a special working group in order to achieve concrete results. The presence of military, medical and legal experts would help. The Conference might, in certain cases, feel the need to set up *ad hoc* working groups. It would be as well to establish a programme with time limits so that all concerned would be aware of the progress being made and the time available.

Further support was forthcoming for these proposals and especially for the idea of *ad hoc* groups, and that of the simultaneous meeting of interdisciplinary groups while leaving sufficient flexibility for setting up a legal group.

One expert thought that each of the groups should include a number of specialists. New proposals should be introduced in a plenary session. The plenary itself should reach joint conclusions for inclusion in the final report in order to show that the Conference had produced some positive results. For the time being, the inclusion of opinions held in common on each of the subjects discussed would suffice.

One expert thought that plenary sessions would be useful particularly at the beginning of the Conference for the airing of general ideas, while at the end they would be essential for adopting conclusions. The items on the agenda should be dealt with by the working groups to avoid wasting time. It would be judicious to change the order of the agenda, starting with incendiary weapons in view of the difficulty of the subject. The doctors were pressed for time and should be enabled to hold a sub-working group meeting as soon as possible.

Too complicated a breakdown of the work of the Conference into a multitude of working groups was feared by one speaker as the limited size of some delegations would not allow them to participate in two meetings at the same time. To appoint a working group for each item on the agenda would be going too far. While the plenary session would offer a forum for general points, it could lead to duplication of effort. The plenary should, therefore, provide a general picture of the situation, the General Working Party should

definitely be interdisciplinary and the sub-working groups should meet successively and not simultaneously.

Another expert in favour of an interdisciplinary approach was, nonetheless ready, as were other experts, to recognize the need for a degree of flexibility in the organization of work and for a fairly general timetable. He felt that no change should be made in the order in which the items appeared on the agenda, that a General Working Party should be set up, and that the study of each of the items should be entrusted to a special working group which should be given a certain amount of time to complete its work.

Together with two other experts he recognized the need to organize an informal meeting of medical experts as soon as possible as doctors generally had little time to spare. Such a meeting should study all the experiments carried out in various countries to prepare for subsequent discussion.

Agreement was then expressed by one expert with article 5 of the Rules of Procedure concerning the setting up of a General Working Party to appoint special sub-working groups as needed, to each of which a particular task would be entrusted, it being left to the General Working Party to decide how many such groups should be created. At the same time, some speakers agreed that the number of sub-groups should be limited in view of the difficulties which the smaller delegations would otherwise have in participating in all meetings.

One of the experts was of the opinion that each of the six classes of weapons to be discussed should be covered in detail by a separate working group. Military, medical and legal experts would form a special group to examine the results produced by the other sub-groups before passing them on to the plenary session for final consideration.

While accepting the idea of creating a general interdisciplinary working party, another expert considered unnecessary the creation of a separate sub-working group for each item, although small groups could be set up if needed.

Several experts felt that it would be difficult for some delegations to participate in all the meetings of the six sub-working groups if they were to be created, but one of those concerned did favour a General Working Party and a number of small groups to study problems as they came up. Most of the discussions would have to be held in plenary to enable all delegations to participate. Plenary would refer certain items to the General Working Party to avoid wasting time.

As a general rule, the working programme should enable participants to have dealt with all items on the agenda by the end of the Conference.

One expert agreed with the previous speaker. He emphasized, however, the danger of the same subject being examined twice over by different bodies. He stressed the need for sub-working groups to draft reports that reflected the views of governments.

General Debate

2. An expert recalled that the Lucerne Conference had enabled experts, directly or indirectly, to add to their technical, military, legal and medical knowledge, which would help them to achieve positive results.

His delegation would welcome the clarification of the English text of Article 23 of the Hague Regulations by replacing the words "calculated to cause unnecessary suffering" by the words "likely to cause superfluous injury" and a more common appreciation of the role of military utility in what was considered "necessary". Consideration might also be given to developing an acceptable definition of "indiscriminate effects" which would relate to the use of a weapon rather than to the weapon itself. An attempt might also be made to arrive at an agreed definition of "treachery" or "perfidy".

For humanitarian reasons, particular attention should be given to the study of incendiary weapons and he hoped that some progress, even limited, could be achieved in restricting certain specific uses of napalm, flamethrowers, land mines, booby-traps, blast and fragmentation weapons and small-calibre weapons.

His government had approved the principle of establishing a national weapons review board for advising on the legality of the use of any new weapons system.

The members of his delegation wanted that a balance would be found between the essential demands of international humanitarian law and the complex problems raised by the requirements of military security.

3. One expert stressed that the task of the Conference was to clarify the essential data concerning those conventional weapons which might be regarded as suitable subjects of prohibition or restriction. It was not for the Conference to lay down rules, but to analyze considerations of a military and humanitarian nature and to report the views expressed to the governments. Each weapon should be considered as an individual case, the emphasis being placed on the humanitarian aspect of the problems without forgetting legitimate problems of military security.

If existing weapons were restricted or banned, alternative weapons should be examined in the light of various factors (cost, effectiveness, etc.). The humanitarian standpoint should be considered in every case, not in the abstract, but in relation to the particular weapon and the alternative weapons. It was possible that alternative weapons might be more cruel than the weapon under consideration.

Any decision should provide for a system of reciprocity involving sanctions (reprisals or other measures) against those who did not comply with the rules laid down.

4. Another expert said that his government had always supported efforts aimed at the development of humanitarian law and stressed that the military regulations in force in his country provided for the observance of the rules of that law. However, the prohibition of the use of incendiary, blast and fragmentation weapons, high velocity projectiles of rifle ammunition, mines and other modern weaponry also had far-reaching security implications. The same was true of a number of proposed restrictions. Consideration should be given to whether it would not be more expedient to deal with such prohibitions in the context of disarmament, where it would be possible to take into account both humanitarian aspects and security interests. In the field of disarmament the more effective prohibitions would be related to the production of a specific weapon and could be also agreed upon.

The discussions among experts had shown that it was not possible to base concrete prohibitions or restrictions of the use of individual weapons on such legal criteria as "unnecessary suffering" and "indiscriminate effect" since the injury and damage caused by a weapon must always be seen in relation to its military effect. Sovereign States would be more inclined to accept prohibitions if they were not derived from the general principles of international humanitarian law but were agreed in each case separately and if the envisaged rules did not spell out the motives underlying them.

The Conference of the Committee on Disarmament would seem to be the best forum for negotiations on the prohibition of the use and manufacture of such weapons.

The question of reciprocity, too, gave rise to legitimate security concerns.

Finally, he underlined the technical character of the Conference. The political, legal, technical, military and medical experts assembled in Lugano were not called upon to elaborate treaty texts ready for signature but should work out an expertise to make it easier for governments to form a balanced opinion.

All weapons could cause extremely serious, excruciating injuries. War by its very nature was cruel. The most convincing way for governments to observe their humanitarian obligations therefore was to pursue a consistent policy of peace and détente.

5. Another expert stated that the development of humanitarian law applicable in armed conflicts had from the very beginning the full support of his government. Any prohibitions or restrictions materializing from the Conference should in his delegation's opinion have a world-wide application. As to the procedure to be followed, his delegation was in favour of dealing with each weapon individually rather than with each category of weapons. His delegation and that of another country intended to submit to the Con-

ference a working document on landmines and booby-traps and restrictions as to their use; he hoped that other delegations would also submit proposals.

While conflicts should, if possible, be avoided, every effort should be made to avoid unnecessary suffering if they broke out.

Second Meeting

Designation of Officers

1. In the absence of the delegate of Zaire, at the opening of the Conference, the delegate of Ghana was designated to the Bureau.

Organization of Work (continued)

The CHAIRMAN said that the Bureau had approved the following organization of the work of the Conference and submitted the text for adoption by the Conference:

- (1) The plenary meeting shall convene at the beginning of the Conference for a general discussion and at the end of the Conference in order to adopt its conclusions. Further, introductory exposition of the various subjects on the Work Programme shall take place in plenary. The plenary meeting may also be convened as and when the need arises.
- (2) A General Working Party shall be set up to which items will be referred after they have been introduced in plenary. The General Working Party shall make a detailed study of the various subjects of the Work Programme and may set up *ad hoc* working groups as necessary to deal with special questions. The conclusions of the *ad hoc* groups shall be submitted to the General Working Party.
- (3) The Working Party and *ad hoc* groups shall be open to all experts; no more than two meetings may take place simultaneously.
- (4) A general timetable for the Conference will be drawn up as soon as possible by the Secretariat.

Paragraph (1)

A representative of the Group of 77 proposed that regular plenary meetings should be held, in order that expression could be given to the viewpoints of delegations on the various items of the agenda that plenary meetings and meetings of General Working Party should not be held simultaneously and that discussions should be confined as far as possible to the

plenary and General Working Party meetings. The Group of 77 was not in favour of *ad hoc* group meetings.

The CHAIRMAN proposed that additional plenary meetings should be held as need arose and suggested that paragraph (1) of the Organization of Work be so amended. He pointed out that paragraph (3) covered the point raised by the representative of the Group of 77.

A delegate agreed with the proposal to hold a general discussion for each agenda item. He advocated a pragmatic approach to the setting up of *ad hoc* working groups, since they might not be required for every agenda item.

Another delegate said that he wished to draw a distinction between the plenary meetings and meetings of the General Working Party. Whereas it had been decided that summary records would be made of the plenary meetings, delegates might think it desirable to preserve the informality of the meetings of the General Working Party.

Paragraph (1) as amended was adopted.

Paragraph (2)

One expert sympathized with the viewpoint of the Group of 77 because of the limited membership of some delegations. Simultaneous meetings should be held as rarely as possible.

The representative of the Group of 77 expressed the hope that the number of *ad hoc* working groups would be limited and that *ad hoc* groups would not meet simultaneously, since many delegations would be unable to attend two such meetings.

The CHAIRMAN proposed that no other meetings should be held during plenary meetings and that no more than one *ad hoc* group should meet at the same time as the General Working Party was meeting.

Paragraph (2) was adopted.

Paragraph (3) was adopted.

Paragraph (4) was adopted.

The Organization of Work, as amended, was adopted as a whole.

The CHAIRMAN said that the Bureau had also examined a number of points concerning the Rules of Procedure, but had decided to defer discussion to a further meeting of the Bureau.

General Debate (continued)

2. One expert said that he welcomed the start of the Conference's work from which he expected concrete results leading to a genuine improvement in

international humanitarian law relating to armed conflicts. He stressed the fact that the Conference was a meeting of experts—military, legal and medical—and that his delegation did not contain a single diplomat. According to rule 8 of the Rules of Procedure, experts' statements did not bind the governments that appointed them; their role was to provide technical advice, within the limits of their competence, on the more or less humanitarian nature—i.e., their greater or lesser conformity with the conscience of mankind—of the various ways of using the different types of weapons included in the Conference's programme of work. Their conclusions would serve as technical bases for the diplomatic decisions that might be taken by the Geneva Diplomatic Conference and by the governments of all United Nations Member States.

The objective of the Conference was humanitarian and did not relate to disarmament; it was to consider the possible *use* of various types of conventional weapons; any consideration relating to the development, manufacture or stockpiling of such weapons was a matter for the appropriate disarmament bodies and was outside the competence of the Conference.

If the Conference was to lead to concrete results in the form of international agreements which could be effectively applied throughout the world, its work and conclusions at all times had to be realistic, taking account both of what was desirable and what was possible. What was desirable was the realization of the Conference's humanitarian objectives; what was possible depended on the requirements of defence and security. That being the case, his delegation would be guided by two basic principles: first, that it would be unrealistic to envisage the restriction on humanitarian grounds of a weapons system without carefully considering whether an alternative system existed which would meet satisfactorily the security requirements of the peoples concerned; and second, that it would be unrealistic to envisage unilateral restrictions, which would be applied by some but not by others. Reciprocity was indispensable if the security of the peoples was not to be endangered.

3. Another expert agreed with a previous speaker that the protection of the victims of armed conflicts could not be separated from rules on methods and means of warfare, as was shown by Protocol I. The present Conference, however, was not a sub-committee of the Diplomatic Conference; its mandate was to examine, as experts, what restrictions were possible and desirable. It was clear that that involved taking security considerations into account: essential humanitarian requirements must be balanced against complex issues of military security.

It would be completely unrealistic at the present time for the Conference to consider bans on the production and stockpiling of specific weapons, such

as napalm or various kinds of mines. The Conference's mandate was the more modest one of discussing prohibitions or restrictions of *use*. That approach was not meaningless, as was shown by the existing bans on dum-dum bullets and BC weapons.

His delegation thought that there was always an advantage in the total prohibition of the use of a specific weapon as against a restriction. A complete ban on a weapon meant that there was no reason for its deployment, whereas restrictions would not stop deployment and might leave field commanders to judge under difficult circumstances whether a use was legal or not. Such rules contained inherent weaknesses, but that did not imply that they were meaningless in all circumstances: the working paper submitted by his and other delegations proposed a restriction on the use of mines, whereas a complete ban would be unrealistic.

It was not the Conference's task to negotiate a treaty text, but simply to draw conclusions from what the data suggested, to define areas of agreement and disagreement and to discuss the contents and form of possible prohibitions and restrictions.

Several speakers had referred to the need for reciprocity in the acceptance of rules and the need for support by the major military Powers. It might be useful if those points were clarified at an early stage by a working group of lawyers, whose conclusions might have a fundamental bearing on governments' attitudes. The simplest way of ensuring that a ban or restriction enjoyed the support of all major military Powers would be to make its entry into force dependent on ratification by a given number of States, including such Powers.

All experts were by now familiar with the Lucerne report. His team intended to present a body of new data, in particular on small-calibre projectiles. It did not think that much would be gained by a further analysis of the concepts of "unnecessary suffering", "superfluous injury" or "indiscriminate effects". The articles adopted by the Diplomatic Conference and the Lucerne discussions already gave sufficient guidance on what categories of weapons it might be desirable to subject to prohibitions or restrictions. If the Conference decided that to ban or restrict the use of a certain weapon was both desirable and possible, it would be unwise to conclude that that implied *per se* that the weapon "caused unnecessary suffering" or was "indiscriminate"; the consensus that had been reached in the General Assembly had only been possible by removing any such suggestion.

While the "fragmentary" approach, based on considering each individual sub-category of weapons within a larger category on its own merits, might facilitate identification of areas of agreement, it might also raise difficult problems of delimitation and definition.

Third Meeting

General Debate (continued)

1. One expert, noting that the Third World was unfortunately less well represented in Lugano than had been the case in Lucerne, stated that this seemed to indicate that these countries had been somewhat disappointed with the results achieved.

Referring briefly to the Lucerne Conference, he said that in retrospect it could be called a success in the sense that good preparatory work had been done for the present Conference. In Lucerne an unfortunate tendency had been noticed among experts to form themselves into mutually exclusive groupings. Though understandable in a conference of a political or economic nature, this could perhaps have been avoided in a meeting of experts.

The expert noted that the present Conference was not called upon to pronounce itself in respect of manufacture, stockpiling, etc. of weapons but only as to their use. He pointed out, however, that it was within the Conference's power to so formulate its proposal as to automatically become a source of moral pressure on those involved in the manufacture and sale of arms to discontinue the practice. In this respect one could quote the example of the Hague Declaration of 1899 prohibiting the use of bullets which expand or flatten easily in the human body.

The expert made a plea for putting complete prohibition on use of certain specific weapons as against only partial restrictions on the use of these weapons. Partial restrictions, he urged, would not only be ineffective but would leave the decision in the hands of the field commander, whose decision in the heat of battle may or may not be rational. The expert reminded the Conference that its aims were of a humanitarian nature. The civilian population had to be spared avoidable suffering and there was no legal way around the point.

Referring to the expressions "superfluous injury" or "unnecessary suffering", he seconded a proposal made by another expert that it would be better to use the former, because it was in many respects the more precise one.

He agreed with certain other experts who had said that a ban or prohibition need not be too wide. It would be only realistic to take into account the national security and military interests of each country. It would be a good idea to draw up specific definitions of various categories of weapons as had been done at Lucerne in the case of incendiary weapons. A list of exceptions could then be drawn up by the experts by considering each weapon on its own merits.

He subscribed to the "principle of reciprocity" which had been mentioned by another expert, but held the view that the surest way of ensuring reciprocity was to agree on a total and complete prohibition of the use of these weapons as against partial or limited restrictions.

2. Another expert mentioned the three basic principles laid down by the Parliament of his country, these being, firstly, that humanitarian arguments against the use of certain conventional weapons and systems causing unnecessary suffering or having indiscriminate effects should be used to formulate new rules of international law concerning the prohibition or limitation of such weapons; secondly, that the existence of military requirements should be taken into consideration; and thirdly, that such rules should be formulated by the Diplomatic Conference and not by that of the Disarmament Committee or any other body which might be considering the same matter. His parliament had further stressed that the principal aim was to take some of the brutality out of warfare.

The government of the country in question, together with a number of others had submitted to the Diplomatic Conference a draft proposal (CDDH/IV/201) concerning the limitation or prohibition of the use of certain weapons.

A number of experts referred to the need for considering the question of national security. Another aspect which should not be forgotten was the distinction to be made between different sorts of conflict when formulating the legal rules relating thereto. A weapons system which could be acceptable in normal warfare might be unacceptable in guerrilla warfare.

Other experts pointed out that these questions could not be considered in the context of the Diplomatic Conference because of their military aspects. However, the Diplomatic Conference had already found a solution to such problems, as in the case, for example, of the problem of proportionality. There was no difference between those questions and the possible prohibition or limitation of the use of certain conventional weapons.

The Lugano Conference had to strike a balance between humanitarian considerations and military necessity.

3. One expert, after pointing out that his country had played an active and constructive role in the discussions on the limitation or banning of certain conventional weapons, said that he had observed that since the 1973 Teheran Conference a number of representatives from various groups of countries—East, West and non-aligned—had made realistic statements. He referred in particular to the statements made at the Diplomatic Conference *ad hoc* Committee on Conventional Weapons in the spring of 1975, and to others made more recently at the latest General Assembly of the United Nations. There was need for a certain degree of equilibrium between humanitarian considerations and national security.

The same expert was of the opinion that a general report should be issued on the limitation of certain weapons. His government, jointly with another, had submitted a draft resolution on mines and booby-traps, on which

he hoped agreement would be reached. He reminded the meeting of the progress which had been made between the St. Petersburg Declaration of 1868 prohibiting the use of some types of projectile in war and the 1972 Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxic Weapons and on Their Destruction. He referred also to United Nations General Assembly Resolution 3464 (XXX) encouraging the Conference to concentrate on such weapons.

4. There was one expert who considered that the Lucerne Conference had, for the first time in history, taken a decisive step towards the prohibition of cruel weapons.

He announced that his country's National Red Cross Society would make a contribution of Sfr. 15,000 to help with research leading to the prohibition of certain weapons. His country was firmly decided to study all proposals and to welcome all ideas which might lead to acceptable and realistic conclusions.

Armaments and the use of certain conventional weapons were interdependent, and the principle of disarmament having been mentioned, it had now to be applied. He stressed the need to conclude a treaty on complete and general disarmament starting with measures for partial disarmament. The arms race could be slowed down by the conclusion of a series of treaties between different countries, regardless of their respective ideologies.

Elimination of conventional weapons might be the first step towards general disarmament and the end of wars of aggression. The use of weapons was, of course, lawful in self-defence. The question was whether such weapons were used indiscriminately: it was difficult to draw a line between those which caused excessive injury and those which did not.

United Nations General Assembly Resolution 2936 (XXVII) urged that recourse to force must be avoided in international relations and that the use of nuclear weapons must be permanently forbidden.

His government had submitted a draft convention on the prohibition of the development, manufacture and stockpiling of new types of weapons, whether conventional or nuclear. If a general prohibition were made applicable to all States simultaneously it would place them on an equal footing and give them all equal security.

The problem facing the Conference was the limitation of some weapons and the total prohibition of others.

He laid stress on the need for reciprocity, universality and equal security for all States.

5. Another expert expressed the wish that the General Working Party might begin its work during the following week but was of the opinion that certain guidelines ought to be laid down in plenary.

The first item on the agenda, which concerned incendiary weapons, had already come under discussion at the Lucerne Conference and in the *ad hoc* Committee on conventional weapons. There was little variation in opinion on the way in which they were to be used and it could even be said that a consensus had been reached. In that connection he referred to paragraph 85 of the report of the Conference of Government Experts on the Use of Certain Conventional Weapons.

He further quoted United Nations General Assembly Resolution 3076 (XXVIII)—which invites the Diplomatic Conference to seek agreement on rules to prohibit or limit the use of napalm and other incendiary weapons—and resolution 3255 B (XXIX)—which condemns the use of napalm and other incendiary weapons in armed conflict whenever human beings, the environment or natural resources were at risk.

The purpose of the Conference was to evolve legally binding rules to prohibit or limit the use of certain conventional weapons. He proposed that the General Working Party should concentrate on deciding whether incendiary weapons belonged to that category of weapons which caused unnecessary suffering and had indiscriminate effects.

6. Another expert stated that there was general agreement on the main points and that the Conference was not supposed to draw up laws but to give real force to existing rules of international law, such as the regulations forbidding the use of weapons which caused unnecessary injury and indiscriminate or uncontrollable effects, or which were perfidious. Attention also had to be paid to the problem of setting up a body responsible for putting an end to the introduction of new weapons. In that respect, the 1972 Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxic Weapons and on Their Destruction gave some room for hope.

He believed that the military security of States had to be taken into account and that all weapons which were not essential for it should be forbidden.

7. Another speaker approached the Lugano Conference with the attitude that it formed part of the general process of reaffirming and developing international law applicable in armed conflicts.

He considered that that process should be viewed in the broader context of current international relations. He submitted that the need for this process resulted from the many basic changes which had occurred in the world. In this

connection, mention had been made of the great number of newly independent States whose influence was felt in all fields of international life and in the progress that had been made in that branch of general international law which condemned wars of aggression and forbade the use of force in international relations except in self-defence.

The speaker said that international law should aim to strengthen peace and international security. His delegation was convinced that humanitarian law had to protect the victim of aggression and that protection of the individual would remain but a pipe-dream if divorced from protection of nations. He further referred to the link between the object of the Lugano Conference and the disarmament negotiations. He shared the opinion of other delegations that reliable protection of the individual could be ensured only by adopting and implementing effective disarmament measures concerning especially nuclear and other weapons of mass destruction. The Lugano Conference should be considered a stage in the general process of disarmament. The results of that Conference could facilitate further disarmament negotiations and could contribute to the total elimination of certain conventional weapons. He insisted on the relation between the subject of the Conference and the legitimate right of every State to self-defence. Almost all delegations had stressed the importance of protecting national security interests. The term "national security" was understood differently from one country to another and its implications were in constant flux. He stated that his country, one of those in the category of small and medium-sized States, would not, under any circumstances, admit any proposals which limited its ability to defend its national security, independence and sovereignty.

He asked that his country be made co-sponsor of working document RO 610/4b on incendiary weapons.

He approved the principle of reciprocity and held the view that all rules of law should be applied subject to that principle.

It was incumbent on the Diplomatic Conference to strike a balance between the military, legal and humanitarian aspects of the matter.

8. Another expert voiced his total support for ICRC activities aimed at improving the protection of war victims and at limiting the use of certain methods of warfare. For that reason his government had played an active role in all of the Experts' Conferences, the Diplomatic Conference and the Conference of the Disarmament Committee.

He insisted on the fact that the Conference was bound to apply existing rules of law concerning the protection of the civilian population and the prohibition on the use of force or threats.

He pointed out that since the Lucerne Conference the European Security and Co-operation Conference had stressed the close ties existing between

peace and security in Europe and in the Mediterranean region. He hoped that the Lugano Conference would produce positive results which would contribute to political détente. His government was of the opinion that it would also be necessary to convene a world disarmament conference. He felt that the total prohibition of mass destruction weapons would offer the best possible protection for humanity.

He agreed with the expert who had previously pointed out that disarmament had become an established principle of international law.

In conclusion he quoted Articles 33, 34 and 46 of Draft Protocol I which dealt with the prohibition of unnecessary suffering, new weapons and the protection of civilians, these articles being of vital importance.

9. Another expert was of the opinion that the report on the Lucerne Conference provided an excellent working basis for future discussions. Certain criteria had been clarified as could be seen from the way in which the terms "unnecessary suffering" and "indiscriminate effects" as used in the Hague Regulations had been discussed. The term "*hors de combat*" would be discussed at the current session. In his opinion, the question of legal criteria should be discussed after the various types of weapons had been studied.

The Conference had made notable progress on the subject of incendiary weapons. As mentioned in Annex V to the report on the Lucerne Conference, a working group on the classification of incendiary weapons had reached a consensus on the definition and classification of incendiary munitions. Chapter III of the report gave detailed explanations on the matter.

A meeting of experts had decided that a study had to be made of small-calibre projectiles. At the current stage, the results were insufficient to allow for a total ban.

One of the experts attending the present Conference had said that he and another expert would be submitting a draft resolution on mines and booby-traps.

10. Yet another expert announced that he and some of his colleagues intended to seek realistic ways of limiting and prohibiting the use of certain conventional arms. He felt that there was a need for a balanced examination of the problems raised by prohibition and military security.

Some sort of agreement seemed to be in the offing with respect to incendiary weapons, mines, booby-traps and perfidious weapons but further information was required.

He drew attention to Article 46 of Draft Protocol I which referred to the protection of the civilian population.

At that juncture, another expert informed the meeting that his purpose in attending the Conference was to reach certain agreements and to show that mankind was running considerable risks by using the weapons currently available. It was necessary to ban the use of certain types of weapons of indiscriminate effect, otherwise it would be impossible to reach any satisfactory conclusions.

11. One of the experts, describing his country's attitude, expressed his full support for what many speakers before him had said about the importance of military security, which should be of major concern to the Conference. He did not think that any ban or restriction on the use of conventional weapons could be realistic, or even conceivable, if there was any chance of its weakening national security.

He considered that a reciprocity clause should be incorporated in any instrument that might be adopted. He reiterated the point made by a previous speaker to the effect that unless such instruments were ratified or acceded to by a large number of States they would not stand the slightest chance of ever becoming effective.

There seemed to be a large measure of agreement on the matter of incendiary weapons, mines, booby-traps and perfidious weapons but it was apparent that the problem of small-calibre projectiles called for some attentive study and, as for other types of weapons, he hoped that the working groups would produce worthwhile results.

He concluded by stressing the importance of some kind of review procedure.

12. Another expert stressed the close correlation which must exist between the task of the present Conference and that of the Diplomatic Conference, namely the reaffirmation of humanitarian law in armed conflicts at whatever level.

It was necessary to distinguish between legitimate and illegitimate objectives, weapons and methods and to protect the civilian population against the effects of weapons of mass destruction.

He recalled that it was usually possible to distinguish between weapons and objectives, and that the legitimacy of the use of a weapon depended on the nature of the objective.

In his view, the Conference should examine objectively other types of illegitimate weapons, such as the hydrogen bomb, biological weapons and chemical weapons.

The use of the hydrogen bomb might lead to the extinction of the human race, by sudden destruction or by slow disintegration.

He quoted many authorities according to whom air warfare was some kind of collective suicide.

A scientific study had shown that radioactive fallout following the dropping of an H bomb on each of the most densely populated areas of the world would affect 52 million persons, 43 million being directly exposed.

Marshal Zhukov, as quoted by the expert, had said that nuclear weapons presented a potential danger in that one day they might fall into the hands of irresponsible or unbalanced individuals. As Sir Winston Churchill had said, there was no protection against nuclear arms which would smite aged and infants alike. Certain arms which must be banned or outlawed should be more closely defined.

Referring to limitations on the use of certain weapons, he considered that it was the task of the Conference to define them according to their tactical or strategic importance, taking into account the principle of "military necessity" within the framework of international law.

In conclusion, he gave the assurance that his country, which attached importance to the reaffirmation and development of humanitarian law, and realized that political ideologies should give way to urgent humanitarian needs, would respect any decisions reached by the Conference.

Fourth Meeting

General Debate (continued)

1. One expert stated that his government had, from the beginning, supported the initiative for the reaffirmation and development of international humanitarian law in armed conflicts and had been one of the original sponsors of the proposal that the Diplomatic Conference should consider the possibility of regulating the use of certain conventional weapons on the grounds that such use ran counter to the basic and generally accepted principles of humanitarian law, such as unnecessary suffering, indiscriminate effects, perfidy, etc. While the need for such measures remained unchanged, dilemmas had been revealed and divergent views had been expressed during the discussions as to the best ways of resolving the problems involved.

Since any conclusions the experts arrived at or recommendations they made were not unconditionally binding upon their governments in their subsequent negotiations, there was nothing to prevent the experts from making a thorough examination of all the technical questions, including the most sensitive, and presenting any recommendations which they felt would offer

acceptable solutions. That was the only way in which the experts could contribute constructively to the Diplomatic Conference. However, despite the close link between the Experts' Conference and the Diplomatic Conference, their mandates were, of course, different: the experts' mission was a fact-finding and advisory one; it was for the Diplomatic Conference to take the final decisions.

The experts needed to display a maximum sense of reality, which meant that they should concentrate their attention on those weapons which might, here and now, be accepted as being objectionable from a humanitarian standpoint. It also meant that due attention should be paid to the security requirements of States. However, humanitarian considerations should not be simply swept aside whenever a question of military utility arose. The possible uses of weapons should be viewed in the context of the objects against which they were used; a distinction should be made, for instance, between cases in which weapons were used against guerrilla or national liberation fighters and when they were used in "regular" warfare between two equally well-armed enemies. The concept of "security" was quite different in the two cases. It was the security of small countries which should be protected first.

His government was a co-sponsor of the proposal contained in working paper CDDH/IV/201 which, in its view, met very well the requirement just referred to. The working paper had the advantage that the list of weapons contained in it was very short and the proposals to ban or restrict certain uses of those weapons were highly specific: for example, the proposal to ban the laying of anti-personnel landmines from aircraft. In other words, his government's approach was realistic although, once initial agreement had been reached on a short selective list of weapons, the Conference could move on to wider agreements covering broader categories of weapons or a greater variety of the ways they could be used. It would be particularly desirable if the major Powers would table a joint proposal for general and complete disarmament.

In general, his delegation would prefer rules prescribing a total ban of the use of certain types of weapons rather than restrictions on the manner of their use. Not only would the practical effect of such bans be much greater, but their application would be less risky. Restrictions on certain types of use would, as an expert had pointed out earlier, leave too much responsibility with commanders in the field and unfortunate mistakes might easily be made.

With regard to universality, it was of course important that as many States as possible should accept any final document which might emerge; but the Conference should not go to the extreme of insisting on complete unanimity. The standards applied for the entry into force of certain partial arms control agreements should be followed in the present case too.

His delegation fully agreed to the suggestion advanced by a previous speaker that provision should be made for some form of review or follow-up machinery to carry on the work of the Conference.

In view of the restricted list of weapons and their uses under discussion, the question of alternative weapons lost much of its urgency. There were many weapons both in use and being developed that were more than adequate substitutes for those the experts were seeking to regulate. If the insistence on alternative weapons was generalized, a situation might arise in which the non-nuclear countries parties to the Non-Proliferation Treaty, whose problems were much greater than those of the nuclear countries, might start insisting on having "alternatives" to nuclear weapons.

Out of the 147 armed conflicts which had occurred throughout the world since the end of the Second World War, well over 90 percent had involved developing countries, and it was precisely in those conflicts that most of the weapons now under discussion had been extensively used. One might accordingly say that the real issue at stake at the Conference, while formally that of regulating the general use of certain weapons, amounted in practice to seeing how the small countries could be most efficiently protected from becoming the future victims of those weapons.

2. Another expert said that, at the Lucerne Conference, his country's experts had displayed their keen interest in the banning of the use of the weapons under discussion and would continue to do so in collaboration with the other experts participating in the present Conference. They had therefore been glad to receive the concrete proposal submitted by other delegations and would study them attentively. Since his country was one of the co-sponsors of the working paper in document CDDH/IV/201, which was already familiar to participants, he would confine his statement to expressing his delegation's agreement with the speakers who had stressed the importance of the principles of priority for humanitarian considerations, of the reciprocity of commitments and of the universality of any legal instrument banning the use of certain weapons.

In view of the frightening speed with which new weapons were being developed and manufactured, he wished to stress the importance of the proposal put forward at the previous meeting that machinery should be set up for the periodical review of any instrument which might result from the Conference's work so as to adapt it to future weapon developments.

3. A third expert stated that his delegation's approach to the issues under discussion was the same as it had been at the Lucerne Conference and was based on two fundamental principles: first, a desire to support the expansion and updating of international agreements on international humanitarian law

in armed conflicts, which led it to support efforts to limit the use of certain weapons; and second, a recognition that the regulation of weaponry directly affected vital national security interests, which might vary from one State to another. It was obvious that if States could agree to adopt more humanitarian methods of warfare, the extent of suffering of military personnel in any future conflicts would be reduced. At the same time, it was necessary to strike a balance between humanitarian considerations and the national security interests of States, which might differ widely from country to country, so that what one country might readily dispense with might be deemed essential by another. In other words, the balance to be sought was a very complicated one; a recognition of that fact would render the Conference's discussions more meaningful and more productive of practical results.

A close examination had been made in his country of the humanitarian and military implications of various proposals which had been made, and the expert views which differed from his country's own views had been carefully analyzed. That exercise had confirmed his delegation's view that progress would be most likely if the Conference concentrated its efforts on trying to get agreement on restricting the use of certain weapons rather than on outright prohibitions. Realistic progress towards the regulation of the use of certain conventional weapons must be based on international agreement to be sought through the rational, orderly and objective examination of all the complex factors involved. The course of the debate hitherto led him to believe that the prospects were good.

4. A fourth expert noted with pleasure that the interventions made so far by delegates were more positive in their approach than those that had been made at the previous sessions of the Conference of Experts and of the CDDH. As the representative of a developing country, he said that his delegation had always been hopeful that positive results would emerge at the conclusion of their deliberations. He pointed out that, in the context of contemporary realities, it was in the developing countries that conflicts involving the use of conventional weapons were most likely to take place. It would be highly unrealistic to expect that wars would not be fought or, if and when fought, that national security considerations would not prevail. It was accepted international doctrine, however, that conflicts, if they took place, should be organized so as to inflict a minimum of suffering. It was to further define and develop that doctrine that the Conference was taking place.

Delegates had heard much concerning the CCD, about not antagonizing major arms producers and suppliers and regarding restricting the use, rather than a total ban on the use, of certain, as yet undefined arms. He expressed surprise that that question had been raised at this late stage. He observed that

general disarmament for economic or strategic reasons, in order to achieve or maintain the balance of power on a global scale, differed from banning or restricting the use of certain weapons for mainly humanitarian considerations. For example, dum-dum bullets had been banned for the latter reason, whilst the nuclear non-proliferation treaty was an illustration of the former. He considered that the present Conference and the CDDH were the right venues for the matters they were called upon to discuss.

It was obvious that nothing could be achieved without taking the major arms producers into consideration. He ventured to state that these should be taken not only as the starting point but also as the finishing point of their deliberations since they were more or less responsible for the arms being used in all countries, in war time as well as in peace time. Hence, they had been largely responsible for ensuring that there had been adherence to the Hague Regulations since the turn of the century. He considered that it was natural, therefore, that there could be no further progressive development of the Hague Regulations without the full cooperation of the major arms producers. It was his belief that no major arms producer would constitute a stumbling block in the way of further elaboration of and possible accretion to those regulations. He stressed the need for realism from both sides, pointing out that humanitarianism must be tempered by those national security considerations which prevailed in every country's national policy; but that those considerations should, in turn, sometimes allow some leeway for humanitarianism. The present Conference provided an opportunity to demonstrate the desire to do so.

Concerning the question of a total or restricted ban of the use of certain, as yet, undefined conventional weapons, he said that it was difficult to resist the arguments raised so far as to the restrictive use of weapons. That was because they had come mainly from delegations whose countries were responsible for the manufacture and distribution of most of the arms in the world, and seemed to delimit points beyond which they were not prepared to go. He emphasized, however, that if delegates confined themselves to subjects capable of consensual agreements, such parameters would ultimately appear to be too restrictive. He was in entire agreement with the delegation which had proposed that the Conference should not attempt to proceed on a broad front but, rather, to proceed towards "breaching weak points in the enemy lines". He believed that such weak points existed and that, by the end of the Conference, some of them would have been breached. He considered that the Conference should endeavour to achieve the total ban of certain weapons, but, at the same time, should not rule out the possibility of restricted use of others. He emphasized the point made by another expert from the Third World that the developing countries expected positive results from the

Conference. Without necessarily expecting that a treaty would emerge at the end of the Conference, which was, in fact, beyond their mandate, they hoped that such positive foundations would be laid that eventually a treaty on the total ban on the use of certain conventional weapons would emerge.

5. A fifth expert said that his delegation could not conceive of the reaffirmation of humanitarian law without development of the principle that belligerents did not possess unlimited rights in respect of the methods they applied to disable the enemy, with the corollary that weapons and methods of warfare which caused excessive and unnecessary suffering should be banned. As a co-sponsor of working paper CDDH/IV/201, it favoured a total ban on the use of such weapons whose horrific effects had provoked the condemnation of the international community; a mere restriction on their use would be a distortion of the humanitarian objectives of the Conference.

Ideally, the universal acceptance of any rule approved by the Conference would be desirable; but universality was not indispensable, because there were many limited conflicts and if excessive sufferings could be avoided in some cases, it was unnecessary to wait until they could be eliminated everywhere.

Sufficient technical information and legal bases were already available to justify an immediate start to the drafting of rules concerning the banning of incendiary weapons, in the form of a draft protocol for consideration at the third session of the Diplomatic Conference. With regard, however, to the other conventional weapons referred to in the proposal in document CDDH/IV/201, the same degree of progress had not been made and the experts should endeavour to reach clear and acceptable definitions and the establishment of machinery for continuing their studies of the restriction or prohibition of those weapons. In the working groups, his delegation would continue to display a flexible approach and a spirit of compromise with a view to reaching generally acceptable conclusions.

6. A non-governmental technical expert, speaking at the invitation of the Chair, said that he wished to give a summary of the results of a symposium of eminent international lawyers that had taken place following the Lucerne Conference.

In the symposium, each of the basic general principles of the laws of war, such as the principle regarding unnecessary suffering, the principle of distinction between civilians and combatants, the principle of proportionality, and the principle of military necessity, had been discussed and held to have continued validity. That was not a foregone conclusion in view of the practice and military doctrines of a number of States, particularly with regard to strategic bombing, coercive warfare and the theory of deterrence.

Attention had also been drawn to the emergence of certain new principles. The first of those was referred to as the principle of survival, either of mankind as a whole, or of particular cultural groups or nationalities. Certain means and methods of warfare, including—but not restricted to—so-called weapons of mass destruction, came very close to threatening the existence, in whole or in part, of human groups.

Such means were, of course, prohibited by the Genocide Convention, but there were some notable absences from the list of parties to that Convention. It was felt, however, that that principle should be borne in mind when considering specific means and methods of warfare, including certain uses of conventional weapons.

The second emerging principle had been the need to protect the natural and human environment. That principle had since been incorporated into Article 33 of the Draft Additional Protocol I. It therefore seemed to be entirely appropriate to take account of that aspect when considering particular weapons, such as incendiaries, blast and fragmentation weapons and delayed-action weapons, all of which could have severe deleterious effects on the environment.

Thirdly, it had been held that there was an emerging principle of the threshold. That principle held that certain weapons, which in themselves might be relatively acceptable, might be prohibited if they opened the way to the use of other prohibited weapons. The most obvious example was the prohibition of tear gases, which were prohibited in order to ensure that no chemical agents be used in warfare. That principle might have important applications in other areas. For example, a number of countries were experimenting with the use of depleted uranium in projectiles. That represented a most unfortunate threshold which it would be better not to cross—a position which might perhaps be endorsed by the experts at the Conference.

He said that the report containing the discussion of these points would be published by the time of the third session of the Diplomatic Conference.

He endorsed the viewpoint already stated by a number of experts, that it would greatly assist in the task of identifying specific weapons if the basic criteria could, at least for the purpose of the present Conference, be defined more precisely.

In particular, it would seem, as pointed out by the ICRC in its 1957 proposals, that the question of indiscriminate effects was closely related to the extent to which the effects spread or persisted. He considered that delegates should ask, for each weapon, whether the effects were likely to spread or persist.

Secondly, with regard to the criterion of superfluous injury, they should enquire not only into the immediate severity of the wounds, caused by a

particular weapon, but also into:

- (a) for those who died, whether death was more or less long-drawn-out;
- (b) for those who survived, whether there were long-term disabilities; or
- (c) whether there were delayed effects.

He pointed out that since the last session of the Diplomatic Conference, the United States Senate had chosen to publish some of the Rules of Engagement applicable to US forces in Viet-Nam. Those rules were of considerable relevance to the Conference, since they showed that it was possible to formulate restrictions on the use of specific weapons, such as napalm bombs or even artillery, with a considerable degree of precision.

Provisional Timetable

7. The Secretary-General of the Conference said that the Bureau had proposed a provisional timetable. He pointed out that the timetable was a flexible one and could be modified if circumstances required. In reply to an expert who had asked for clarification on the question of introducing proposals in working groups, the Secretary-General said that proposals could be introduced verbally or in writing in the General Working Party and in the working groups.

The Timetable (COLU/INF/205) was adopted.

Rules of Procedure

At the request of an expert, a modification was made to Article 8, para. 2 of the Rules of Procedure; the words "or to the CDDH" were deleted and replaced by "especially to the participants in the CDDH".

Bureau of the General Working Group

The Secretary-General said that the Bureau had proposed that, in addition to a chairman and rapporteur, two vice-chairmen should also be appointed to the General Working Party.

Fifth Meeting

General Debate on Incendiary Weapons

1. An expert referred to the draft international instrument, of which a modified text—reproduced in document RO 610/4b—was proposed by

twenty countries for the prohibition of certain munitions including flame-throwers, incendiary shells, rockets, grenades, mines and bombs.

He said that he was by no means convinced that those weapons invariably caused unnecessary suffering relative to their military value, and he considered that these two elements should be balanced before drawing any conclusions. Incendiary weapons were, in fact, particularly useful under certain circumstances and the employment of other less effective weapons would be more costly. Moreover, anti-aircraft and anti-tank weapons were purely defensive and should therefore be excluded from any general prohibition. On the other hand, airborne weapons, particularly napalm could be employed with great precision, thanks to technical progress, which enabled them to be directed solely onto military objectives.

The speaker emphasized the fact that if small countries were forbidden to employ these weapons, they would be unable to defend themselves, particularly against large countries, which possessed an arsenal of modern arms.

It was therefore difficult completely to ban incendiary weapons. The important question was how they were used. Finally, a ban on such weapons would present difficulties for some countries which held considerable stocks of them. It would therefore be advisable for limitations to be introduced gradually, if at all. If the use of incendiary weapons against military targets were lawful it should be subject to some restrictions to avoid excessive suffering to civilians and combatants.

2. One expert said that, as co-sponsor of the text of the amended proposal to which the previous speaker had referred, he welcomed the fact that a new delegation—that of Romania—now supported the provisions contained in it.

His delegation was firmly convinced that an instrument of that type could be effective only if it had broad international support, including that of the major military Powers.

The proposed text was based on the principle of a ban with exceptions rather than that of restriction in particular cases. The co-sponsors were nevertheless aware of the fact that, in the last analysis, the problem raised must be solved on the basis of the merits of the various arguments put forward during the discussions.

3. One expert drew attention to the numerous studies of incendiary weapons which had been carried out—from the standpoint both of their physical and of their other effects—and in particular those carried out by organizations like the United Nations and SIPRI. To facilitate the discussion, he proposed that incendiary weapons should be divided into two groups, according to their charge. It was, in fact, the size of the charge which determined the

number of victims and the extent of the material damage they caused. The two groups would be: heavy charge incendiary weapons (cluster bombs, scatter bombs, napalm, etc.) and small charge incendiary weapons (flamethrowers, rockets, grenades and anti-aircraft projectiles with secondary incendiary effects). Since the latter were of the same calibre as conventional explosive or fragmentation weapons, they only differed from conventional weapons in that they contained incendiary substances.

The purpose of the Conference was to examine, from a humanitarian standpoint, all the available information and to determine whether the charge should be limited or whether the weapons with a very heavy charge should be banned.

4. A medical expert made a number of remarks on the question of burns in general and those caused by incendiary weapons in particular. Such wounds, which he had often had occasion to treat in the course of his professional work, required the services of large numbers of staff and intensive and often prolonged treatment lasting for months, or even years. In the case of an armed conflict, the end of hostilities did not mean an end to the treatments and to the work of the medical personnel, nor to the sufferings of the patients.

He left it to the participants to conclude whether the sufferings caused by incendiary weapons were necessary or unacceptable and to decide whether they were or were not superfluous.

5. One expert said that incendiary weapons could be divided into anti-matériel and anti-personnel weapons. They could be used in offensive or defensive operations, and especially in conjunction with other weapons. Their targets were varied: equipment, resources, vegetation, etc., and they were also used to illuminate and to prevent the enemy from advancing. They were also close combat weapons which could have a demoralizing effect on the enemy. It could not be denied that they caused unnecessary suffering, but what needed to be studied was the interaction between their military value and the humanitarian aspects of the problems raised by their use.

6. Another expert described the losses caused by the use of incendiary weapons during the hostilities in the Middle East in 1973. The statistics which had been established, with some difficulty, had made it possible to draw up a table of the effects of those weapons, showing that 74% of the burns that they caused were deep; that was a higher percentage than had been recorded hitherto. He stressed the sufferings caused by such wounds and stated that, while it was true that the developing countries could easily manufacture such weapons, those which gained most from them were those having

the greatest air power. They were essentially indiscriminate in character. His government's view had been expressed in documents CDDH/IV/201 and RO 610/4b, which stipulated that the use of such weapons should be banned, except for those designed for use against armoured vehicles and aircraft and for smoke and signalling systems.

7. One expert pointed out that some of his colleagues had drawn attention to the advantages for some countries (especially the developing countries) of incendiary weapons, in view of their low production cost, while others had suggested that substitutes could be found for such weapons. In the latter case it had been found that, as a rule, fire power would have to be increased and losses would therefore be higher. Quoting actual examples, he compared the effects of incendiary weapons and of fragmentation munitions, the best criterion for comparison being, in his opinion, the energy with which the area engaged was hit. Another criterion was the kind of protection available for military personnel or civilians: the weaker the protection, the greater the number of casualties. With fragmentation munitions, whether dropped by aircraft or delivered by artillery, the effect was worse, the number of casualties being considerably greater. Consequently, the banning of incendiary weapons on humanitarian grounds would probably lead to the inhuman result of multiplying the number of dead.

It was difficult to compare the effects of the two types of weapon in civilian built-up areas, because the various types of building construction varying with climate made generalization impossible. The banning of incendiary weapons in temperate zones where stone buildings offered protection against fragmentation munitions would be a good thing, but that would not be the case in tropical climates where fragmentation munitions would considerably increase the number of casualties among the poorly protected civilians.

8. One speaker explained the criteria adopted by his delegation with respect to incendiary weapons. Information on the subject had been supplemented during the past months by SIPRI, the United Nations Secretary-General and others. He was of the opinion that it would now be perfectly possible to compile a set of practical instructions to help solve the problem of incendiary weapons. While there could be no doubt as to the military efficacy of such weapons they did most certainly cause considerable damage. Any progress, however slight, that the Conference might make in this respect would be beneficial. Even a simple limitation would be felicitous. Incendiary weapons—whether napalm or flamethrowers—did use considerable energy and could be used against personnel or material, and those which should be banned were those used against personnel. The economic reasons advanced by some were worthless when human lives were at stake. Humanitarian

considerations had to come first. While incendiary weapons caused great suffering, account had to be taken of military requirements so that the working group should aim at banning only certain types of arms.

9. Another expert, while not denying the value of certain incendiary weapons, pointed out that although the nuclear powers would be in favour of banning incendiary weapons the smaller countries would not so readily do so. The indiscriminate nature of some devices was not the only aspect to be taken into consideration in humanitarian law.

10. An expert tried to view the matter through the eyes of his colleagues and felt that the documents distributed gave the impression that a wide variety of opinions existed as to what was to be done. For instance, use of napalm in close combat appeared to be discriminate and to produce less casualties. Legal or medical viewpoints did not suffice, those of a psychological nature had to be taken into account also. Man feared fire and that should not be forgotten. Was the Conference aiming at total prohibition, a partial ban or just limitations? It would be necessary to examine the effect that could be produced by the massive use of incendiary weapons against densely populated areas. It was necessary to approach the whole matter—with its political implications—in a practical way.

11. One expert, seconding an earlier speaker, said that a ban should be placed on the use of incendiary weapons against areas of dense population, and that he was prepared to back any provisions likely to result in precautions in the use of incendiary munitions in order to avoid unnecessary suffering among the civilian population. The measures to be adopted should consider what sort of weapons could best be used instead.

12. An expert then said that the matter had been studied by the United Nations and reported in the press because of the suffering caused by such weapons. The Lugano Conference should try to produce some definite conclusions. There were two possible lines of action—either total prohibition or a ban with specified exceptions. From a humanitarian viewpoint, the former solution seemed the better but account nonetheless had to be taken of whether or not other types of weapons could be used instead. It seemed impossible to forbid the use of fire. A battlefield in itself implied the risk of burns with all the serious attendant consequences. As total prohibition would be hard to enforce, the use of incendiary weapons against material could be permitted. He was seconded in this point of view by a number of his colleagues.

13. One expert said that had the draft treaty which was presented by the United Kingdom in the 1930s against incendiary weapons been accepted the problem would not have been before the Conference. History could not be rewritten, but one could influence the future. It was not easy to add any new facts or arguments to those in the Lucerne report and in the report of the Secretary-General of the United Nations. At Lucerne a vast number of statements had been made and a study of them revealed only a few points of agreement. Only on the question of definition of incendiary weapons was a—successful—effort made to reach a joint conclusion. At the present Conference the experts were asked whether they considered bans or restrictions desirable and possible, and if so, what bans or restrictions. Some twenty governments had made their conclusions known. What were the conclusions of other governments? Could a discussion bring the various conclusions closer? While others were sceptical of the approach taken by the twenty States, he was sceptical of some other approaches, such as the distinction between anti-personnel and anti-matériel weapons, between battlefield and hinterland use and the limitation of rules to protect only big cities or only civilians. He thought the complete prohibition of incendiary weapons raised far fewer problems of definitions and was much more viable in practice. No incendiary weapons were indispensable and the medical aspects spoke equally strongly for protection of soldiers as for civilians. If it were difficult for some States to accept a prohibition immediately, it could be made to enter into force after some years, thus enabling States to phase out the weapon. He concluded by describing the twenty States' proposal in RO 610/4b.

14. A non-governmental technical expert hoped that certain misunderstandings would be cleared away. In war, napalm bombs were used in conjunction with fragmentation bombs. He gave several examples of cases in which the population had been attacked in that manner. He was sceptical about the use of napalm solely for close support. The proportion of napalm casualties who died of wounds (DOW) amongst the 51 victims referred to at the Lucerne Conference was about three times higher than the proportion of DOW from other weapons amongst soldiers of the same army. It was not justified to conclude from those data, as some experts had done, that napalm had a low casualty rate.

Sixth Meeting

General Debate on Delayed-action and Treacherous Weapons

1. Introducing document COLU/203, one of the co-sponsors recalled that mines and booby-traps had been discussed at Lucerne and much useful,

important and new information had been submitted. It was clear that some restrictions on the use of such devices could be acceptable to most experts.

Paragraph 259 of the report on the Lucerne Conference stated that "it was widely felt that in further deliberations on the subject stress should be laid on use against the civilian population". As a result, the experts of two countries, with the advice of those from certain other countries, had drafted proposals which had been submitted as a working paper. The speaker hoped that a correct balance had been struck and that restrictions, unrealistic to a soldier in battle—and hence impractical in application—had been avoided. The aim was to increase protection of civilians against some of the hazards of war.

The actual proposals referred to the use of mines and booby-traps in armed conflict on land only and did not apply to sea warfare. The word "landmine" had been avoided as it implicitly raised the question as to whether it referred to mines designed for use on land or mines in fact used on land, it being perfectly practicable for certain purposes to use seamines on land or landmines under water. To avoid ambiguity, mines used under water had been excluded from the proposals. For the purposes of the present proposals, the word "mine" did not include those detonated by remote control. Such mines were not a danger for civilians as they were controlled by a person who would detonate them only on observing a proper military target.

The first proposal was that all minefields of more than 20 mines be recorded as was already done by most armies. A legal requirement to that effect was, however, desirable. It would be difficult to extend such a rule to isolated mines laid hastily during combat as a defensive technique to harrass the enemy. It might be too much to expect the individual soldiers who laid such mines to record them but, since they were laid solely in the direct path of the enemy, they would be unlikely to remain *in situ* and undetected for long periods. The main point of the proposal was that it required the location of all recorded minefields situated in territory controlled by an adversary to be made public on cessation of hostilities.

The second proposal related to "remotely delivered mines" which were called "scatterable mines" at the Lucerne Conference. The essential feature of such mines was that they were delivered at long range by aircraft, gun, rocket or mortar. Mines so delivered were more likely to endanger civilians than were those emplaced by hand. A distinction nonetheless needed to be made between such long range delivery and delivery by devices operating at short range, as used, for example, in quickly laying a defensive minefield. The latter type of field was always used where combat was—or would shortly be—taking place and was akin to manually placed fields. "Remotely delivered mines" had accordingly been defined as those laid by aircraft

and those laid by other means at a range exceeding 2,000 metres.

The proposal required that such remotely delivered mines be permitted only when the mines were fitted with a neutralizing mechanism or when the area into which they were delivered was distinctively marked.

Having covered remotely delivered mines, the proposal next referred to all other mines, being those emplaced by hand or by the short range devices already mentioned. The proposed restrictions referred equally to booby-traps, as there was no clear line between mines and booby-traps.

Such devices were of the greatest danger to civilians when used in populated areas where no combat was taking place and where many civilians were going about their daily business. The explosion of such a device could cause death or injury to unsuspecting people. In such circumstances, manually emplaced mines and booby-traps should be permitted only if due precautions were taken to protect civilians from their effects. The only exception to that rule would be when the device was placed on or near a military objective where the risk to civilians would have to be accepted in the same way as when the objective was attacked from the air or by long range artillery.

The proposals referred to a third type of manually emplaced explosive device dangerous to civilians—the remotely or automatically detonated delayed-action device. Experience had shown that as such bombs were a terrible risk to innocent civilians they, too, should be prohibited—or precautions should be taken to safeguard civilians from their effects.

Finally, the proposals called for the total prohibition of certain booby-traps and similar devices, referred to at the Lucerne Conference as being perfidious by their very nature. They included devices attached to or associated with internationally protected emblems, signs or signals, sick, wounded or dead persons, medical facilities, equipment, supplies and transport, and children's toys. Also included were those non-explosive booby-traps specifically designed to cause cruel or lingering death such as devices which stabbed, impaled, crushed, strangled, infected or poisoned the victim, and which had no military efficacy in modern warfare, their only purpose being to intimidate through the use of terror. Such devices were in most cases already unlawful under the Hague Regulations (para. 23(e)) but a further specific prohibition seemed desirable in the interests of humanitarian law.

The above-mentioned proposals, which were both realistic and humanitarian, had been introduced as they covered an area in which agreement seemed possible.

2. The other co-sponsor of document COLU/203 said that the 1973 Report on the work of Experts on Weapons that May Cause Unnecessary Suffering or have Indiscriminate Effects and the report on the Lucerne Conference

gave little space to the subject of mines. That suggested a lack of interest quite out of proportion to the number and severity of military and civilian casualties caused by mines even after cessation of hostilities.

Regulation of mines and booby-traps would be relatively simple and worthwhile and his delegation had for that reason co-operated with another in wording the proposal COLU/203.

3. An expert, welcoming document COLU/203, reminded the meeting of document CDDH/IV/201 proposing, *inter alia*, the total ban of some methods of mine remote delivery. He questioned whether the “neutralizing mechanism” and “marking” proposed in document COLU/203—in other respects an improvement on document CDDH/IV/201—were adequate. He also wondered why the proposed definition of “remotely delivered mine” stipulated 2,000 metres as the minimum range.

He suggested that the words “use of remotely delivered mines” in paragraph C of the proposal contained in document COLU/203 should be changed to read “remote delivery of mines”.

He urged also that the proposal should give greater protection to the civilian population by deleting the word “either” from the fourth line of paragraph D 2 and replacing “or”, at the end of sub-paragraph (a), by “and”. In addition, the use of one or more specific weapons for the defence of military objectives might be banned because of the indiscriminate effects of their use.

He also urged supplementing the list of forbidden booby-traps and devices by the addition, for example, of objects of worship and foodstuffs.

4. One expert said that his delegation gave general support to the joint working paper, which contained useful and realistic proposals of the type that were likely to lead to practical recommendations. A proposal made by his delegation at the Lucerne Conference was very effectively covered by the proposal to prohibit the use of certain booby-traps and other devices in paragraph E (b) of document COLU/203.

5. One expert said that his delegation was in agreement with the prohibitions and restrictions proposed in document COLU/203. It felt, however, that the attempt to make a list of prohibited uses of booby-traps, in paragraph E (b), was misguided. The list was not complete and could never be complete. His delegation proposed that the list should be replaced by a general formula to the effect that “The camouflage of explosive devices in objects in general use among civilians shall be prohibited” (see document COLU/206). It would welcome a discussion of that proposal.

6. One expert said that the proposals in the joint working paper provided a useful basis for discussions. He felt, however, that while the definition of

“military objective” given in paragraph A of the proposals might have been suitable to the conditions of the First World War, it did not apply to the conditions prevailing after the Second World War; the Conference should try to work out a more meaningful definition of “military objective” giving clear guidance to soldiers in the field. He was doubtful whether underwater mines should be excluded from the provisions of the proposal, and agreed that the limit of 2,000 m in the definition of remotely delivered mines would need further discussion. With regard to the proposal that remotely delivered mines should be fitted with neutralizing mechanisms, he wondered whether the developing countries could afford to supply them. Lastly, he thought that the list in paragraph E (b) should be extended, since it was a matter directly related to humanitarian considerations.

7. One expert, welcoming the joint proposals, said that he thought they went to the limit of what many delegations would regard as desirable and possible. One merit of the proposals was that they covered mines, booby-traps and other devices in a single paper, which would avoid difficulties of interpretation and queries concerning the demarcation lines between them. Another merit was the emphasis laid on the protection of the civilian population and on the criterion of indiscriminate use of such weapons. He wondered whether “underwater mine” covered mines used in internal waters, such as lakes and rivers; and he also queried the desirability of the 2,000 m limit for remotely delivered mines. The phrase “So far as is feasible” at the beginning of paragraph B was rather vague, but since it referred to battlefield conditions, it was difficult to be more precise.

8. One expert congratulated the sponsors of the proposals in document COLU/203, which deserved to be studied in greater detail.

They should be systematically discussed in conjunction with other possible solutions, such as those in document CDDH/IV/201, of which his delegation was a co-sponsor, which contained, for instance, a proposal concerning anti-personnel mines. The definition of “military objective” proposed in paragraph A was, he thought, not as precise as that in Article 47 of Additional Protocol I. He agreed with the previous speaker that the phrase “So far as is feasible” in paragraph B was too vague. He welcomed the proposal that minefields should be recorded but thought it desirable for the other party and, in particular, civilians to be informed of them before the “end of hostilities”. They should be informed as soon as the troops which laid the mines had definitively left the area. With regard to paragraph C, he preferred the proposal in document CDDH/IV/201. He thought the addition of the words “(other than remotely delivered mines)” in paragraph D 1(a) was unnecessary, since the paragraph dealt with the *place* where mines, etc., were

not to be used. With regard to E, there seemed to be a certain lack of balance between sub-paragraphs (a) and (b); moreover, the list in (b) was incomplete and somewhat arbitrary. A formula should be found which covered booby-traps in general.

9. One expert said that he had read the joint proposals with interest and his delegation would willingly participate in any discussion of the problems they raised. In view of what had been said at the Lucerne Conference (see paragraphs 220, 229 and 230) concerning minefields, he took the view that the defensive use of minefields for the purpose of paralyzing enemy movements were acceptable and should not be prohibited. On the other hand, mines scattered from aircraft over a large area presented a danger for civilians. The best solution would be to admit delayed-action weapons only as defensive weapons and to prohibit their use for offensive purposes.

With regard to the Canadian suggestion in document CDDH/IV/203 for an obligatory system of marking minefields, any such system could, for technical reasons, only be somewhat haphazard, since the perimeters of minefields were not accurately determined. In the case of air-delivered mines, accuracy depended on the efficiency of navigation instruments, the competence of air personnel, combat conditions and meteorological factors. A certain number of mines would unquestionably be scattered outside the area aimed at and would constitute a risk for civilians.

Even normally emplaced landmines might remain dangerous long after they had served their military purpose. They were usually very difficult to detect because one of the purposes aimed at was that they should not be detected and de-activated too easily. His delegation agreed with the sponsors of the joint proposals that means should be found for the accurate recording of the location of minefields so that they could be rendered harmless by the local authorities after the end of hostilities. It would be better if mines could be fitted with self-destruct devices; but that, unfortunately, would add to the weight and cost of the weapons.

In the case of booby-traps, the civilian population was most exposed to risk when they were placed in populated areas, i.e. outside combat zones. He therefore agreed with the proposal in document COLU/203 that such weapons should be banned outside combat areas, except in the immediate vicinity of military objectives, unless precautions had been taken to protect civilians. Furthermore, certain specific booby-traps which were manifestly treacherous should be prohibited, particularly when used in association with protective emblems or children's toys.

The weapons covered by agenda item 4 provided a suitable subject for the Conference's discussions because they had benefited from the latest develop-

ments of science and technology and because—as stated in paragraph 259 of the Lucerne Report—the Conference’s deliberations should lay stress on use against the civilian population.

10. One expert congratulated the co-sponsors of the joint proposals and, in particular, supported the proposal that minefields should be recorded and that the records should be kept (paragraph B of document COLU/203). Mines delivered from aircraft or other remote delivery systems (paragraph C) were likely to be scattered over a wide area, so that the extent of the field was difficult to check or record. For that reason, his delegation preferred proposal V in document CDDH/IV/201 (page 3), which could be amended to read “Anti-personnel landmines must not be remotely delivered”, instead of “. . . by aircraft”.

While agreeing in general with the proposals concerning booby-traps in paragraphs D and E of document COLU/203, he agreed with the proposal that the word “or” in D(2a) should be replaced by “and”, and with the proposal to replace E(b) with the formula in document COLU/206.

11. One expert said that, while the proposals in the joint paper were generally acceptable to his delegation, he thought that certain improvements might be made to them.

In paragraph A, he wondered whether it was necessary to exclude underwater mines or whether only under-sea mines should be excluded and not those in inland waters. It had not been explained why the limit of 2,000 m for remotely delivered mines had been set; he was not sure whether there were any land-based weapons which could lay mines for more than that distance. He did not see why sub-paragraph D 2(b) had been included but, if it was maintained, the proposal that the word “or” should be replaced by “and” would be an improvement. With regard to paragraph E(b), he thought that the list should be expanded and that the general formula in document COLU/206 should be added at the end. Many recent conflicts had been highly asymmetrical: one side had possessed aircraft, while the other had not. He accordingly preferred the proposal in document CDDH/IV/201 that landmines laid from aircraft should be totally banned.

12. The author of document CDDH/IV/202, referring to the section dealing with the recording of minefields in the working paper under discussion said that he would be remiss if he did not draw attention to the reference to the proposal for the marking of minefields embodied in CDDH/IV/202, which foreshadowed the requirement for the marking of minefields. He laid stress on the fact that the proposals in CDDH/IV/201 failed to deal adequately with the delivery of mines by aircraft and the concern felt as to the dangers

to the civilian population in inadequately marked minefields. He pointed out that mines had become more sophisticated and that there had been considerable technical advances in mine laying. He welcomed the initiative taken by the sponsors of the working paper and welcomed the comments made by other experts who had made realistic proposals. He had been glad to note that the previous discussions had dealt with specific details which proved the value of the working paper. He drew attention to paragraphs 238 and 248 of the Report of the Lucerne Conference on the desirability of marking mines and minefields and the opinion expressed by some experts on the need for mandatory rules for minefield marking. He said that the working paper had tried to satisfy those opinions and that it opened up a new area by dealing with the question of booby-traps. He also wished to record his satisfaction with the definition of "remotely delivered" mines. Concerning the comments expressed by a previous speaker, he pointed out that it would be unrealistic to try to seek prohibition of mines and minefields and that it would be more practical to try to ensure the protection of the innocent civilian population.

Concerning the camouflaging of booby-traps, mentioned in COLU/206, he pointed out that this created for commanders in the field the difficult problem of determining whether they could or could not resort to the camouflaging of, and to use as booby-traps objects in general use by civilians, particularly in urban and populated areas. The proposal in COLU/206 was restricted to explosives, whereas the working paper had a wider scope. A good start would be made if an enumerated list could be drawn up of easily identified objects which were not to be booby-trapped. Such a list should be kept within practical and realistic limits.

13. The opinion that the Working Paper gave a balanced account of and a positive approach to the problems involved and provided concrete proposals that could well serve as a basis for constructive discussions was expressed by another expert. He said, however, that he would like further clarification of Section A, Definitions, since it left open several important questions such as the status of underwater mines, a minimum range of delivery of remotely delivered mines, and some others which had already been mentioned by several experts. The paper contained a sound proposal on the recording of minefields (Section B) and, in his view, should be retained with perhaps some additional improvements. As to the use of remotely delivered mines, his delegation still preferred, as more comprehensive and reliable, the proposal contained in Working Paper CDDH/IV/201, of which his delegation was a co-sponsor, but was also ready to give serious consideration to the provisions of Section C. He felt, however, that two points called for clarification. The first concerned the choice to be made between a neutralizing mechanism and

marking; both had advantages and disadvantages, but his delegation would prefer the former, as providing better protection against the indiscriminate use of mined areas. But, here again, further examination of the question was needed. The second point concerned the period of time allowed to elapse before a neutralizing mechanism should be set to complete its task. Possibly the safest solution would be to have a predetermined time period to be observed in all situations, although a more acceptable one might be to define the period in terms of estimated military need, i.e. of the expected duration of military operations in the area. There were other possibilities and the whole problem merited careful examination.

His delegation considered that the question raised in Section D, Use of Mines, Booby-Traps and Other Devices in Populated Areas, had already been covered to a large extent by other provisions of international law. He asked for clarification regarding paragraph 2 and asked whether the stipulation that prohibition would apply in areas "in which combat between ground forces is not taking place or is not yet imminent" meant that the rules were not applicable in areas where combat was taking place. If so, he thought the lives of civilians would be seriously jeopardized.

His delegation considered that Section E, dealing with booby-traps, could well be expanded, particularly the sub-paragraph on children's toys, which should be supplemented by including all objects commonly used by civilians, such as fountain pens, telephones, etc. But this should in no way imply the prohibition of the use of ordinary mine devices.

14. One expert said that since mines were a very effective means of defence, he felt that they should not be discussed in the context of their prohibition. He thought that the Working Paper constituted a good attempt to try to reach a consensus. He supported its approach to the problems and welcomed the fact that it covered both humanitarian and defence aspects.

15. Another expert said that his delegation associated itself with the excellent Working Paper and that it combined two qualities that were rarely seen together: progress towards humanitarianism and a realistic attitude to the needs of defence. He stated that his delegation wished to be included as co-sponsor of document COLU/203.

16. An expert thought that any rules concerning mines should aim at avoiding indiscriminate effects, as was in fact recognized in the Working Paper before them. His delegation's first reaction was that the paper proposed useful definitions that could serve as background material, but he reserved the right to return to these definitions.

In principle, his delegation supported the proposal regarding the "recording of minefields", but thought that the phrase "so far as is feasible" left the choice to the commander in the field as to what was "feasible". That greatly reduced the value of the proposed rule which, by its very vagueness, might render it nugatory. The limitation of recording of minefields exceeding 20 mines might also lead to the possibility of circumvention.

He considered that the scattering of mines by aircraft constituted a severe threat to civilian populations in the area concerned, whether these mines were equipped with neutralizing mechanisms or not. He wondered whether it was possible to produce a 100% or even 80% reliable neutralizing mechanism. He was also doubtful whether the limits of a minefield could be so marked as to ensure that civilians would avoid them. He considered that the proposal embodied in CDDH/IV/201, of which his delegation was a co-sponsor, was not only simpler but more reliable.

He approved of the general approach of the Working Paper and considered as constructive the proposals made in Section D, Use of Mines, Booby-Traps and Other Devices in Populated Areas, but considered that the last part of the proposal concerning the prohibition of use of certain booby-traps and other devices were not sufficiently elaborated. He was unclear as to the reason for the discrimination in the proposals in Section E between non-explosive and explosive booby-traps. He said that he would prefer a note in a preamble stating that some uses were already unlawful, rather than having a long list of proscribed items as in Section E (b) (i-v), particularly as it was possible that some States might not adhere to the list.

He considered that the proposal regarding children's toys was a useful one. He thought that the question of the maximum charge of anti-personnel mines was an important one as was the possibility of introducing a rule prescribing that material used in landmines should be detectable by X-rays.

17. After expressing his appreciation of the Working Paper, one expert said that the requirement to record the location of small minefields should not be limited to minefields containing as many as 20 mines, since even smaller minefields were a danger to civilians.

He proposed for Section D, paragraph 2, a new sub-paragraph (c), to read "they are marked in a distinctive manner". He suggested that the last word of sub-paragraph (a) "or", be deleted and the word "and" be added at the end of sub-paragraph (b).

18. Another expert said that he had been struck by the limited interest that had been shown in mines and booby-traps at the Lucerne Conference; these weapons caused more civilian casualties than any other conventional weapons. He attached great importance to the question of the removal of

minefields after hostilities, based on practical experience in Denmark after World War II. He considered that particular importance should be attached to the use of mines in areas where there was civilian movement. The Working Paper was a constructive document and constituted a practical contribution to the work of the Conference.

19. One expert said that the proposals in document COLU/203 were very useful and could help the Conference in its effort to arrive at common conclusions and recommendations. The Lucerne Conference had stressed the importance of mines and booby-traps which, as many experts had pointed out, were more dangerous to the civilian population than most other types of weapon, especially if used in densely populated areas.

In his country, the presence of unrecorded minefields still caused casualties among the civilian population thirty years after the end of the Second World War. Nevertheless, any proposal to record minefields must be one which it was really possible to implement during hostilities. The phrase "So far as this is feasible" gave rise to problems, but, in combat conditions, there were real difficulties in the recording of minefields, even those consisting of more than twenty mines. Efforts should be made to find a wording of paragraph B which was strong enough to create a real obligation to record minefields, but at the same time was capable of practical implementation. The phrase "cessation of active hostilities" in that paragraph was also unclear: did it mean a cease-fire agreement or the local cessation of hostilities in the area in question?

Since the laying of minefields was designed to protect military units or even civilian objectives against an advancing enemy, it was unrealistic to propose that they should be marked by flags or flares. The proposal that they should be equipped with self-destruct or neutralizing mechanisms was more useful and should be taken into account.

A distinction should be made between anti-personnel and anti-tank minefields, the technical characteristics of which were very different. Such a distinction had not been made in document COLU/203, but he was not convinced that it was unnecessary. But it was above all necessary to provide for the elimination of minefields after they had served their defensive military purpose, especially in the case of minefields laid from the air, which was the commonest method used in modern warfare. A way of avoiding the difficulties involved in the phrase "cessation of hostilities" would be to provide for them to be placed under the control of the civilian administration once they had served their defence purpose.

With regard to paragraph D, it should be recalled that the use of booby-traps against the civilian population was already prohibited, the problem

was to protect all personnel against the dangers they represented. The experts should therefore propose, as their common conclusion, that the use of booby-traps should be prohibited as such, adding that their prohibition was particularly important in populated areas.

His delegation welcomed paragraph E. It understood that the purpose of the list in E (b) was to give commanders clear instructions concerning the devices prohibited; but the list was not complete and might give the impression that other uses were allowed. His delegation would not object to a formula such as that proposed in document COLU/206 but would prefer a general prohibition of the use of all types of booby-traps. Lastly, his delegation was not convinced of the necessity to distinguish between explosive and non-explosive booby-traps.

Statement by the Secretary-General on the Financing of the Conference

20. The Secretary-General of the Conference drew attention to the two lists of contributions, received or announced, to the costs of the Conference. So far those contributions amounted only to some 500,000 Swiss francs, or about two-thirds of the estimated costs of the Conference. While thanking those delegations which had already made or promised contributions, he appealed to those which had not yet done so to make a contribution and to those which had already done so to see if they could make an additional effort.

Seventh Meeting

General Debate on Delayed-action and Treacherous Weapons (continued)

1. An expert briefly commented on and expressed his approval of working document COLU/203 submitted by two delegations and concerning land-mines and booby-traps and the regulation of their use.

He pointed out that several preliminary statements had been made at earlier meetings and, although the proposal submitted could doubtless be improved, it was clearly a well thought out paper. There was, however, little prospect of agreement being reached on the prohibition of remotely delivered mines.

2. Another expert welcomed the concrete proposal made in document COLU/203 which showed how necessary it was to protect civilians further. At the previous meeting, most experts had agreed on the constructive nature of the proposals and on the fact that it deserved careful consideration.

A technical debate within the General Working Party was obviously called for and his delegation would be making detailed proposals in due course.

3. A member of one of the delegations that had submitted COLU/203 said that his delegation was prepared to hold off-the-record discussions with any other delegation that might wish so to do. He thanked an expert from another delegation which wished to be considered a co-sponsor of COLU/203.

4. The CHAIRMAN, noting that the debate commenced during the previous meeting had drawn to a close, proposed that the meeting rise and reconvene as the General Working Party.

Eighth Meeting

General Debate on Small-Calibre Projectiles

1. One expert, on the basis of technical considerations, and after submitting a number of equations, reached a four-point conclusion concerning small-calibre projectiles, namely: (1) the limitation of the technical parameter for arms and munitions—in particular, calibre and bullet velocity—did not *ipso facto* limit an infantry weapon system's wounding capacity; (2) a qualitative description of the relations between those parameters had shown that, despite all possible limitations, the effects of a bullet on the body could be very varied; for humanitarian reasons, therefore, users and manufacturers should be asked to confine themselves to effective requirements; (3) it was not by increasing the kinetic energy of a projectile that weapons could be appreciably improved, but only by reducing the kinetic energy so as to produce an optimum bullet for a required combat range; that tendency could already be observed; (4) instead of proposing the prohibition or limitation of certain useful parameters, it would be better to observe the letter and the spirit of the Hague Declaration of 1899 with respect to future weapon systems.

2. Another expert said that small-calibre weapons raised a complex problem from the medical standpoint and that the purpose of the Conference was not to ban the use of such projectiles, but to ensure that wounds did not become more serious than at present.

At the Lucerne Conference, the expression "small-calibre projectiles" was defined as "those having a substantially smaller calibre than the 7.62 mm rounds which had been in common use since the turn of the century". He would prefer the expression to cover carbines and pistols of all the calibres in current use, i.e., weapons of 7.62 mm, 9 mm and even machine-guns

of 12.7 mm. At the present stage of the work, he would prefer to leave on one side the expression "high velocity projectiles", which seemed difficult to define, because most current 7.62 mm projectiles and all standardized projectiles (of 5.56 mm) used for military purposes had velocities much higher than 800 m/sec.

A new legal instrument on the banning of such projectiles should contain a less restricted part than the 1899 Hague Declaration and cover all projectiles which, on account of their shape, velocity, material, or any other feature, deformed or tumbled on or after impact, or produced shock waves or secondary projectiles. The co-sponsors of Working Paper CDDH/IV/201 had not based their proposals solely on the velocity of projectiles; they had followed the spirit rather than the letter of the 1899 Hague Declaration concerning prohibition of the use of bullets which expand or flatten easily in the human body. It would therefore be reasonable to propose a more general rule which would cover all small-calibre projectiles that may cause excessive wounds.

In conclusion, the expert quoted paragraph 154 of the report of the Conference of Government Experts on the Use of Certain Conventional Weapons, according to which those experts had agreed that further study and research were required to reach more definite conclusions.

3. One expert thought that the problem of small-calibre projectiles was, at least from a technical and medical viewpoint, probably the most complicated to be dealt with by the Conference. The purpose of the Conference, as had already been stated by various experts, was not to reach agreements on the prohibition or limitation of the use of certain weapons, but to reduce suffering in armed conflicts. He supported the viewpoint of the previous speaker regarding the definition of small-calibre projectiles that should apply to any projectile of a calibre smaller than 12.7 mm. He also thought that it was time to leave aside the concept "high velocity weapons" and suggested that the terminology "assault rifles" should be used for the whole family of small arms under consideration and that the term "light assault rifles" be used for those of 5.56 mm and others of similar properties.

According to working document CDDH/IV/201, "It is prohibited to use small-calibre projectiles which are so designed or have such velocity that they (a) break or deform on or following entry into a human body, or (b) tumble significantly within the human body, or (c) create shock waves which cause extensive tissue damage outside the trajectory, or (d) produce secondary projectiles within a human body".

The expert found that document to be an excellent working basis for discussion within the Conference as the factors mentioned were those he considered most important.

The speaker insisted on the military requirements which had induced military specialists to take an interest in small-calibre projectiles and he briefly commented on their "stopping power" and "incapacitation probability" when fired from a given distance and in a given tactical situation with a view to putting a combatant temporarily *hors de combat*. In order to immediately incapacitate a combatant a considerable amount of energy had to be imparted to the target, that being possible only with a heavy dum-dum or similar type bullet.

When speaking of the chances of rendering a combatant *hors de combat*, participants in the Lucerne Conference had referred to criteria based on the kinetic energy transmitted by the bullet as currently used in various countries. Those criteria varied from 40 to 240 joules, a wide variation which clearly showed just how insufficient such standards were. The importance of kinetic energy had not been questioned but was, in itself insufficient, needing to be considered together with the shape of the bullet, its trajectory and other factors. From a military point of view, it was necessary to possess weapons superior to those of the enemy. It was relatively easy to procure a new small arms system on the international market and that could only lead to an escalation of brutality.

In Lucerne it had been agreed that further research was required and several experts stressed that besides efforts on the national level, international co-operation, exchanges of views and information would be of particular importance.

The speaker pointed out, that, in response to that request, research programmes had been prepared with the co-operation of various bodies, and he made special mention of the Göteborg Symposium which had been held in 1975.

The medical expert of the same team informed the meeting that Supplement No. 459 of the *Acta Chirurgica Scandinavia* (1976 edition) would be distributed to all participants in the Conference in the near future. That document contained information of great value for subsequent discussions. It dealt, in particular, with experiments on anaesthetized pigs and its purpose was to define the ballistic and medical parameters which made it possible to establish accurately the wounds caused by the various weapons. A number of experiments had also been made in blocks of soap. The velocity of the projectile, although important for the kinetic energy and the rate of transfer of energy, was not found to be directly correlated to the size or appearance of the wound.

A high proportion (45%) of the bullets that caused large wounds showed signs of breaking or of some deformation. Since bullet deformation or break-up in most cases occurred in soft tissue and not as a result of the bullet

hitting bone it was assumed that it was caused by tumbling. It was further found that of the bullets tested only the 5.56 mm bullets broke up or were deformed while none of the tested 7.62 mm bullets did so. A good correlation was found between the energy transfer and the amount of damaged tissue in the wound.

Of the tested bullets the 5.56 mm rounds transferred a higher percentage of their total kinetic energy and thereby deposited energy in the wound as much as or more than the 7.62 mm bullets that were used. Further, the 5.56 mm bullets in the test caused three times as many large wounds than did the 7.62 mm ones. The greater wounding power of most of the 5.56 mm bullets that were tested was obviously caused by early tumbling within the tissues. However, within the group of 5.56 mm bullets, variations in wounding properties were evident, which suggested that such bullets could be designed not to cause large injuries without impairing their overall advantageous external ballistic properties. The experiments strongly suggested that the severity of the missile wound was mainly dependent upon the release of energy per unit length of the wound channel.

4. Another expert agreed that the question of “small-calibre projectiles” was complex and difficult. He had listened carefully to the various statements and would study in detail any proposal or information designed to improve existing technical and scientific knowledge.

His government was co-sponsor of Working Paper CDDH/IV/201 which contained a draft article on banning the use of small-calibre projectiles which caused extensive damage to tissues. When drafting a legal instrument, account should be taken of that draft article and of the results of the Göteborg Symposium. The draft concerning banning the use of such projectiles was to be found in section IV, paragraphs (a), (b), (c) and (d), which dealt with the essential features of projectile behaviour. Another aspect of bullet wounds to which attention should be given in the future was the energy liberated by the projectile in the body.

He shared the view of another expert who had stressed that the spirit and the letter of the 1899 Hague Declaration should be respected.

He was, however, aware that the time had not come to write provisions banning the use of small-calibre projectiles. Further detailed examination was necessary to identify all the relevant data. Such an examination should also aim at drawing up a guide for the use of weapons manufacturers, who, while taking military requirements fully into account, should endeavour to reduce the injuries caused by new weapons.

His delegation was willing to take part in the detailed study of those

problems, without any preconceived ideas, in order to arrive at a set of international regulations.

5. Another expert said that the only limitation proposed to the Conference was that contained in section IV of document CDDH/IV/201. The drawback of that proposal was that weapon manufacturers might think that they were being asked to square the circle or that objections were being made on humanitarian grounds to the use of any type of rifle whatever. The lack of enthusiasm of the majority of countries to produce proofs during the discussion showed that the Conference was not on the right road.

He had at the outset warned of the danger of advancing on too wide a front. Although it had not reached an impasse, the Conference was not within sight of a general agreement or certain restrictions. However, the initiative taken by one country had certainly contributed to an awareness of these international problems and had encouraged research into them. Agreement should at least be reached to recommend further research to governments.

6. Another expert said that there was general agreement on the overall principles of the mechanism of wounding by penetrating or perforating projectiles. Energy was given up to the tissue by the bullet and the gravity of the wound depended largely on the amount of energy given up, and on a number of other factors such as bullet shape, construction, density of material, balance, velocity, length, diameter, and the physical properties of the tissues penetrated.

The effect of a wound—whether discernible to the naked eye or only by electronic micrography—depended upon the vulnerability of the organs struck or of the vital system disrupted and different effects could result from similar bullets fired at similar distances.

The incapacitation caused by a wound had hardly been studied, but the expert had reported at Göteborg a study showing that highly motivated soldiers with mortal wounds could return enemy fire.

Combat ranges had diminished in the last hundred years, so that the tendency was for weapon manufacturers to reduce the quantity of energy available on impact at the end of that range, with the result that the wounds inflicted were less serious and easier to treat.

It had been claimed that 5.56 mm bullets caused wounds out of proportion with military requirements owing to their high muzzle velocity and their tendency to tumble. On the basis of the data presented at the Göteborg Symposium and in the Working Paper submitted by certain experts, he thought that that assertion did not correspond to the facts.

It was unlikely that a simple reduction of muzzle velocity and energy deposit, or the more complex proposals set out in section IV of document

CDDH/IV/201, would suffice to change the character of wounds. Much more research needed to be done on the relationships between the various parameters before an agreement could be reached on limitations capable of reducing mortality and disability.

He concluded by emphasizing the need for military surgeons to continue their medical research beyond the immediate treatment of wounds, with a view to reducing as far as possible the inhumanities of war.

7. One expert pointed out that the working document submitted by the experts representing his country contained a collection of data established by the ballistic experts of the Material Research and Test Command. The sole purpose of the document was to show the effects of firing 7.62 mm and 5.56 mm bullets into a block of soap.

The conclusions, however, concerned only that particular test as no experiments had been carried out on other targets. He nonetheless hoped that that might serve as a basis for comparative research in connection with more advanced experiments carried out by other countries.

8. Another expert recalled that the discussions at the Lucerne Conference had shown that further research and experimentation was necessary where small-calibre projectiles were concerned. Furthermore, paragraph 154 of the report on the Lucerne Conference made it quite clear that all experts had readily agreed that further study and research was necessary.

Experiments were being carried out in his country but he was not in a position to disclose the conclusions reached.

Nonetheless, the experts of his delegation subscribed to all the guiding principles set down in working document CDDH/IV/201. He felt that it would be useful for the Conference to concentrate on the inhumane effects of small-calibre projectiles rather than on their speed or calibre. He was of the opinion that agreement could be reached on the banning of projectiles which disintegrated or deformed in the human body on impact, which had a tumbling effect or which created shock waves capable of causing extensive tissue damage outside their trajectory, or which produced secondary projectiles. It was obviously important to know how inhumane effects were produced and research should be carried out on the subject. Parameters other than calibre and speed should be taken into account. The shape, mass and rotary speed of the bullet, for example, should be studied by experts.

In his opinion it should be possible to produce small-calibre weapons which caused injuries no worse than those caused by weapons of normal calibre. The task of the Conference was not, in fact, to ban the use of small-calibre weapons but rather to ban the use of small-calibre weapons causing unnecessary suffering.

9. Another expert stated that his delegation would be submitting a report on recent tests in which several types of small-calibre projectiles were shot into blocks of soap.

The experts of his country realized that it was desirable that the tests be kept simple and objective in order to compare the effects of various types of ammunition on the human body. However, they had found it difficult to decide on valid criteria for differentiating between permitted and forbidden effects. The expert said that a detailed report on the experiments in question would be distributed at the following meeting. He gave a few details. For example, at a distance of 30 metres there was a very clear relationship between the speed on impact and the volume of the cavity produced by the projectile. That relationship became uncertain at 100 metres. Both at 30 and 100 metres, high velocity 5.56 mm projectiles tended to fragment. The speaker said that there would be an exhibition of pierced targets and other items at the Congress Centre on the morrow.

A shooting demonstration would be organized at the Isona butts on the coming Thursday.

Concluding, the expert hoped that it would be possible to internationally standardize testing methods. He proposed that a working group analyse the results of the various reports to be submitted and then examine the possibility of continuing tests on an international basis.

10. One of the experts pointed out that most armies were using mainly 7.62 mm calibre rifles. Military specialists interested in small-calibre projectiles were above all seeking lighter and more targetsure munition while not reducing the effects of each projectile. During the second World War, it had been felt that the infantry should have lighter and more manageable weapons; that had been one of the main reasons for the success of 5.56 mm weapons which fired projectiles weighing less than 4 grams.

In order to maintain efficacy, it would be necessary, while satisfying the new operational requirements, to take account of two parameters—namely accuracy and incapacitation probability. The degree of accuracy fell sharply as the length of trajectory increased. A high degree of accuracy thus contributed in large measure to a not indiscriminate use of the weapon.

The expert was of the opinion that the only element to be taken into consideration when evaluating small-calibre high-velocity projectiles was the notion of unnecessary suffering. Other factors possibly having a notable influence on the seriousness of wounds were characteristics such as yaw angle, angle of entry and the geometry and rotation of the projectile. Facts showed that such projectiles were certainly more discriminating as they were more accurate than other types of rifle ammunition and because they lost their

devastating effects, unlike the 7.62 mm bullet which was slower, heavier and even more cruel. There was nothing to show that small-calibre projectiles caused unnecessary suffering. It could merely be shown that wounds caused by such weapons were no more serious than those caused by projectiles of greater calibre or lower velocity. The effects of high velocity could not be directly related only to any given projectile velocity, nor even to the velocity factor itself. Other factors, such as bullet shape, could appear more important. He therefore felt that the reasons mentioned in working document CDDH/IV/201 for prohibiting the use of small-calibre projectiles were not justified as they referred to the prohibition of the dum-dum bullet which had been designed to release all its kinetic energy. Small-calibre bullets were designed on different lines, they could tumble on impact thus transferring three-quarters of their energy and so worsening the wounds.

He thought that it would be as well to continue research in order to determine whether it was possible to reduce tumble, cavitation and other barbaric effects of the bullets while preserving the efficacy of the weapon. He could not imagine that States would agree to give up all rifles firing high muzzle-velocity bullets if research could not lead to more definite conclusions. It was necessary to find out whether there existed a satisfactory system for national defence purposes and, in that respect, reciprocity was indispensable.

The expert was certain that, as matters stood, results were not sufficient to permit an agreement on the prohibition of projectiles.

11. Another expert reminded the meeting of a statement made at the Lucerne Conference that a projectile always had a tumbling effect when penetrating a dense medium such as water.

Experiments had been conducted last October using small-calibre low velocity spin-stabilized projectiles shot vertically into water with impact velocity of about 290 m/s.

Mathematical analysis of the behaviour of these projectiles had shown that they had begun to tumble immediately after entry into the water and that the tumbling angular velocity was related to the angle at which the projectile struck the water surface. He considered that all ogival projectiles shot into a dense medium such as water would tumble regardless of their velocity.

He then turned to ammunition break-up, described in paragraph 143 of the Report of the Lucerne Conference.

Experiments on 6.50 mm projectiles carried out in his country had shown that depth of penetration was limited by bullet break-up and was maximised at an impact velocity of about 750 m/s. Above that speed, depth of penetration fell sharply owing to bullet break-up and deformation in the water. Projectile break-up or deformation was probably due to centrifugal force generated

by its tumbling angular velocity, the bullet breaking up at the weakest part of the tail, the nose always remaining intact. No deformation was observed at velocities of less than 420 m/s.

Those data were obtained with relatively old types of weapons and could not be applied to the general small arms currently in use. Furthermore, the behaviour of bullets in water was not, in the expert's opinion, directly related to behaviour in human tissue. Tumbling, impact velocity and material strength of the bullet were the main factors in bullet break-up.

The subject called for further study.

12. Another expert welcomed the work which had been done in connection more particularly with small arms at the Göteborg Symposium and elsewhere. It was a subject which attracted considerable and widespread interest and was seemingly being approached with an objectivity which might have been lacking in the study of other weapons systems. Even if the proposal in document CDDH/IV/201 were not feasible, his delegation was prepared to continue studying the problem and collaborating closely with other countries on the matter. He seconded a statement made by a previous speaker and said that he would, at a subsequent meeting, be submitting data on long range shooting tests.

Ninth Meeting

Organization of Work

1. The CHAIRMAN said that the next plenary meeting, on Friday, 13 February, would deal with agenda item 6. Since the discussion of that item was not expected to take very long, any spare time at the end of the meeting could be used to permit delegations, which, having arrived late at the Conference, had not had the opportunity to express their views, to make general statements on the problems before the Conference. When that had been done, any further time available could be used to discuss the organization of work during the second part of the Conference.

General Debate on Blast and Fragmentation Weapons

The CHAIRMAN drew attention to the four documents before the Conference—CDDH/IV/201, sections II and III, and COLU/202, 209 and 212—which related to agenda item 5: Blast and fragmentation weapons.

2. One expert said that his delegation had not thought it realistic to propose a ban on the use of blast and fragmentation weapons and had accordingly

focussed on anti-personnel fragmentation bombs. Its views on the subject were contained in section II of document CDDH/IV/201; it considered that fragmentation weapons in the form of cluster warheads containing bomblets which dispersed a vast number of small fragments had indiscriminate effects and caused unnecessary sufferings. The multiple wounds caused by the fragments increased pain and suffering and called for prolonged medical treatment.

His delegation also proposed the prohibition of the use of fléchettes or weapons which eject a large number of fléchettes, darts or needles which also caused multiple wounds of a particularly painful nature, especially when the fléchettes bent or broke on impact.

His delegation accepted the proposals in documents COLU/202 and COLU/209. It had co-sponsored document COLU/212, concerning weapons producing non-detectable fragments, which might be assimilated to perfidious weapons.

3. One expert, introducing document COLU/209, said that it was well known that mixtures of combustible dusts with air or of combustible gases or vapourized liquids with air could produce devastating explosions and were frequently the cause of serious accidents in civilian life. The destructive effect of such explosives derived from the fact that the low pressures caused by the explosion lasted longer than those produced by the detonation of explosives, so that the impulse was more effectively transmitted to rigid structures. Although the idea of using such mixtures for military purposes was not new, weapons had only been developed in the last few years, after the problem of the choice of substances had been solved. The initial uses had been to make clearings in forests for helicopter landing-pads and the destruction of mine-fields; but potentially, in view of their immediate and secondary effects, such weapons might be compared with napalm. While it was always difficult to secure agreement on the prohibition of weapons which already played an important part in the military arsenals of many countries, it might be much easier to obtain agreement on fuel-air explosives, which were still in the development and introductory stage. That made them a suitable subject for discussion at the Conference.

4. Another expert said that his delegation shared the concern of the co-sponsors of document COLU/212 regarding the medical difficulties which might arise in the treatment of wounds caused by fragments which could not be detected by radiography. Some studies of the problem had been undertaken in his country, the findings of which would be presented later to the Conference. In his view, however, the text of document COLU/212 might be improved: as it stood, it covered weapons which, because of the necessary

inclusion of plastic components, might produce a few fragments of low-density plastic materials which might be difficult to detect in the human body, but which would be unlikely to cause significant injury. In order to exclude such weapons from the purview of the proposal, he proposed that the word “producing” in the first line should be replaced by the words “which rely for their injurious effect on”.

5. An expert, introducing document COLU/212, said that the weapons referred to in the proposal in question were those which, being wholly or mainly composed of substances—especially wood, glass and plastics—consisting of light atoms which did not differ appreciably from those of the human body in respect of the absorption of X-rays, produced fragments which would be impossible to detect by the medical means in current use in battlefield conditions. In her delegation’s view, the suffering caused by the wounds from such weapons—due to delay in extracting the fragments and enhanced risk of infection—was unnecessary. It had nothing to do with military necessity or the immobilizing of the enemy. In certain cases, weapons were intentionally fitted with glass or plastic casings with a view to producing the effects described; but even where the effects were produced unintentionally, they could, in her delegation’s view, be assimilated to “perfidious” weapons and were therefore a suitable subject for discussion by the Conference. She thanked all those delegations which had expressed an interest in the proposal and, in particular, the previous speaker for his proposed amendment. Her delegation was prepared to consider any suggestions which might lead to an acceptable solution.

6. One expert said that a very wide range of weapons—artillery shells, aircraft bombs, landmines, hand grenades, etc.—had blast or fragmentation effects; they could, perhaps, be arranged in a scale ranging from those with maximum blast effect (e.g., fuel/air weapons) to those with maximum fragmentation effect (e.g., multiple fléchette projectiles). They were also used in very varying situations—in attack or defence, as land or air weapons and at long or short ranges. In ordinary bombs and shells, the size of the fragments was not predetermined, and sizes varied considerably; but when maximum fragmentation was sought, the weapons were designed to produce fragments of uniform size. The latter was known as “controlled fragmentation”, as opposed to “spontaneous fragmentation”.

In defensive situations, it was necessary to use weapons which covered large areas, requiring the uniform spread of a very large number of fragments. Controlled fragmentation and fléchette munitions were the result of normal weapon development in response to the greater firepower and consequent dispersal of infantry formations. Fléchettes had excellent ballistic properties,

to exploit which they had to be ejected in trajectories as nearly as possible parallel to the ground. They had greatly increased the capacity of artillery to attack extensive targets. The new developments had also increased the accuracy of artillery. For that reason, greater fragmentation would not be used to increase the numbers of human losses, but to reduce the number of shots that had to be fired, thus helping to solve the logistic problem. Fléchettes could play an important role in the close defence of artillery units, as anti-personnel weapons for tanks and in the rockets launched from helicopters against enemy troops.

Controlled fragmentation weapons operated on the same principle as what were called “general use” munitions, but the size and shape of the fragments were regular. In his view, if preference was given to the “general use” munitions, objectives would have to be attacked with a heavier load of munitions, wounds would be more serious and the damage caused to buildings would be greater and extend over a wider area. Thus to limit the use of controlled fragmentation weapons would not contribute to humanizing war, but would have exactly the opposite effect.

The primary purpose of cluster bombs was to replace high-explosive bombs against aircraft on the ground, anti-aircraft batteries, radar installations and ships. To use them effectively, the target had to be identified and deliberately aimed at. Risk of detonation in the air was very slight, so that the effects of the weapon would tend to be confined to the area attacked. That was why he could not accept the ban on the use of cluster bombs and fléchettes against military objectives proposed in document CDDH/IV/201.

His delegation was prepared to examine all realistic proposals, but considered that blast and fragmentation weapons did not cause more suffering and were not more indiscriminate than the weapons they had replaced or were intended to replace.

Non-discrimination depended on the way in which such weapons were used and not on their nature. He therefore could not accept, as such, the proposed ban on fuel-air weapons.

7. One expert said that there was no clear line of demarcation between blast and fragmentation weapons, although some weapons relied mainly on their blast and others on their fragmentation effects. Both types, however, covered large areas and were accordingly indiscriminate and liable to cause unnecessary sufferings. Fragmentation weapons, moreover, caused multiple injuries, which increased the level of pain and the difficulty of medical treatment. He therefore supported the proposals in document CDDH/IV/201 for the prohibition of fléchettes and of anti-personnel fragmentation weapons, whether the fragments were detectable or non-detectable.

8. One expert said that nobody had proposed a general prohibition of fragmentation weapons, but that recent developments had led to the production of extremely destructive weapons of that type. CDDH/IV/201 mentioned a proposal for a ban only on the use of some anti-personnel fragmentation weapons, with extreme area coverage.

He said that in land warfare tactics there was a general tendency to disperse troops over vast areas to afford them better protection. In defence, a battalion might well cover several square kilometers and be deployed, for offensive purposes, over 5-10 square kilometers.

Special means and methods had to be employed in order to attack such dispersed units. Whereas, formerly, the choice for an attacker lay between artillery bombardment and bombing from aircraft with heavy bombs depending on blast effects or a lot of small fragmentation and incendiary bombs, the current trend was toward cluster or dispenser bombs; these latter weapons were being introduced both for anti-personnel and anti-matériel use. In that context, he thought that the Conference should examine the considered anti-personnel cluster or dispenser bombs, which are mentioned in the Lucerne report.

This kind of sophisticated weapons were originally developed for the suppression of concealed anti-aircraft units and their effects directed upon the unprotected gun crews. An important feature of anti-personnel cluster and dispenser bombs was their immediate effect over a large area and the fact that the different bomblets detonated almost at the same time over the area and afforded little time for those caught in the open to find cover.

Coverage of very large areas might well lead to civilian casualties. Reference to the area coverage of such weapons appeared in paragraph 162 of the Lucerne Report.

There was, of course, no prohibition against the use of weapons with extreme area coverage provided that only military objectives were located in the target area; but that might often not be the case.

He said that the proposed rule in CDDH/IV/201: "Anti-personnel cluster warheads or other devices with many bomblets which act through the ejection of a great number of small-calibre fragments or pellets are prohibited for use" was of limited scope. The word "anti-personnel" meant that all anti-matériel weapons were excluded, as well as those with combined anti-personnel and anti-matériel effects. But cluster and different kinds of dispenser bombs were included in the rule. Their fragments were small and, though very numerous, mainly affected unprotected persons in the open field.

Those weapons could be used against targets in a wide area, although no exact area measure was given in the proposed text. It might be questioned whether the use of cluster or dispenser bombs against troops dispersed over

an area much larger than one square kilometer would be justified in terms of cost-effectiveness.

Further, in view of the considerable risk to civilians of widespread coverage, he could see several reasons for a rule limiting the maximum area coverage permitted for such weapons. He asked whether any experts felt that a quantitative approach would be less difficult than the one suggested in CDDH/IV/201.

Concerning fuel-air explosives, he said that only limited information was available, such as that found in paragraph 180 of the Lucerne Report. He considered that more technical data on those weapons was desirable. Since the Lucerne Conference, there had been press reports concerning the use of fuel-air explosives against personnel in the open, in South Viet-Nam, and that death had resulted from asphyxiation.

He referred to Working Paper COLU/202, prepared by his delegation, with the following text: "The anti-personnel use of weapons which for their effects rely exclusively on shock waves in the air is prohibited". He thought that it would be wise for the Conference to take up consideration of those weapons at this stage, when fuel-air explosives were still at the first stage of their development.

9. Another expert welcomed the proposal made in Working Paper COLU/212. He considered that the use of weapons producing non-detectable fragments could hardly be justified from a military viewpoint.

10. One expert said that he had been interested in the comments made on COLU/212 and that the thinking of his delegation had been along similar lines. He believed that the Conference should endeavour to formulate a rule that would seek to ensure that particles from fragmentation weapons would be composed of X-rayable substances.

He said that he was concerned over the phrase "usual medical methods" in the text of COLU/212 and asked for clarification of "usual", since there were different standards of medical methods. His delegation had an open-minded approach to fuel-air explosives (COLU/209). Since they were not yet part of national arsenals and therefore not important for national security, it should be rather easy to regulate them. He concurred with the proposal in COLU/209. He was not persuaded, however, that enough was known at present on their military uses or their military, technical and medical effects. He felt that more information would have to be made available for them to reach final conclusions. That viewpoint was shared by another expert.

Concerning the spread of blast and fragmentation weapons, he considered that a basic approach might be the stipulation that no single weapon should be allowed to have a coverage of more than one square kilometer. But he recalled

that there had been discussions to that effect in Lucerne, where they had been told that, in that case, more weapons would be used. He pointed out that he was concerned over the fact that, if used over wide areas where civilians might be found, fuel-air explosives might well become weapons of mass destruction.

He also expressed concern over the multiple wounding effects of fragmentation weapons. The very difficulty of treating such wounds was a form of unnecessary suffering. He was not yet convinced by available evidence on that point and asked for more information from medical experts to be made available.

11. Another delegate considered that prefragmented weapons were probably a positive achievement from a humanitarian point of view despite the multiple wound effect which seemed to be outweighed by the lesser seriousness of the wounds inflicted as compared with those inflicted by non-fragmented substitutes.

Special reasons for banning or limiting the use of prefragmented weapons, such as anti-personnel cluster bomb units, could include their large area coverage ability and the resulting dangers of indiscriminate effects in populated areas. That point had been made in Working Paper CDDH/IV/201, but new elements had subsequently come to light, especially the adoption in the Third Committee of the last session of the CDDH of Article 46 (3) relating to indiscriminate attacks which could provide the most adequate basis for assessing the legality of the use of certain high-explosive and prefragmentation weapons. The speaker felt that owing to the indiscriminate nature of the weapon in question, a need did exist for an assessment thereof in the light of the above-mentioned article in order to establish whether a case existed for banning or limiting their use. The answer would depend on whether the weapons or the way in which they were used was considered indiscriminate *per se* according to the criteria of Article 46 (3).

The speaker was also concerned by the multiple wound effects of fléchettes, which he considered to be closely related to prefragmented weapons, but was not convinced that that argument would carry enough weight to justify their being banned. Since he was not convinced to the contrary either, he did not see any reason to propose changes in the proposal contained in document CDDH/IV/201. His delegation supported the proposal concerning non-detectable fragments which had been submitted in document COLU/212, as well as the two proposals on fuel-air explosives (COLU/202 and COLU/209).

12. One expert agreed with a previous speaker concerning the relevance of Article 46, paragraph 3, which had been adopted by the Diplomatic Conference, on the restricted use of certain weapons. He welcomed the proposal

embodied in COLU/212 and agreed fully with the amendment that had been proposed by another expert. He also considered, however, that the "medical methods" should be defined more precisely and that appropriate wording should be defined more precisely and that appropriate wording should be drafted to show the type of medical methods envisaged.

He thought that the prohibition of such fragmentation weapons was acceptable, since the non-detectable fragmentation of a weapon had nothing to do with its military purpose.

Concerning COLU/209, fuel-air explosives had also been discussed at Lucerne, but sufficient information was still unavailable. He thought that such weapons could hardly be compared with incendiary-napalm weapons and it was difficult therefore to take a concrete stand at this stage. Referring to CDDH/IV/201, paragraph III, he said that many countries still had doubts concerning the use of fléchettes. At the present stage, the best solution would be to think in terms of restrictions of methods of use. He wondered whether it would be possible to limit or prohibit their use against non-military targets, in accordance with Article 46 of the Draft Additional Protocols. He hoped that there would be general support for the prohibition of fléchettes against non-military targets and felt that the idea of at least limiting their use would be acceptable to the large majority of delegates.

13. One expert said that, at a previous meeting, his delegation had made a comparison of the effects of cluster bombs and napalm. One aircraft could carry either one cluster bomb or four 100-gallon napalm bombs. Tests had shown that the cluster bomb covered an area ten times as large as the napalm bombs. Casualty and mortality rates were very much larger in the case of the cluster bomb. Soldiers tended to be hit by only one or two fragments because the fragments were more or less evenly distributed over an area of about 20 hectares. Pellets and prefabricated fragments caused smaller wounds than irregularly-shaped fragments and should therefore be regarded as more humane. It appeared that cluster bombs were indispensable in certain situations, e.g. when opposing a numerically superior enemy. They might be necessary not only against tanks, but in certain cases also against personnel. If napalm bombs were replaced by fragmentation weapons, the military significance of fragmentation and cluster bombs would be even greater in future, so that there seemed little chance of a ban on such weapons being generally acceptable. All countries, however, should respect Article 46, paragraph 3, of Draft Protocol I, and refrain from using cluster bombs in areas containing civilians. He agreed with the sponsors of document COLU/212 that the use of plastic and glass in the manufacture of cluster and fragmentation bombs should be reduced and finally eliminated.

14. One expert said that his delegation supported the proposals in documents COLU/212 and COLU/209.

15. One expert noted that a number of delegates had asked for further information concerning some of the weapons under discussion. His delegation had some possibly helpful data which it would be happy to present in the General Working Party.

16. One observer for a non-governmental organization, speaking at the invitation of the Chairman, said that, since Lucerne, two new developments had occurred which were relevant to the legal aspects of the questions under consideration: the adoption of Article 46 of Draft Protocol I by the Diplomatic Conference and the publication of the United States "Rules of Engagement for the Employment of Firepower in the Republic of Viet-Nam", which had governed the action of United States troops during the hostilities in that country. Copies of the Rules could be made available to interested delegates. They contained a number of fairly precise rules concerning the distances from friendly forces, from areas containing non-combatants or from areas of cultural value at which different types of munition might be used. Those regulations were well worth studying in conjunction with Article 46 with a view to formulating restrictions on the use of blast and fragmentation weapons as opposed to a general prohibition. The concept of the "danger area" of weapons, which was to be found in many military manuals, should be applied not only to the safety of friendly troops, but also to that of the civilian population. Such rules, however, might have to be drafted in the light of specific combat situations; they might not be acceptable if formulated too generally.

He agreed that fragments which could not be easily located in the human body were perfidious and should be considered for prohibition. Certain weapons, moreover, might contain poisonous substances, not all of which were covered by the Hague Regulations. That was a point to which the Conference should give some consideration. White phosphorus was a case in point; if forced into the body it could continue to burn, making very deep wounds which were difficult to treat. It might also have toxic effects. Other substances which might be considered in that connection were depleted uranium, pyrophoric substances and reactive fragments.

17. One expert, speaking as a co-sponsor of document COLU/212, said that she agreed with the criticism by previous speakers that the words "the usual medical methods" in that proposal were too vague. She suggested that they might be replaced by the word "X-rays". While certain countries might be endowed with more sophisticated methods of locating fragments in the

human body, X-rays, which were used in rural hospitals, were the simplest and cheapest method.

18. The observer from a non-governmental organization, speaking at the invitation of the Chairman, said that his organization was concerned by the possibility of superfluous injury caused by fléchettes. It had been stated that all fléchettes tumbled in the tissue at some striking velocity, a velocity that was close to the muzzle velocity of a fléchette tank gun round and the initial velocity of fléchettes discharged from air-to-ground rocket warheads. The wounding effect of fléchettes was increased when a propellant was installed in the warhead and when they were fitted with concave-tapered points. The area coverage of bomblet-filled surface-to-surface missiles and air-dropped bomblet dispensers also seemed to imply a danger to non-combatants. He hoped that the Conference would contribute to the cause of world peace.

Tenth Meeting

Statement by the Vice-President of the ICRC

1. The CHAIRMAN, speaking as Vice-President of the International Committee of the Red Cross, made the following statement:

“As the President of the ICRC said at the opening meeting, we hope that even if this Conference does not manage to complete its study of the weaponry question, it will achieve some worthwhile results, be they only partial. It is therefore with satisfaction that we note the experts’ determination to succeed. Some interesting proposals have been made and there has unquestionably been some genuine progress since the Lucerne session. I hope that that progress will be confirmed and consolidated.

Moreover, I think relatively minor results which meet with general agreement are far better than projects which look dazzling on paper but which are worthless in practice and likely, when all is said and done, to undermine humanitarian law as a whole.

Another thought which occurs to me is that sometimes, in the course of discussions, the legality of a weapon was all too readily admitted merely because it was effective. Of course, the ICRC cannot make any pronouncement on military necessities, that is to say, it cannot judge if and when a State’s vital interests are at stake. As you know from all the effort the ICRC has devoted to the development of the law, it has managed to remain realistic and it has always made allowance for military and political interests. But the dictates of humanity must not be forgotten either. That a weapon is of

military value does not mean that it is essential to State security or that its use is justified in defiance of the general principles of law and humanity. Those principles, written or natural, predominate.

I am reminded of a Christmas message from General Eisenhower, Commander in Chief of the Allied Forces during the Second World War, who said that the term military necessity should not be a cover for laxity or indifference; that it was sometimes used when it would be truer to say military or even personal convenience.

I would here emphasize that humanitarian principles are permanent. Although the techniques of warfare may have been developed on a fearful scale, neither human nature nor the vulnerability of living beings to suffering have changed. Principles were made for man and it is for technology to adapt to principles, not man to technology.

My last two comments refer to the work which remains to be done. You have already started discussing the form to be taken by a diplomatic instrument concerning weapons. Whatever the form considered, I think that it should be as simple and clear as possible. Even more than the Geneva Conventions, rules on weapons are meant for soldiers in the field who have to take spot decisions, as well as for those responsible for the arming and training of troops.

We must take a lesson from precedents. The St. Petersburg rules on certain projectiles, the Hague Regulations on dum-dum bullets and the 1925 Geneva Convention on asphyxiating gases owe much of their success to their exemplary clarity and brevity. They put the message across in a minimum of words.

Finally, the drafting of this instrument on weapons should not be allowed to jeopardize or delay the adoption of the two Protocols submitted to the Diplomatic Conference in Geneva. The work of the CDDH is already well on the way to completion, especially for the protection of civilians against the effects of war. Agreement has already been reached in Committee on a body of rules which offer extensive guarantees to civilians and which already regulate the use of certain weapons. The ICRC is of the opinion that priority must be given to those rules and to the two Protocols.

We are not in any way minimizing the importance of weapons—I think that we have already made that point by convening the Lucerne and Lugano Conferences in compliance with the wishes of a number of States. But we are trying to bring this less advanced subject into line with the other.”

Organization of Work

The CHAIRMAN, referring to the work remaining to be done, announced that there would be no plenary meetings the following week. He hoped that, over the next few days, the General Working Group and unofficial groups would make some progress. The report of the General Working Group would have to be distributed, discussed and adopted chapter by chapter.

2. The Chairman of the General Working Group reminded the meeting of the existence of the three sub-groups—that of the legal experts, that of the military experts on booby-traps and mines and that of the technical experts for small-calibre weapons. The General Working Group would probably be meeting on the following Wednesday to discuss incendiary weapons, and on Thursday and Friday to speak of other matters. It would thus be possible to adopt the General Working Group report on Monday 23 February.

3. The Rapporteur said that the Conference report was being prepared chapter by chapter. He hoped that it would be possible to start distributing it at the beginning of the forthcoming week. Anyone wishing to make comments could do so orally or in writing. The report was a succinct analysis of the discussions. It contained no details of individual statements.

The same chapter-by-chapter procedure would be adopted for the General Working Group report. The whole document would be drafted at the end of the following week, so that it could be distributed and discussed at the beginning of the final week of the Conference.

4. An expert expressed his appreciation of the interesting statement made by the Vice-President of the ICRC and said that he had been struck both by its contents and by the timing of its delivery. It quite rightly recalled the need to adopt moderate rules, couched in measured terms, and the difference between the effectiveness and the lawfulness of a weapon. The statement had rightly stressed the necessity of using precise and simple terms in drafting rules which would be applied to real situations in the field. He asked that the text of the statement be distributed to participants.

General Debate on Other Categories of Weapons and New Weapons

5. One expert considered that very little had been said about future weapons at the Lucerne Conference. He read out paragraph 277 of the report on that Conference and pointed out that it was a text with which most experts could agree.

He nonetheless considered that the problem was somewhat different in the case in point. When States started developing such weapons, they would

probably be unwilling to discuss them for security and other reasons. The same did not apply during the production phase owing to the efficiency of information media. These States could, however, argue that it was then too late to discuss the weapons in question as sizable funds had already been invested in their production. That was just the sort of situation which had, if possible, to be avoided, difficult though it might be, for the reasons given. States should therefore be compelled to keep a sharp eye on the development of new weapons, considering them from a humanitarian angle. Certain States had already set up such surveillance systems which would doubtless prove their worth.

The speaker then moved to the subject of laser weapons and the prospects that they offered. He considered that information available on the matter was insufficient to provide a basis for a proper proposal. One large country had invested heavily developing laser applications and it could be assumed that the same held true for another. It was therefore probable that the first laser weapons would appear at the beginning of the next decade. From a humanitarian viewpoint the consequences provided scope for conjecture. Lasers would not be used solely for military purposes but their uses in that field should not be underestimated. The speaker then spoke of the various types of laser weapons and their high degree of effectiveness. In fact, even if the air could be treated to stop the beam from penetrating to the target, the protective method itself could, in turn, be overcome.

He then went on to describe the various ways in which the laser beam was used, for example: mounted on aircraft, armoured vehicles or ships. It could also be aimed at all kinds of objectives up to a range of 20 km or more.

In view of the fact that the laser beam could cause blindness, its use as an anti-personnel weapon would have very grave consequences even if the combatants aimed at had protective equipment. To completely forbid its use against people was therefore desirable and also possible, but its unqualified prohibition was impossible, as it might be extremely useful against strategically important targets.

He concluded that a watch on the military use of the laser beam was desirable to prevent its causing a greater incidence of casualties among combatants.

6. A non-governmental technical expert took the floor at the Chairman's invitation and said that, for some time past, a number of new weapons had been perfected and several were already in use. Technical progress had opened the way to new applications of which advantage might be taken in the near future.

The most obvious example was the use of fuel-air explosives about which some experience and information were available. The use of such munitions caused almost 100% mortality within a given radius.

Another category was chemical fireball munitions which produced intense thermic radiation. A heat flux of 2 Kcal/cm²/s caused third degree burns within 4 seconds.

As examples of weapons of this kind, the expert mentioned 66 mm rockets, launched from shoulder-fired rocket-launchers, with a range fifteen times greater than that of conventional flamethrowers. Also mentioned were 105 and 152 mm shells. The 20-metre diameter fireball obtained emitted heat at 6 Kcal/cm²/s, which meant that the shell creating the fireball could destroy the target even if it missed the target by 15 metres. Such munitions could consequently be used to convert any assault vehicle fitted with a 152 mm gun into a mechanized flamethrower.

Intermediate between these two classes of weapon was a new category, known as "flameblast" munitions, combining the fuel-air explosive effect with the radiation of the chemical fireball munitions. Such munitions could be expected to cause extremely high mortality but might be military attractive because they could be "tailored" to a wide variety of delivery systems.

The expert concluded that new weapons did, in fact, come within the purview of the Conference by virtue of the high mortality rate which might result from their use and that they should therefore be accorded due attention.

Eleventh Meeting

The CHAIRMAN read out the agenda for the final plenary meetings of the Conference, namely: (1) continuation of work; (2) adoption of the report; and (3) final statements.

He stated that the Bureau had approved the proposed presentation of the report (document COLU/INF/210) and that the provisional summary records of the final plenary meetings would be sent to all delegates after the Conference. Corrections would have to reach the ICRC in Geneva within fifteen days of receipt of the summary records.

Continuation of work

1. One expert, pointing out that the Conference, mandated by the Diplomatic Conference, had been assigned the task of studying the question of conventional weapons whose use had been the subject of proposed bans or restrictions, stated that the reports of the General Working Group and Sub-

Groups showed clearly that the Conference had by no means completed its assignment, at least as far as some weapons were concerned.

There were obvious differences of opinion on incendiary weapons, but there had not been sufficient time to reach a compromise. A definite result was in sight in respect of delayed-action weapons, treacherous weapons and manually-emplaced devices. On small-calibre projectiles the conclusion reached was that studies should continue. There had almost been a consensus on a proposal submitted by two countries on the subject of fragmentation weapons, including those producing fragments difficult to trace in the human body. In contrast, consideration of cluster bombs, fléchettes and fuel-air explosives had come to nought.

He concluded by proposing that governments should recommend to the Diplomatic Conference to confer permanent status on the Conference of Experts (document COLU/210).

2. Another expert shared his view on the continuation of the work of the Conference and stated that a solution to the question of banning or restricting certain conventional weapons was essential. He thought it was for the Diplomatic Conference to reach a decision on that subject at its third session.

3. Another expert, whilst recognizing the importance of the question, held the opinion that further study was required on some categories of weapons. The question had to be given such study—as most experts agreed—but he could not, as things were, decide for or against proposal COLU/210.

4. One expert said that the Conference, after starting from the very laudable principle that human suffering must be attenuated, had lost sight of that aim, military considerations having been allowed to dominate the humanitarian. Of 140 members of the United Nations, only 40 were represented at the Conference. Had those forty addressed themselves only to humanitarian considerations, they would have been in a much stronger position in their dealings with the absent hundred. It was necessary to plan new action, so that proposal COLU/210 seemed appropriate. Nevertheless, the Conference had to avoid becoming bogged down in interminable discussions. He felt very pessimistic about the future of the negotiations.

5. Another expert, not so pessimistic, said that the work accomplished at Lugano paved the way to several possibilities of a humanitarian nature. He reminded the meeting that only two proposals had been approved at Lucerne; at Lugano a score of proposals had been put forward, though not all had been subjected to a thorough examination. It could, therefore, not by any means be said that there had been no negotiations.

He could hardly see the practical value of proposal COLU/210, although he did, like other experts, approve the spirit underlying that proposal. It was incumbent on the ICRC to examine the problem of conventional weapons at regular intervals, and in that connection he was prepared to support the proposal.

6. One expert who was of exactly the same opinion as the previous speaker thanked the author of document COLU/210 proposing the permanent examination of the question of banning conventional weapons so that agreements acceptable to all might be reached. The study of the question had, moreover, to be continued by the *ad hoc* Committee of the Diplomatic Conference during its third, and possibly its fourth, session.

He did not agree with the expert who had said that the humanitarian spirit had dwindled during negotiations and that military and security considerations had carried the way against the humanitarian. That had not by any means always been the case. There were therefore grounds for continued consideration of the ban of certain conventional weapons by the *ad hoc* Committee of the Diplomatic Conference. His country was prepared to convoke a symposium to discuss all these questions, particularly that of limiting the production of small-calibre projectiles.

To conclude, he stated that proposal COLU/210 could be studied attentively when examination of the question of the banning of weapons had been completed.

7. One expert who suggested that examination of this question be continued at the Diplomatic Conference pointed out that, once Draft Protocols I and II additional to the 1949 Geneva Conventions would have been adopted, the founding of an international body to seek agreement on the banning of conventional weapons would have to be decided.

8. One expert gave proposal COLU/210 his full support.

9. Another, stating his delegation's point of view concerning proposal COLU/210, pointed out that the Conference had been convoked by the ICRC whose essential mission was to give relief and protection to the victims of armed conflicts. The Conference should therefore not be discussing the question of prohibiting certain conventional weapons which could be dealt with by other bodies such as the CCD, the Diplomatic Conference and even other international institutions of the United Nations family. He could not therefore approve the proposal.

10. The CHAIRMAN said that he understood that the experts approved the spirit underlying proposal COLU/210 and considered more thorough

studies to be necessary, although they had not recommended to the Conference to put the proposal forward.

After a discussion on procedure, with particular reference to Rule 8 of the Rules of procedure (document RO 610/2 b), it was noted that the Conference could formulate proposals or express wishes, but could not adopt any resolution. Document COLU/210, about which experts were not unanimous should be considered as a Conference document, not as a Conference recommendation. Some experts approved the spirit, if not the letter, of proposal COLU/210.

Consideration and adoption of the Report

11. The RAPPORTEUR stated that the final report would include a chapter on conclusions and on the discussion of action to be taken on proposal COLU/210. Part of the report would be devoted to an informal document which had been submitted by the medical experts who had expressed themselves on "unnecessary suffering". He hoped to be able to have that part of the report distributed before the end of the Conference.

12. After a lengthy discussion on procedure, the CHAIRMAN stated that it was for the Bureau to decide on how the report should be drawn up.

13. One expert asked for the report to be as comprehensive as possible; he felt that delegates should trust the Bureau.

I. Introduction (COLU/REP/1)

14. The RAPPORTEUR said that in the first paragraph the words "the governments of 41 States" should be amended to read "the governments of 43 States".

In the English version only, the words "the President of the ICRC" should be inserted between "heard addresses by" and "the President of the State Council".

To paragraph 10, add: "As in most cases the discussions on particular agenda items commenced in Plenary and were then continued in the General Working Group, it is necessary for a correct understanding of the discussions as a whole to read the reports of these two bodies in conjunction".

In the last line of paragraph 12, replace "496,279 Swiss francs" by "411,270 Swiss francs".

15. After a discussion in which several experts took part, the Assistant Secretary-General of the Conference stated that the report on the proceedings of the plenary meetings should bear the reference COLU/REP/2 to ... and that document COLU/REP/1 should be entitled "Introduction".

16. One expert proposed the deletion of paragraphs 9, 10 and 11 of COLU/REP/1, and the addition, after paragraph 12, of the Presentation of the Report as shown in document COLU/INF/210.

II. General Debate (COLU/REP/2)

17. The RAPPORTEUR said that in paragraph 14 the words “to which they were not related” should be deleted and a full stop placed after “negotiations”. The following sentences should be added: “They should be held in the context of humanitarian law, since the point of departure was a humanitarian concern. This did not preclude that security considerations were fully taken into account.” The word “nonetheless” in the same paragraph should be deleted.

In paragraph 18, the comma after the words “from use” should be deleted.

In the last sentence of paragraph 21, the words “in principle” should be added after the word “denying”.

18. An expert proposed that the following sentence be added at the end of paragraph 13: “Some experts emphasized that this Conference should neither repeat nor prejudge the work being done at the CDDH.”

He also proposed to add a new paragraph 14 bis, worded as follows: “Some experts expressed the view that it was not the task of this Conference to create new rules but rather to apply and concretize three existing rules of international law, viz., the prohibition to use weapons that cause unnecessary suffering, have indiscriminate effects, or are perfidious.”

In paragraph 17, the expert proposed to add, after the word “alternatives”, the words “which would also be lawful”.

In the first line of paragraph 20, he wondered whether the adjective “much” before “support” was appropriate.

The amendments proposed by this expert were accepted by the RAPPORTEUR.

19. Another expert was not fully in agreement with the previous expert’s proposals and suggested some drafting alternatives.

20. An expert proposed adding, in the last sentence of paragraph 14, the words “provided they were complete bans”, and deleting the phrase “as the example of the dum-dum bullet went to show”, at the end of the paragraph.

The RAPPORTEUR said he was against the wording proposed and suggested, as a compromise that the “complete ban” should refer solely to the use of a specific weapon.

21. An expert asked that the phrase between parentheses in paragraph 13 be placed between commas, and that the term "a poor people" in the middle of paragraph 16 be replaced by a milder expression. He proposed also that in paragraph 21 the words "some experts" be replaced by a more appropriate expression.

The RAPPORTEUR said he was prepared to accept these suggestions.

22. Another expert pointed out that in the third line of paragraph 15, it would be better to put "expert" in the plural.

23. An expert proposed a number of amendments in paragraphs 20 and 25 and said he would submit them in writing to the Secretariat.

The draft report "General debate" (COLU/REP/2) was approved with the proposed amendments.

III. Incendiary weapons (COLU/REP/3)

24. The RAPPORTEUR said he had received many amendments concerning this section of the report.

In paragraph 28, the first two sentences should be replaced by the following text:

"The question of incendiary weapons was addressed by several experts. It was held by some experts that there was no denying the excessive suffering they may cause and which, some of them said, might well be considered to constitute unnecessary suffering. Particular stress was also laid by some experts on the aspect of indiscrimination that might well (although not necessarily in all cases) attend the use of incendiary weapons."

In the third sentence, he proposed to replace the words "some of the latter group of experts" by the words "some other experts", and to add after the fourth sentence (after the word "injurious") the following sentence: "These experts also were not convinced that incendiary weapons are inherently indiscriminate". In the last sentence, the words "the degree of suffering inflicted" should be replaced by the words "these factors".

The RAPPORTEUR believed that the wording of the text would be thereby improved.

In paragraph 29, an additional sentence should be inserted before the last sentence, as follows:

"An expert pointed out that the countries which had most often used napalm were precisely those with the greatest air forces."

A lengthy discussion took place on whether it was expedient to speak of the "greatest air forces".

25. An expert said that he would oppose such a wording and asked that his objection be recorded in the summary record.

The discussion closed after a proposal had been formulated seeking to provide a draft acceptable to all the parties involved and to the Rapporteur.

26. Another expert proposed adding the following sentence at the end of paragraph 29:

“An expert remarked, however, that second-hand aircraft were available at low cost.”

27. Another expert suggested that a sentence be inserted before the new sentence about “air forces” at the end of paragraph 29.

The RAPPORTEUR did not object to this proposal but asked that a written text be communicated to the Secretariat.

28. An expert representing a non-governmental organization suggested inserting in paragraph 29 the words “and control” after the words “means of delivery”.

29. The RAPPORTEUR submitted an amendment concerning the last sentence of paragraph 32, viz.:

“Another expert, referring to the information presented at the Lucerne Conference concerning certain accidents with napalm firebombs (Report, para. 96), had calculated that the proportion of casualties who died of wounds amongst the 51 victims involved in those accidents was about three times higher than the proportion of casualties who died of wounds from other weapons amongst soldiers of the same army. These data, he felt, did not warrant the conclusion that napalm had a low casualty rate.”

The RAPPORTEUR proposed to add at the end of paragraph 33 the following sentence:

“An expert mentioned that in the last war in the Middle East, 75% of all burn wounds were deep burns.”

30. An expert proposed that the words “and to the difficulty of treatment to which they often gave rise” in the second half of paragraph 33, be replaced by the sentence: “It was emphasized that the treatment of these wounds kept much personnel occupied and required intensive care during long periods of time, often lasting till after the end of hostilities.”

31. After a brief exchange of views on the respective terms of reference of the plenary meeting and the General Working Group, it was decided that no changes could be introduced into a report which had already been adopted.

Statement by the Secretary-General on the financing of the Conference

32. The Secretary-General said that after the Lucerne Conference the balance of cash in hand was 85,000 Swiss francs, bringing to 500,000 Swiss francs the total sum available for the Lugano Conference, the total cost of which had been estimated to amount to 750,000 Swiss francs.

He announced contributions of 38,000 francs from the Japanese Government and 3,000 francs from the Irish Government. The Italian and United States Governments were also considering contributing to the cost of the Conference.

The total available therefore amounted to 540,000 Swiss francs. The Secretary-General called upon Governments which had not paid any contribution to do so and invited the others to make supplementary payments.

He added that the Conference costs were not expected to exceed 700,000 Swiss francs.

Twelfth Meeting

Consideration and adoption of the Report (continued)

Chapter III

Paragraph 29

1. The CHAIRMAN drew attention to the new draft of paragraph 29 incorporating all the proposals that had been made in document COLU/REP/3/Corr. 1.

Paragraph 29, as amended, was adopted.

Paragraphs 30 to 34

Paragraphs 30 to 34 were adopted.

Paragraph 35

Paragraph 35 was adopted.

Paragraph 36

2. The RAPPORTEUR proposed that the words “, which was sponsored by some twenty governments,” should be inserted in the third line of paragraph 36 after the words “in this working paper”.

Paragraph 36, as amended, was adopted.

Paragraphs 37 and 38

Paragraphs 37 and 38 were adopted.

Chapter III, as amended, was adopted as a whole.

Chapter IV

Paragraph 39

3. One expert proposed that the following words should be added at the end of paragraph 39: “, as should non-explosive traps which were specifically designed to cause cruel or lingering death or injury.”

Paragraph 39, as amended, was adopted.

Paragraphs 40, 41 and 42

Paragraphs 40, 41 and 42 were adopted.

Paragraph 43

4. One expert proposed that the following sentence should be added at the end of paragraph 43: “To this it was replied that the use of non-explosive traps was already prohibited.”

Paragraph 43, as amended, was adopted.

Paragraph 44

Paragraph 44 was adopted.

Chapter IV, as amended, was adopted as a whole.

Chapter V

Paragraph 45

5. The RAPPORTEUR drew attention to the following corrections that had been made in paragraph 45: the word “have” was replaced by the word “had” in the first line; the inverted commas after the word “inch” in the sixth line were deleted; the comma between “12” and “7” in the seventh line was changed to a full stop; and a comma was inserted after the word “rifle” in the seventh line.

Subject to those corrections, paragraph 45 was adopted.

Paragraph 46

6. The RAPPORTEUR drew attention to the following amendments which had been made in paragraph 46: in the fourth line, inverted commas should be inserted after the word “projectiles”; in the fourth line, the words “, some experts felt,” should be inserted after the words “the task at hand”; and in the ninth line, the words “the wounds inflicted” should be replaced by the

words “the non-fatal wounds inflicted at the greater ranges of engagement” and the word “serious” should be replaced by the word “severe”.

7. One expert found that, in the French version, it was not sufficiently clear that the views expressed in the part of the second sentence after the semi-colon represented the opinion of only a certain number of experts and not those of the Conference as a whole.

8. The CHAIRMAN proposed that the expert in question should consult with the Rapporteur to arrive at a satisfactory wording.

It was so decided.

Paragraph 46, as amended, was adopted.

Paragraph 47

9. The RAPPORTEUR drew attention to the following amendments which had been made in paragraph 47: in the fourth line, inverted commas should be placed around the words “stopping power” and the word “or” should be replaced by the words “in the sense of”; in the seventh line, the word “total” should be replaced by the word “instantaneous”.

Paragraph 47, as amended, was adopted.

Paragraph 48

Paragraph 48 was adopted.

Paragraph 49

10. One expert proposed that paragraph 49 should be inserted between paragraphs 46 and 47.

That proposal was not adopted.

11. The RAPPORTEUR said that, in the last line, the words “a number of” should be replaced by the word “some”.

Paragraph 49, as amended, was adopted.

Paragraph 50

12. The RAPPORTEUR proposed that the following sentence should be added at the end of paragraph 50: “Some experts, speaking to this question said that it would be desirable to arrive at a standardization on the international plane of the testing methods used in the various countries.”

Paragraph 50, as amended, was adopted.

Paragraph 51

13. After a short discussion, it was decided that four new paragraphs should be inserted after paragraph 51 describing briefly the findings of the tests which

had been carried out in Sweden, Japan, Switzerland and Indonesia respectively.

14. The CHAIRMAN proposed that the Conference should entrust the drafting of the said paragraphs to the Rapporteur in consultation with the experts of the four countries in question.

It was so agreed.

Paragraph 51, subject to the proposed additions, was adopted.

Chapter V, as amended, was adopted as a whole.

Chapter VI

Paragraphs 52 to 57

Paragraphs 52 to 57 were adopted.

Paragraph 58

15. An expert proposed that the following sentence, or words to that effect, should be added at the end of paragraph 58: "An expert pointed out that the prohibition of fragmentation weapons should cover both detectable and non-detectable fragments since, in war, surgical intervention is dictated on the basis of the severity of the wounds caused by such fragments."

Paragraph 58, as amended, was adopted.

Paragraph 59

Paragraph 59 was adopted.

Chapter VI, as amended, was adopted as a whole.

Chapter VII

Chapter VII was adopted as a whole.

16. The CHAIRMAN states that the consideration of the Report on Plenary Meeting Proceedings is over and that the Conference has also taken note of the Report of the General Working Group.

Final Statements

17. Another expert considered that the Conference had achieved some worthwhile results. His delegation had always thought the step-by-step approach to realising advances in humanitarian law the best way to achieve progress. He understood the disappointment of some for whom the steps taken are not large enough and the pace not sufficiently fast, but he was

confident, considering the complex and difficult context in which they had been working that firm foundations had been laid for future work.

There had been, for example, widespread agreement that the proposal on non-detectable fragments (COLU/212) might form the basis of some future agreement.

Large portions of the proposal (COLU/203) on mines and booby-traps had also received wide support. Here there was certainly basis for further and significant future agreement.

Experts in his delegation had been particularly encouraged by the tenor of the revised proposal—Annex A—on the use of incendiary weapons on a massive scale and on the use of napalm. He pointed out, however, that that proposal did not go nearly so far as the position of his own country, which possessed neither aerial nor mechanised napalm type weapons and did not intend to acquire them. Nevertheless, the revised proposal represented a real advance on existing international regulations. He considered that, even more, it had the possibility of attracting from a wide spread of experts (and eventually Governments) with differing points of view broader support than any related proposal tabled up to now. It had therefore quickly had his delegation's support. The delegation had been gratified that some others had done the same and that many more had acknowledged its positive nature and would give it careful consideration. It should certainly assist in the process of general movement towards the middle ground where, in his view, lay the greatest likelihood of eventual international agreements on weaponry.

Like other experts here, his delegation had detected in the debates on the proposals mentioned and in a number of other areas of discussion at the Conference a promising note of flexibility on all sides and growing understanding for different points of view.

18. One expert said that the Conference had done good work and represented a significant step forward as compared with the Lucerne Conference. It had discussed many important problems and more than twenty new proposals and ideas had been submitted which would help towards the achievement of a common approach and agreement on the prohibition and restriction of the use of certain weapons. Although there had been no consensus on many points and no concrete provisions had been agreed on, the Conference provided evidence of the world community's determination to achieve positive results. He believed that it would be possible in the future to eliminate the points of difference and to reach common agreement on the questions of incendiary weapons, mines and booby-traps, blast and fragmentation weapons and even on small-calibre weapons. The experts' future work should be based on the principles of universality, reciprocity,

disarmament and of the equal security of all States and especially of the States signatories of an agreement. He hoped on that basis that the further consideration of the problems in the Diplomatic Conference and its *ad hoc* Committee would enable real solutions to be found. He proposed that the *ad hoc* Committee should not be convened at the outset of the Diplomatic Conference, but only after a number of weeks had passed, so that governments should have time to give thorough consideration to the views and suggestions put forward at the present Conference.

19. Speaking on behalf of the socialist countries, an expert thanked the ICRC, the Lugano City Council, the officials of the Canton of Ticino, the Swiss Government and all concerned in the organizing and running of the Conference, which had made progress towards the easing of human suffering in armed conflicts, and even towards the elimination of armed conflicts.

20. One expert stated that one clear conclusion was that incendiary weapons as defined at Lucerne had little military value, whilst their effects were indiscriminate, cruel, and mainly affected victims having nothing to do with military operations; their strategic worth lay primarily in the fear which they aroused. They should be banned by international humanitarian law, but the Conference proceedings had been diverted to the restriction of their use. Military units could hardly be expected to use them with discernment. Their use should therefore be totally prohibited.

His delegation was discouraged that a consensus on fragmentation weapons, after almost being achieved, was prevented by grammatical quibbling which had obviously been dictated by delaying tactics and a desire to see that no results emerged from the discussions.

Small-calibre projectiles had been buried under an avalanche of technicalities and those who did not want any agreement should leave the field to the experts who did believe that agreements were of humanitarian utility.

Some progress was perceptible on the question of mines and booby-traps: a modest result compared to what world opinion had hoped for. His delegation was convinced that sufficient data and an adequate legal basis existed for drawing up definite rules.

He added that even if rules were devised to limit methods and means of incapacitating an enemy, they should be dynamic and constantly up-dated. It was necessary to set up machinery to keep pace with and rein in man's destructive nature.

21. One expert, after thanking all concerned in the organization and smooth-running of the conference, said that his delegation's feelings were a mixture of disappointment and of hope.

After four weeks of work, only one proposal, relating to fragments non-detectable by X-ray, had met with almost general approval: a meagre result. His delegation had hoped for much more.

He considered that the most important proposal, co-sponsored by his delegation, related to mines and booby-traps, but despite its realism it had met with a very disappointing reception. That proposal, and others, had been stifled by negative criticism and amendments, no doubt because of the different military and security standards from one country to another. It was therefore necessary for every delegation to make an effort to understand the motivations of others and to show realism and good will in order to advance the cause of international humanitarian law by reconciling the desirable and the possible.

Nevertheless, he felt that the Conference had been useful, many delegations having contributed new information and useful arguments. Opinions had evolved and tended to converge, so that there was hope for the future.

His delegation would study all points of view that had been expressed and would revise its opinions whenever possible. He hoped other delegations would do likewise.

22. A delegate conveyed a message of thanks on behalf of his own country and that of other experts from Asian countries and expressed the hope that, in the future, other countries would help relieve the financial burden of such meetings from the shoulders of the ICRC. He said that millions in the developing countries had watched the work of the Conference with hope and satisfaction and concluded by assuring delegates that his country would support any efforts made to help suffering humanity.

23. Another expert assured delegates that his country would continue to co-operate in good faith in the search for constructive solutions aimed at striking a balance between humanitarian aspirations and security needs. There had been general agreement not to use plastic or other material not detectable by X-rays nor by other methods for the production of explosive devices. On mines and booby-traps agreement seemed to be in sight at the *ad hoc* Commission of the Diplomatic Conference. A number of countries would concentrate tests and research on the parameters that determine the performance of small-calibre projectiles in order to develop weapons that will incapacitate the combatant with the least possible wound. Since concerns for national security would have to be taken into account increasingly with regard to incendiary weapons, blast and fragmentation weapons and new weapons,

it appeared wise to combine initiatives out of humanitarian motives with disarmament efforts. He pointed out that the preservation of peace was the best way of avoiding unnecessary suffering.

24. One observer said that there would undoubtedly be some disappointment that the Conference had produced no solutions. It had however made a small step forward and efforts must be continued. He reminded the participants in the Conference of the interest with which societies of the Red Cross, Red Crescent and Red Lion and Sun were following the discussion on arms.

25. According to one expert the Lucerne session had relied much more on the contributions of technical experts and had produced much more useful new information on weapon systems than had the Lugano session. On the other hand, the Lugano session had generated a large number of new ideas and approaches for restrictions on various types of weapons, and would provide a better basis for further work. By way of examples, he referred to the constructive suggestions made at Lugano concerning the regulation of mines and booby-traps, the prohibition of the use of weapons relying on non-detectable fragments for their injurious effects, and the protection of civilians from incendiary attacks. These were proposals on which it would be possible to achieve progress.

In contrast, he saw no basis for international consensus on other prohibitions or restrictions. In particular a great deal of further technical work was required on small-calibre projectiles.

He did not believe that humanitarian purposes would be served by prohibiting other types of battlefield weapons which had been discussed, but his delegation would continue to keep an open mind to any new data or proposals.

26. One speaker said that although his delegation had come to Lugano in a spirit of earnest dedication to the development of humanitarian law, it was nonetheless acutely aware of the requirements of security. No State large or small could abdicate those requirements. For small States, security was vital and a right, being a corollary of the principle of national sovereignty contained in the United Nations Charter.

He considered that the Conference had worked in a serious, sustained and responsible manner, it had avoided political pitfalls and struck a balance between idealism and realism. It had made progress on the subject of mines and booby-traps. Discussion of incendiary weapons had provoked wide divergence of opinion but promised future progress in protecting civilians. Small-calibre weapons would have to be subjected to further study

considering the many factors involved. Any decision based on a single factor would be premature and misleading at the current stage.

Discussions had shown that a total ban was, in most cases, inpracticable and that the only realistic policy would be to blend restrictions with limited prohibition. However, as restrictions were open to abuse on the battlefield, further thought needed to be given to the inclusion of a reciprocity clause in any further instrument.

27. One expert said that the last attempt to solve the problems of weapons causing unnecessary suffering and having indiscriminate effects had been made in 1932, or more than 40 years ago. Forty years was too long. The present efforts had begun in 1971 and had continued through a long series of meetings leading up to the present Conference. One of the positive features of the Conference had been the discussion of legal aspects which had previously been left aside. He had been encouraged by the large number of proposals submitted and by the fact that some rapprochement of views had taken place, though much more was needed. It was not so much new data that were needed—except on the question of small-calibre weapons on which his government proposed to invite further international co-operation in the collection of data—as political good will, flexibility and patience, as a previous speaker (see paragraph 17) had emphasized. He shared that speaker's disappointment at the negative outcome of the discussion on the proposals concerning mines and booby-traps. Work on that question would have to continue in the *ad hoc* Committee. His delegation was strongly opposed to any attempt to produce merely "cosmetic" results; it would be better to admit that the work had been too difficult. He hoped that more positive results would be obtained in 1977 or 1978.

28. An expert said that his delegation's initial optimism at the outset of the Conference had not been entirely dissipated and that if a real effort were made in the future to seek the middle ground elements of consensus might emerge. In his delegation's proposal on mines and booby-traps, such an effort to find the middle ground had been made. He did not share the disappointment that had been expressed with regard to the results achieved by the Conference in that respect. He regretted that he had nothing optimistic to say about the subject of small-calibre firearms, though he did not agree with the sentiment that discussion in the General Working Group had amounted to a "burying exercise". Referring to the Göteborg seminar, he said that it had made the important contribution of demonstrating that muzzle velocity was not the main determinant of the severity of wounds, thus correcting a widely-publicized, earlier contrary view. He considered that a wider awareness of that kind of knowledge represented an aspect of progress. Progress was not

only to be measured in terms of prohibitions reached, but also by further knowledge of the connection between weapon design and wounding and indeed about the actual mechanism of wounding. He agreed with other delegations that a consensus regarding incendiaries might be in sight. He added his appeal to that of a previous speaker for more data to be made available by more countries both by states who manufactured weapons as well as by those who used them whether for external or internal conflicts. He expressed appreciation of the proposals which had emerged from the legal working group regarding the subject of international review.

29. Another speaker said that while the Conference had been unable to make any specific recommendations, it had done some very useful work. The highest degree of consensus had been on the question of non-detectable fragments. He also wished to pay a tribute to the efforts of one delegation to produce a generally acceptable proposal on incendiary weapons, in the discussion of which a certain emotionalism had been discernible, possibly because the discussion of that question had begun at a time when the use of incendiary weapons had been much in the public mind. The proposals in question pointed in the direction of a solution; his delegation could not yet accept them *in toto*, but it would give them very careful consideration during the coming weeks and hoped that, in later discussions, it would be possible to come nearer to an agreement. The proposals of three delegations concerning mines and booby-traps had been very carefully discussed in the military sub-group. While there had been no general consensus, agreement had been achieved on a number of aspects of the proposals and he expected that something quite close to the latest draft of the proposals would find final acceptance. The debate on small-calibre projectiles showed that there was still much work to be done on that category of weapons. The tests which had been carried out did not yet show conclusively that any of the various parameters—yaw, tumbling, velocity, transfer of energy—was decisive in determining whether a bullet design was inhumane. He regretted that weapon manufacturers had not been more forthcoming in the presentation of data useful for the Conference on that subject; that reluctance had given rise to a certain suspicion that more evidence was available than had been brought to the notice of the Conference. He welcomed the announcement that one country planned to hold a further symposium on the subject and hoped that national testing would continue, although he did not believe that the problem could be solved by any simple standardized test. There had been little discussion of future weapons and it was hard to get an idea of what their military characteristics might be. That was another matter which should be dealt with on a future occasion. Useful initial discussion had been held in the

legal sub-group and he wished to pay a particular tribute to the Chairman of that sub-group both for his efforts in the chair and for the very interesting contribution he had made. He shared the view that the time had now come for further political discussions. He also shared the optimism of the preceding speaker and the views expressed by other experts that the prime needs were for good will, flexibility, patience and realism. The Conference had made a step forward on the right road.

30. One expert recalled that there were three different types of moral and humanitarian obligations to be met, those of governments, those of the international community and those of the inventors of weapons. In a certain extent, serious efforts had been made at the Conference to achieve subtly modified versions of the objectives sought, but the speaker was convinced that complete prohibition was the only answer.

31. Another expert welcomed the efforts that had been made at the Conference, but considered that it had been diverted from its task by devoting a considerable part of its time to a definition of weapons and munitions. Although the meeting had fallen short of its possibilities, it had furthered efforts to prevent unnecessary suffering and had provided useful new data. In view of the rapid technical development of weapons in the past 30 years, much more information was desirable. He said that his country fully supported all efforts to reduce unnecessary suffering, but pointed out that all restrictions must be universal and reciprocal.

32. One expert felt that it was necessary to acquire even more detailed knowledge of the effects of certain weapons before any adequate legal instruments could be prepared. Difficulties were caused by the wide diversity of opinion on a number of facts as, for example, the need for using mines or napalm and the possibility of finding some alternative. Experts had been made aware of the true complexity of the problem of small-calibre projectiles and of the need for further research in the matter. It had been difficult to find satisfactory solutions meeting technical, military and national defence requirements. Other facts closely related to modern warfare also called for attention, those being the much discussed subjects of protection of civilians and unnecessary suffering of combatants. All of those problems had to be solved within the framework of the Law of War which, according to Max Petitpierre, was inseparable from humanitarian law. Although the Conference had been discussing armaments, it had not tried merely to limit arms—the function of another forum—but rather to create a new spirit of responsibility to guide those directing action in the field. Would that be possible at the present stage of evolution of international society? The Lugano

Conference had certainly taken a step in the right direction and there was no reason to adopt an attitude of pessimism about the final outcome.

33. One expert speaking on behalf of the delegations of a number of countries said that throughout the session delegates had been inspired by the symbol and significance of the Red Cross and had been constantly aware of the humanitarian aspect of the matters under discussion. They were grateful to the ICRC for having organized the Conference which would provide food for thought for quite some time to come, and appreciated the way in which the work, both in Plenary and in the General Working Group had been directed by their respective Chairmen. He welcomed the unanimous adoption of the Report of the latter body and said that it would provide a valuable basis for further work.

34. Another expert, on behalf of the African countries present, after thanking all concerned in the organizing and running of the Conference, expressed the hope that the CDDH in April would take advantage of the new data and proposals which had emerged.

Final Statement of the President of the Conference

35. The CHAIRMAN of the Conference delivered the following final statement:

“Our work has drawn to a close. Although this Conference has made considerable progress on what was achieved in Lucerne, it is perfectly obvious that the last word on the matter has not yet been said.

I must admit quite sincerely that to reach a consensus on specific points has proved far more difficult than we had imagined. We are, however, aware that agreements of this nature are related to important interests concerning the security of nations and that the subject is of the utmost complexity.

Despite all our difficulties and differences of opinion, it would seem to me that the main result obtained in Lugano has been a step towards a diplomatic agreement on the prohibition of certain weapons and on a limitation of their use. One working group has even considered the form that such a document might take. I am convinced that a diplomatic instrument on weapons will, one day, be a reality. The ICRC certainly hopes so, for it is important that restrictions be imposed in this sphere in order to reduce both the number and the suffering of civilian victims of war. I will not conceal from you the fact that the ICRC views with growing alarm the news of weapons whose ravages go far beyond the requirements of military action.

Many proposals have been submitted and considered. We have accumulated a valuable body of documentation and many points have been clarified. We are now far more aware of one another's attitudes. That, too, is all to the good.

Although we have not, at this juncture, reached a true consensus, I do feel that some general trends have come to light which could be considered a valid basis for further discussion. I am thinking, for example, of the conclusions reached on mines, booby-traps and fragmentation weapons.

As for incendiary weapons, the ICRC most fervently hopes that it will be possible to make further progress and that the groundwork done here will help pave the way to a future agreement which will meet with the approval both of the Red Cross and of the general public—for weapons such as these incur general disapproval.

We have now become aware that there exists a category of weapon known as small-calibre. We have heard of numerous technical experiments carried out in various countries and have even witnessed some here. Such experiments provide legitimate cause for concern. Although no conclusion has been reached this time, we have agreed on the need to press on with experiments. The ICRC is of the opinion that consideration of the calibre, the muzzle velocity and even other manufacturing characteristics may not suffice, but that it will be necessary, above all, to concentrate on the particularly dangerous effects that these munitions have on the human body. In fact, the main thing to be avoided is the effects.

In any case, it is high time that such weapons were given consideration. We are convinced that no government would tolerate these new weapons' having considerably more serious effects on human beings than did their predecessors. We should, moreover, like to see everything possible done to ensure that no escalation is sparked off in this sector.

Finally, the ICRC has noted that certain results have been achieved at both the Lucerne and the Lugano Conferences and is sure that these results will bear fruit at some later stage. In view of the humanitarian interests at stake, the ICRC is at your disposal to help in continuing the work.

Now it only remains for me to thank all delegates who, through their good will and courtesy, have facilitated my task, and also those officials who have given so selflessly of themselves for the success of the Conference, particularly Mr. Kussbach—who admirably chaired the General Working Group—the chairmen of the sub-groups; our indefatigable Rapporteur, Mr. Kalshoven, and the other Rapporteurs and their assistants; Mr. Pilloud, our Secretary-General, Mr. Cayla and his colleagues, the translators and all who have contributed to the organization of the Conference, especially Mr. Herbert and his excellent team of interpreters.

I wish you a pleasant journey home and hope that your thinking on return to your respective ministries will be productive so that this question of weaponry may remain a primary concern of all those on whom so many human lives depend.”

III. REPORT OF THE GENERAL WORKING GROUP

1. Introduction

1. The General Working Group of the Conference of Government Experts on the Use of Certain Conventional Weapons, second session, was set up by the Plenary Meeting of the Conference in accordance with Rule 5 of the Rules of Procedure. The General Working Group, hereinafter referred to as GWG, designated as its Chairman Dr. E. Kussbach (Austria) and as Vice-Chairmen Mr. A. de Icaza (Mexico), Mr. K. Saleem (Pakistan) and Mr. B. Wozniecki (Poland). Dr. F. Kalshoven (Netherlands) was designated to act as Rapporteur. Mr. Y. Sandoz and Mr. B. Zimmermann, legal experts of the ICRC, acted as Secretaries to the GWG.

2. The mandate of the GWG was to study in detail the various subjects of the work programme of the Conference after they had been introduced in plenary. The GWG was authorized to set up special working groups as necessary to deal with specific questions. In the course of its proceedings, the GWG set up the following special working groups:

- (a) a working group of military experts on mines and booby-traps;
- (b) a working group of technical experts on small-calibre projectiles;
- (c) a working group on legal issues.

Reports of the special working groups are annexed to this report (see III. 9, 10 and 11).

3. This report does not attempt to set out in any detail the debate held in the General Working Group. Instead, and following the recommendations of experts, it is structured so as to give prominence to:

- (a) areas of agreement or disagreement concerning the types of proposal which might be advanced for future consideration, and
- (b) new factual information of direct relevance.

2. Incendiary weapons

4. At the invitation of the Chairman, the GWG adopted a set of general guidelines as an aid to its consideration of incendiary weapons. These guidelines specified the various legal, medical and military matters which needed to be discussed and were used, in a flexible manner, as an agenda.

Proposals

5. A proposal for a general prohibition of the use of incendiary weapons was contained in document RO/610/4b, which embodied a revised version of Section I of document CDDH/IV/201 (see Annex A.21). Experts who were in favour of this proposal put forward the following arguments:

- (a) Although many incendiary weapons may have military value, almost all of them can be substituted by other weapons. This circumstance, as well as the extreme human suffering they may cause and the hazards to which they may expose non-combatants, justify their complete prohibition of use.
- (b) A general prohibition is to be preferred to the alternative of specific restrictions on use because it would be the more reliable. It would remove from field commanders the onus of having to decide in the stress of battle whether a particular application of incendiary weapons was or was not legitimate. Under conditions merely of restrictions on use, the deployment of incendiary weapons would continue, thereby perpetuating a situation which lent itself to abuse.

6. Experts arguing against this proposal put forward the following arguments:

- (c) Medical experts can agree only that severe burn injuries present peculiarly difficult problems of treatment. There is no consensus on whether injuries from incendiary weapons are likely to impose more suffering either than other war burn injuries or than any other type of traumatic injury. That being so, the medical arguments in favour of a general prohibition remain unproven.
- (d) Incendiary weapons represent an important element in the military arsenals of some States, and the security of those States would be weakened by a general prohibition of use. While substitutes for incendiary weapons might perhaps be found, it is not evident that their use would result in a diminution of the overall level of human suffering and injury to non-combatants.

7. The proposal contained in document RO 610/4b contained definitions both of the munitions to which a general prohibition was to apply and of those to which it was not to apply. Included among the latter were certain munitions that might have secondary or incidental incendiary effects. Included also were munitions that combine incendiary effects with penetration or fragmentation effects and specifically designed for use against certain military targets. It was explained that the last-mentioned class of munitions was exempted from the ban in an attempt to reconcile humanitarian and security considerations.

8. An expert who, while continuing to support the main thrust of the proposal contained in document RO/610/4b, had always maintained an express reservation with respect to this latter class of exemption, put forward on behalf of his government a proposal, contained in document COLU/220, to prohibit the use of all incendiary weapons as defined in para. 49 of the Report of the Lucerne Conference. The proposal was in the form of a Draft Additional Protocol to the 1949 Geneva Conventions.

9. While expressing sympathy for the proposal contained in document RO 610/4b, an expert considered that there were, contained in the definition of incendiary munitions to which the ban was to apply, certain incendiaries, not exempted in that proposal, but which required exemption for security reasons. He referred specifically to simple incendiaries which could be operated by a single man or a small group and would not need expensive or complicated delivery systems. The use of such incendiaries, he explained, would be mostly anti-matériel and notably against single combat equipments e.g. various military vehicles, boats and cannons as well as such limited material targets as depots, stocks and military transports.

10. A similar suggestion was put forward which also used the approach of exempting specified munitions. The proposal distinguished between "high-capacity" and "low-capacity" incendiary carriers, the distinction being based on the volume of the incendiary-agent payload carried by the munition, and envisaged a complete prohibition of use applying only to the high-capacity carriers. It was explained that this approach sought to protect non-combatants within the immediate vicinity of legitimate military objectives.

11. Experts supporting a general ban expressed their readiness to consider exemptions such as those recorded in the two preceding paragraphs.

12. Parallel with the attention given to the proposals noted above, there was discussion of proposals that envisaged a general prohibition of the use of napalm but from which specific exemptions were made concerning the types

of target that might be attacked. Their proponents put forward the following arguments in favour of such restrictions on use:

- (a) Of all incendiary weapons, it is napalm which has aroused the greatest public concern. Proposals concentrating on napalm would therefore serve to reflect the present state of public opinion.
- (b) Having regard to the objections raised against proposals for a general use prohibition, proposals for restrictions on the manner in which particular incendiary weapons might be used are likely to attract a broader consensus.
- (c) In view of the military value which some experts attach to napalm, proposals which would permit its use in specified circumstances would strike a judicious balance between humanitarian and security considerations.

13. The following objections were raised against this class of proposal:

- (d) Having regard to the absence of consensus among experts, either on the degree of human suffering imposed by napalm, or on the indiscriminacy of its most usual applications, napalm did not warrant special proscription. Moreover, the military value of napalm could perhaps be considered to reside more in its psychological effects than in its physical ones; and since it thereby achieved its desired results more by stimulating flight than by direct casualty-production, a case could be made that it was likely to cause less overall suffering than alternative types of weapon.
- (e) From a humanitarian standpoint, there is no logic in proscribing one type of incendiary weapon but not another. In particular, it would be unduly shortsighted to concentrate on napalm for it was readily conceivable that other incendiary agents, perhaps more destructive ones, could be used in place of it; indeed, one such category of agent was already beginning to replace napalm, namely the thickened pyrophoric agents, of which TEA is an example.
- (f) A ban which contains a number of exemptions would hardly be viable and would be likely to break down. Further, although there may be useful military applications for napalm, these are not indispensable since equivalent forms of firepower are available. There is therefore no security need to exempt those applications of napalm from proscription.

14. A detailed proposal for restricting the use of napalm was contained in Annex B of document COLU/205 (Annex A of which, as noted in para. 18 below, aimed at protecting the civilian population). For the text of the

proposal see Annex A.4. It was explained that the exemptions specified for the types of target that could continue to be attacked with napalm related to situations in which napalm could be used in an accurate and discriminate way and where, generally speaking, attacks with alternative weapons would be likely to cause as much or more suffering.

15. Several different views were put forward on the appropriateness of the exemptions specified in COLU/205. Questions were raised as to whether the proposal adequately reflected considerations of unnecessary suffering, particularly among combatants, and of military importance. A number of amendments were proposed accordingly.

16. One such proposal was contained in the section on protection of combatants in document COLU/211 (which, like COLU/205, also contained a section on the protection of civilians; see Annex A.10). This proposal exempted fewer types of target; it was not limited to the use of napalm but referred to all incendiary weapons.

17. Other proposals, all of them suggested as amendments to COLU/205, sought to increase the list of permissible targets to include the following:

- (a) "other military facilities used directly in the zone of operations";
- (b) "military objectives such as fuel stores or troop concentrations"; or
- (c) "all military targets open to legitimate attack".

18. A third category of proposals was concerned only with the protection of civilians in populated areas from incendiary attack. Discussion commenced with the proposal contained in Annex A of COLU/205 (see para. 14). The reasoning behind the proposal was explained as follows: the experience of past wars had demonstrated that massive use of incendiary weapons in area bombardments of populated areas could easily lead to widespread suffering among the civilian population. Although such use was probably proscribed by existing international law or would be so as a result of the CDDH, it was desirable to formulate a specific rule which prohibited such attacks but which did not preclude the discriminate use of incendiary weapons against military objectives located within populated areas.

19. A similar proposal was put forward in document COLU/207 (see Annex A.6). It was explained that this had been drafted so as to bring it into line with the language adopted at the CDDH for draft Protocol I.

20. The proposals described in paras. 18 and 19 were criticized on the grounds that the concept of military objective was a very vague one and that reference to it could exempt from proscription attacks on a very wide range

of targets located within civilian areas. The proposal contained in document COLU/211 (see Annex A.10) was designed, so it was explained, to narrow down this range. As noted in para. 16, this proposal also offered restrictions on the battlefield use of incendiary weapons. A further criticism of the two proposals described in paras. 18 and 19 was that they might admit the *a contrario* conclusion that weapons other than incendiaries could be used against non-military objectives.

21. A corrigendum was offered on Annex A of document COLU/205, one effect of which would be to meet the latter criticism. Its main purpose, however, was to reduce to a minimum the risks posed to civilians by the use of a particular category of incendiary weapon, namely flame munitions such as napalm. The text of that corrigendum was incorporated into the text of document COLU/205.

22. A number of experts welcomed the corrigendum as an important contribution to the discussion on this topic and as an interesting compromise suggestion; it would, however, require careful examination in view of its security implications. Questions were raised about the aptness of the distinction drawn between incendiary weapons in general and flame munitions in particular, having regard to the limitation of the latter to munitions based on a gelled hydrocarbon as the incendiary agent, thereby seeming to exclude other important agents, such as TEA. Some experts objected to napalm being singled out as a specific example of flame munitions. One expert suggested that the distinction might more properly be made between intensive-type and scatter-type agents. He went on to suggest that it might be explored whether flame munitions—or alternatively scatter-type munitions—which in his view largely coincided with anti-personnel weapons, could be prohibited for use five years, say, from now, with use of other incendiary weapons on urban areas being prohibited without delay. (This suggestion was a particular form of the broader suggestion described in para. 24.)

23. It was widely recognized that, while the rules set out under (a) and (b) of Section 2 might be considered as mere restatements of existing international law, the rule proposed under (c) would add to the law. Some experts cautioned the “restatement” contained in paragraphs (a) and (b) might lead to confusion; they emphasized the need to prevent discrepancies between the law as it stood and was being developed at the CDDH, e.g. with regard to the precautions to be taken in attack, and language worked out in the present context.

24. Other detailed suggestions included the insertion of the word “immediately” before “imminent” in Section 2 (c) or, alternatively, the deletion of the last three words of that Section.

25. One further proposal within the third category was put forward, as follows:

“It is prohibited to use indiscriminate means and methods of conduct of military operations by incendiary weapons against populated areas as a whole under conditions that in these areas civilian population prevails and military objectives located in these areas may be neutralized by other means and methods which are less dangerous to the civilian population.”

26. The proposal contained in document COLU/208 (see Annex A.7), which was presented as an amendment to COLU/205, removed altogether the exemption of military objectives within or near population centres.

27. With respect to the basic idea underlying the proposals described in paras. 18-23, which all aimed at improving the protection of civilians in populated areas against incendiary attack, some experts observed that the question of the protection of the civilian population was treated both in existing legal instruments and in the work of Committee III of the CDDH, to whose domain it properly belonged; they felt strongly that the primary task of the present Conference was to seek rules for the protection of combatants against the use of weapons that cause unnecessary suffering.

28. In the course of the discussions, it was suggested that common ground might be found in a proposal which provided for a general prohibition of the use of incendiary weapons that would become operative only after a specified period of time had elapsed, say five years. The lapse of time would enable States which possessed stocks of incendiary weapons to acquire substitutes for them.

29. An expert suggested that States where napalm was considered particularly inhumane and not indispensable might unilaterally renounce its use. Alternatively, he suggested, States might seek to prohibit on a regional basis the use of incendiary weapons. While the latter suggestion was welcomed as interesting by some experts, others considered that it would amount to regional humanitarian law, which was unacceptable.

New Data

30. One expert reported on the results of experiments in which animals had been subjected to burning napalm. Goats had been clipped and then tethered

in the open or in shallow slit trenches. Each one was covered with a single army blanket. A standard napalm bomb was dropped on the animals, completely enveloping 30 goats in its fireball. One goat was severely injured by a direct hit from the bomb casing. Two goats had slightly reddened skin, and six had singed hairs. No goat was asphyxiated or displayed signs of carbon monoxide poisoning. No comments were offered on this report.

31. The same expert also reported on the results of experiments involving human subjects. A burning blob of napalm on the bare skin became intolerable after one second. The size of the blob had no effect on this pain threshold. A single layer of cotton protected the skin against burning for 6-7 seconds, and a second layer for 30 seconds. Of the thickened-napalm blobs striking an individual in a simulated direct hit, 69% could be extinguished with the bare hands. No comments were offered on this report.

32. A second expert referred to a recent publication in the military-medical literature* which described experiences in the treatment of firebomb casualties during the Korean War. The expert stated that, on the basis of this evidence, it was to be expected that about 35% of those caught by a firebomb would be killed, and of the survivors 25-35% would need to be evacuated by other people and 50-55% would be *hors de combat*. It was commented by some experts that these data, based on a broad material, were of greater interest than data which had been presented and which emerged from one single incident.

33. A third expert reported on the results of effectiveness calculations for three alternative types of munition that could be used in close air support: napalm, general-purpose bombs, and bomblet-dispenser munitions. The scenario used depicted unprotected, prone, friendly and enemy troops, each located within separated areas of 300×150 feet, in open terrain; the enemy troops were attacked by a single close-support aircraft; for each munition, delivery conditions were chosen to optimize the effects on the enemy. Using delivery accuracy values for the munitions representative of those which occur in combat, it was estimated that the general-purpose bombs and bomblet-dispenser munitions would cause, respectively, 1.5 and more than 5 times as many incapacitating wounds to enemy troops as would the napalm. When the enemy and friendly troop concentrations were separated by a distance of 100 feet, it was estimated that the explosive munitions would produce about 80% as many incapacitating wounds among friendly troops as among

* V. A. Dolinin. *Voenna Medits. Zh.* 1975 (12): 33-37.

enemy troops, dropping to about 40% for a separation distance of 300 feet. At the latter separation distance, napalm would incapacitate no friendly troops.

34. A fourth expert, commenting upon the report recorded in the preceding paragraph, thought that the results might have been different had napalm been compared with aircraft guns, rockets or so-called smart bombs. Close air support, he said, required a complicated and costly system comprising aircraft, weapons, intelligence units and forward controllers. Advantages of the use of napalm bombs in this type of operation were the following: possibility for the aircraft to attack at a low altitude, under adverse weather conditions, and without running the risk of being accidentally hit by the bombs; possibility to drop the bombs close to friendly troops; possible use for battlefield illumination; psychological effect both on enemy and friendly troops. Disadvantages were: the doubtful effect on troops equipped and trained to withstand attacks with incendiary bombs, the risk of unwanted secondary fires, and the influence of climate and weather conditions on the effect of napalm bombs. A number of substitute weapons were available for napalm bombs and, in future, most attacks also with these substitute weapons could be carried out at a low altitude; another way of avoiding anti-aircraft fire was the "stand-off attack", and smart bombs and missiles could be used for that purpose. Again, the development of multiple-projectile weapons such as the rapid-firing airborne gun with a calibre of 25-35 mm and improved, increasingly accurate, systems for conveying information about the target would, in future, tend greatly to reduce the safety distance for use of such weapons in close proximity to friendly troops. In the event of the enemy being too close for any of these substitutes, the use of napalm bombs could still be foregone by using the weapons of the friendly ground forces instead.

35. A fifth expert reported on follow-up studies that had been made, by interviews, during September 1974 through June 1975, of the victims of the napalm accidents referred to in para. 96 of the Lucerne report; he also offered some corrections on the facts set out there. There had been 51 (not 53) people caught within the fireballs of the seven accidental napalm drops during 1968-69 that had been evaluated. Three of them had suffered no burns at all. Of the other 48, half had suffered second or third degree burns covering 10% or less of their total body area; three-quarters had had up to 20% of total body area burned. Three (not 4) died from their wounds, which represents a mortality rate comparable with that reported for burn patients in general. All the casualties had reported that they had been able to perform any physical activity attempted immediately after wounding. One survivor, despite 27% burns, had made his own way to medical treatment,

taking 14½ hours to do so. The period from wounding to death for the three fatalities had been 28 days, 7 days, and 7 days. For the other 45 casualties, the average time to release from hospital had been 53 days. Twelve of them were subsequently discharged from military service because of their burns; 44 of the 45 (one could not be contacted) were subsequently employed in a variety of professions or were receiving higher education; two had since died in accidents not related to their napalm injuries; and three were having medical/mental problems, though in one case not thought to be burn sequelae. The most prevalent complaint, noted in 21 interviews, concerned the sensitivities of the burned areas to heat or cold; only one interviewee referred to disfigurement. No evidence was found in any of the casualties of carbon monoxide toxicity.

36. A sixth expert presented comparative data on napalm injuries and other burns that had come under his care. Out of 34 napalm cases during 1966-70, only one had died: this represented a mortality rate no greater than expected from other burn injuries of comparable extent. The time to closure of the napalm burns had averaged 52.7 days, as compared with the 65.4 days required by the similarly burned patients within the same age group being treated at the same time.

37. It was commented that the data recorded in the two preceding paragraphs concerned an extremely limited material and that they did not warrant any general conclusions as to lethality or incapacitation or, for that matter, the degree of suffering inflicted by the use of incendiary weapons in armed conflict. This view was not shared by some other experts.

3. Delayed-Action Weapons and Treacherous Weapons

38. Although the GWG discussed the question of delayed-action and treacherous weapons in some detail, it was agreed that adequate treatment of the military considerations involved required that the subject be referred to a special working group. A working group of military experts on mines and booby-traps was duly convened; its report is reproduced in III.10.

Proposals

39. The proposals put forward concerned five distinct topics:

- (a) the use of time-fused munitions;
- (b) the recording of minefields;

- (c) the use of remotely delivered mines (such as those referred to in the Lucerne report as “scatterable mines”);
- (d) the conduct of mine warfare within areas of civilian population; and
- (e) the use of booby-traps.

Two general cautions were advanced during the discussion of these proposals: due consideration should be given to (1) the requirements of defensive military operations and (2) the risk of compelling resort to more objectionable means or methods of warfare.

40. On topic (a), a proposal was put forward in document COLU/213 (see Annex A.12). It was explained that the proposal sought to eliminate as far as possible, by means of an express time limit, the effects of time-fused munitions which would escape, whether in time or in space, the sphere of military operations properly speaking and which would, hence, pose grave risks for the civilian population or for rescue operations. Opposition to the proposal was expressed on the grounds that the specification of any one particular time limit could place undue restrictions on important military operations.

41. On topics (b)-(e), proposals were put forward in document COLU/203 (see Annex A.2). These attracted arguments both *pro* and *contra*, and gave rise to several alternative proposals. One of these, noted in para. 5, also addressed the same four topics. The others were more limited in this respect; they are noted in paras. 6-18, which are ordered according to topic.

42. Proposals on topics (b)-(e) were also put forward in document COLU/215 (see Annex A.14), being presented as amendments to the COLU/203 proposals. (The wording referred to for the amendment of the proposal on the recording of minefields is set out in para. 44 below.)

43. Concerning the recording of minefields, doubts were expressed about a number of different aspects of the proposal contained in COLU/203, which also provided for the publication of minefield locations upon the cessation of active hostilities. The Working Group of Military Experts (on which see para. 38) considered these matters, and its report advances a revised proposal.

44. It was suggested that any provisions for the recording and reporting of minefields should be supplemented by provisions for the disposal of minefields. This suggestion was put forward in the form of additional wording for part B of the COLU/203 proposal, as follows:

“*Bbis*. Disposal of Mines

- (a) No mine may be deployed until means exist to ensure that it can be safely located and disposed of at the close of hostilities or when the mine no longer serves the military purpose for which it was placed in position.
- (b) The military authorities of the adversaries shall co-operate as necessary at the close of hostilities to ensure the disposal of all mines or other unexploded munitions.”

45. Concerning the use of remotely-delivered mines, a proposal to prohibit the use of aircraft for laying anti-personnel mines had already been advanced in document CDDH/IV/201 (see Annex A.21).

46. The COLU/203 proposal on remotely-delivered mines provided for the prohibition of the use of such mines unless the mines were equipped with a neutralizing mechanism or the area in which they were delivered was distinctively marked. The COLU/215 proposal would, in addition, prohibit the use of remotely-delivered mines in populated areas. A number of difficulties were perceived in these approaches and in the manner in which “remotely-delivered mines” were defined; these, and a range of possible solutions are set out in the report of the Working Group of Military Experts.

47. Another suggestion concerning remotely-delivered mines was put forward in the following terms:

“The use of remotely-delivered mines outside the battle zone is prohibited. Within the battle zone, remotely-delivered mines must be fitted with a neutralizing mechanism or the areas in which these are delivered must be marked in some distinctive manner.”

48. Remotely-delivered ammunitions were explicitly included within the scope of the proposal on time-fused munitions contained in document COLU/213, noted in para. 40 above.

49. Concerning the conduct of mine warfare and related activities within areas of civilian population, the proposal contained in document COLU/203 sought to prohibit, with certain exemptions, the use of mines, booby-traps and suchlike devices in circumstances where they might create undue dangers for the civilian population. The proposal was criticized on the grounds that it would afford insufficient protection for the civilian population, both because the range of munitions whose use was to be prohibited was considered to be unduly narrow, being restricted primarily to manually emplaced munitions, and because the exemptions made from the prohibition were considered to be unduly broad. The COLU/215 proposal was intended, so it was explained, to offer more restrictive language in both these respects. Another criticism of the COLU/203 proposal was that it amounted to nothing more than a

restatement of prohibitions derived from existing international law. The COLU/215 proposal was intended, so it was explained, as a response to this criticism also. These and related matters were discussed further in the Working Group of Military Experts, as is noted in the report from the group.

50. Concerning booby-traps, the proposal contained in document COLU/203 offered a prohibition of the use of a number of specific devices or techniques falling within this category. This approach attracted a number of criticisms and alternative proposals.

51. The proposal put forward in document COLU/217 (see Annex A.16) recommended a specific addition to the list of booby-traps contained in the COLU/203 proposal.

52. The proposal put forward in document COLU/206 (see Annex A.5) was confined to booby-traps of the explosive type, this on the ground that in the view of its authors the prohibition of the use of non-explosive booby-traps already was contained in Article 23 of the Hague Regulations. Some experts added that other international legal instruments in force also had a bearing on this topic. Other experts argued, on the other hand, that since non-explosive booby-traps might be of substantial military importance for poorly-endowed armed forces, a prohibition of their use would be inappropriate.

53. The proposal put forward in document COLU/214 (see Annex A.13) recommended the deletion of the passage specifying non-explosive booby-traps from the COLU/203 proposal.

54. It was argued that it was inappropriate to distinguish between explosive and non-explosive booby-traps, since both were equally perfidious. It was therefore proper to envisage only a comprehensive prohibition of the use of booby-traps, a consideration which also argued against the approach of specific prohibitions used in the COLU/203 proposal and its congeners.

55. A fully comprehensive approach would require agreement on what precisely was to be regarded as a booby-trap. A proposal for such a definition was put forward in document COLU/219. This, and other matters relating to booby-traps, were discussed in more detail in the Working Group of Military Experts.

New data

56. Some new information was presented on the reliability of the self-destruct mechanisms fitted to certain mines. For these munitions, the standard

of reliability aimed at was that only one in a hundred thousand should remain hazardous after the self-destruct time had elapsed; and a reliability of one in a thousand was specified as the lowest acceptable. In the mine system referred to, test experience had shown that something in the order of one in 30,000-40,000 mines failed to neutralize.

4. Small-Calibre Projectiles

57. Although detailed consideration was given in the GWG to small-calibre projectiles, the subject was also discussed in considerable depth during the introductory plenary debate, and within the Working Group of Technical Experts referred to in para. 63 below. New data were presented and discussed in each of the three fora. More so, therefore, than for most of the other agenda items before the GWG, what is written in this chapter of its report conveys an incomplete picture of the contributions to the Conference made by experts.

Proposals

58. Document CDDH/IV/201 (see Annex A.21) offered a proposal for prohibiting the use of especially injurious small-calibre projectiles. Such projectiles were defined as those which, upon impact with the human body, displayed any of four specified wounding phenomena (projectile deformation, projectile tumbling, intense hydrodynamic shock, and secondary-projectile formation), insofar as those phenomena resulted from the design or the velocity of the projectile.

59. This proposal attracted criticism, much of it accompanied by technical data too detailed to report here. The principal line of argument, however, was as follows. Whether or not the occurrence of a particularly severe wound from a bullet or similar projectile could be explained adequately in terms of one or more of the four specified wounding phenomena, the proposal also rested on the assumption that the determinants of those phenomena would invariably reside in the way the bullet was designed and its velocity at impact. Yet adequate proof that the determinants were so limited was not available; and several other possible determinants could be envisaged, for example, those residing in the design features or condition of the weapon used to fire the projectile. Sponsors of the proposal explained that they were ready to adjust the proposal in the light of new knowledge. It seemed to them that the points in their proposal on tumbling and bullet disintegration remained fully pertinent in the light of the new data which had been produced.

60. There was general agreement, however, that design principles existed which afforded the manufacturers of small-calibre projectiles a wide range of choice in the degree of severity of the wound likely to be inflicted by such a projectile. For example, it seemed that bullets of 5.56 mm calibre, or smaller, could be designed that were no more injurious, even at higher velocities, than 7.62 mm bullets. Some experts considered an impact velocity of over 950 or 1,000 m/s to be an important wounding factor. Other experts thought that 1,500 m/s might constitute a critical velocity in this respect. Even so, there was no general agreement as to whether such design principles could be specified in a form on which could be based projectile-use proscriptions that would not obtrude upon important military requirements. Some experts argued that it was possible that knowledge in this area might be increased relatively easily. The suggestion was made that governments be encouraged to promote further research. Several experts paid particular attention to the phenomena of bullet tumbling and disintegration.

61. Consideration was given to the lines which such future work might take. Three particular areas of enquiry were identified:

- (a) how best to describe target effects, so that evaluations within different laboratories would become easily comparable;
- (b) how best to design and conduct trials of different projectiles, with a view to establishing standardized procedures; and
- (c) the establishment of a precise criterion or criteria for defining acceptable limits to wounding power.

Suggestions were made that research in these areas might be performed not only on a national basis but also on an international one.

62. During the discussion of these matters, it was generally recognized that the terminal effects of bullets in live tissue were extremely complex, and that simple solutions to the problems under consideration were unlikely to be found within the present body of knowledge. It was suggested by several experts that having regard to the broad range of variables that might or might not be significant parameters, side-by-side comparisons of different bullets fired into animal tissue or tissue simulants could for the present provide little in the way of decisive information, valuable though the comparisons might be for the design of further experiments. Certain general propositions were, however, beginning to emerge. In particular, there was general agreement that the severity of a bullet wound depended in large measure upon the amount of energy deposited per unit length of the wound track. It was further suggested by some experts that if this correlation were examined

further in experiments that were tightly controlled, sufficiently numerous, and reliably instrumented, it might indeed become possible to proceed towards an assessment of whatever correlations might be thought to exist between particular wounding phenomena, on the one hand, and particular projectile design features, on the other. Other parameters of particular importance were the site of the body wound, protective materials used, and the environment through which the projectile passes before the tissue is struck. The suggestion was made that a team of specialists should be asked to propose to a future Conference of Government Experts a testing standard which would simulate, as far as possible, the structure of the human tissue.

63. The notion of a standard test aroused wide interest, and a working group of technical experts was set up to consider it in detail. An expert complained that the fact that certain projectiles cause more severe wounds than others had been buried under a load of technicalities and demands for thorough research. The same expert estimated that the data already available were sufficient for the preliminary formulation of a principle to the effect that those projectiles that, due to their properties, cause superfluous injury be prohibited from use.

New data

64. Much new information was contained in statements made by experts within the GWG. Its general tenor is reflected in paras. 59 to 62 above, though without doing full justice to the detail and specificity with which it was presented. Further information was contained in papers that were submitted formally to the Conference (document COLU/204) or distributed informally.

65. Document COLU/204 set out the results of tests in which bullets of 7.62 mm and 5.56 mm calibre had been fired into blocks of soap at ten different ranges (25 m to 1,000 m). The volumes of the resultant cavities within the soap blocks, and the lengths of the neck of the cavities, had been measured and compared with the energy reckoned to have been deposited by each bullet. Experts commented in some detail upon the paper and upon the relationships between its findings and the other technical data submitted; here again, paras. 59 to 62 reflect the general lines of the discussion.

66. Reference was made by several experts to the results of similar experiments on animals (pigs), that had been conducted during the international symposium on wound ballistics that had been held in Göteborg, Sweden, in July 1975, and which several of the experts had attended. One of the experts, who had been among the organizers of the symposium, reported on

the results of follow-up studies, including soap-block experiments, that had been performed after the symposium, referring to a paper that had just been published in a professional scientific journal.* He had previously remarked, during the introductory plenary debate, upon certain similarities between these results and those that had been reported in document COLU/204. Other experts remarked upon apparent points of divergence. One expert expressed doubt about the accuracy of techniques employed in these experiments. Another expert said he could not accept this criticism.

67. A further expert presented, in outline only, the results of tests that had been conducted in order to compare the terminal effects of dum-dum bullets with those of representative 7.62 mm and 5.56 mm calibre bullets in current military use. Particular soft-point and hollow-point hunting rounds, said to resemble certain of the soft-point and hollow-point cartridges produced at Dum-Dum Arsenal immediately prior to the 1899 Hague Declaration, were used in the tests. Two comparisons were made: one of energy deposited within gelatin blocks at different ranges and the other, using goats, of permanent wound cavities as measured after autopsy. The expert stated that the general trend apparent in the two comparisons was that the wounds caused by the hunting rounds were significantly more severe than those caused by the military projectiles, even in cases where the latter tumbled or broke up in the wound. Another set of similar experiments compared currently used military rounds of 7.62 mm and 5.56 mm with “dum-dum” projectiles of similar calibre, mass and striking velocity. The results, this expert said, showed that even though in certain cases the military projectiles tumbled and broke up, there were great differences between their effects and those of their counterpart “dum-dum” configurations. Hence, this expert concluded that the tumbling and break-up of military projectiles could not be equated to the “mushrooming” characteristic of dum-dum projectiles. Another expert urged care in making these comparisons, since the original British dum-dum bullets, which had only 1 millimetre diameter of the core unjacketed, had considerably less effect than some hunting bullets.

5. Blast and Fragmentation Weapons

Proposals

68. At the outset of the discussion within the GWG on this agenda item, it was noted that blast and fragmentation effects were frequently combined,

* R. Berlin, L. E. Gelin, B. Janzon, D. H. Lewis, B. Rybeck, J. Sandegard and T. Seeman: “Local effects of assault rifle bullets in live tissues”, *Acta Chirurgica Scandinavica*, Supplementum 459 (1976).

and that this would create problems of categorization in the elaboration of the proposals. It was clear that a total prohibition of the use of blast and fragmentation weapons would be out of the question. The view was therefore expressed that the only realistic courses open were either to prohibit completely the use of certain weapons, or to place restrictions on the manner in which any of the weapons might be used; with regard to the latter course, one possibility (and the only one to be put forward in the GWG) was to concentrate on anti-personnel uses. However, the idea of distinguishing between anti-personnel and anti-matériel applications, which had arisen frequently during discussion on other agenda items within the GWG, was criticized on the grounds that the distinction between the two applications would be difficult to define with adequate precision.

69. With regard to the possibility of prohibiting use of certain specific weapons, experts gave their attention primarily to multiple-submunition weapons of the prefragmentation or controlled-fragmentation types, to multiple-fléchette munitions, to fuel/air explosives, and to weapons dispensing fragments that would be difficult or impossible to detect when lodged in the human body. Proposals were made on each of these classes.

70. Document CDDH/IV/201 (see Annex A.21) included a proposal for a ban on the use of multiple-bomblet weapons which act by ejecting a great number of small-calibre fragments or pellets. Such weapons were considered, so it was explained, to cause undue suffering because of the multiplicity of the wounds they might inflict on individuals; they were also considered to lend themselves to uses that could particularly easily be indiscriminate, whether intentionally or inadvertently. By way of counter-argument to the contention about multiple injury, reference was made to a comparative study that had been undertaken of wounds inflicted by fragmentation munitions of the controlled or pre-fragmented type and of the older uncontrolled type. While it appeared true from this study that the former type tended to cause a higher proportion of multiple injuries among casualties than the latter, higher mortality rates were found among casualties caused by the latter. Though the degree of pain in each case could not be quantified, the comparison thus suggested that, on one criterion, the newer types of fragmentation munition caused less suffering than the older.

71. It was further suggested that, in view of the apparently lower degree of suffering which the latest types of fragmentation weapon caused, military and humanitarian requirements were moving in the same direction, for the military rationale underlying the introduction of controlled-fragmentation or prefragmentation munitions in place of randomly-fragmenting ones was

that the newer types had a greater effective area coverage. Yet it was precisely in this increased area coverage that a number of experts perceived grave dangers of indiscriminate use. The possibility was raised of restricting the CDDH/IV/201 proposal to weapons having an individual area of effectiveness greater than a specified threshold, say one square kilometre. Such a restriction need not, so it was argued, conflict with security requirements, as there exist possibilities to cover most military targets at the company level with weapons of the quality required. An expert referred to a particular type of multiple-bomblet weapon in which the proportion of the bomblet payload actually ejected, and hence the effective area coverage, could be preselected according to, for example, the size of the target.

72. A proposal was put forward in document COLU/218 (see Annex A.17) which sought to prohibit the use of fragmentation munitions of the prefragmented type in which the fragments were irregularly shaped, and therefore likely to cause excessive suffering.

73. Document CDDH/IV/201 had also contained a proposal for prohibiting the use of multiple-fléchette munitions and the like. This proposal attracted little comment, although doubts were expressed as to whether sufficient was yet known about the characteristics of fléchettes to justify any form of proscription. Reference was made, however, to a number of different fléchettes under development, though not all of them for multiple-fléchette munitions, which were apparently being designed to cause particularly severe injury (e.g. soft-point fléchettes, or those having features such as a curved point which increased the likelihood of tumbling within the wound). An expert referred in particular to the possibility of firing fléchettes by means of a powder charge placed in a special shell, known as “bee-hive”; they had, he said, good ballistic properties, especially as far as deceleration was concerned; to have full profit of these properties the fléchettes should be launched in such a manner that their trajectory would be almost parallel to the ground.

74. With regard to fuel-air explosive (FAE) weapons, two proposals were put forward, as noted in paras. 75 and 76 below. One rested mainly on the rationale that suffering and mortality rates would be very high in any anti-personnel use of FAE. The other had been motivated, so it was explained, by three considerations. The first was the belief that FAE weapons lent themselves too easily to indiscriminate applications, by virtue of the very large areas of effectiveness that were available from some of them. The second was the belief, which was derived from a combination of field experiment and theoretical calculation, that FAE weapons caused undue suffering by virtue of the very high mortality rates to be expected among FAE casualties; the

deaths were, moreover, likely to be particularly painful. The third was the belief that use of such FAE would go beyond the goal of putting an enemy *hors de combat*. However, doubts were expressed about the validity of the mortality-rate expectations; and one expert reckoned that FAE casualties displayed no significantly higher mortality rate than those found among casualties from more conventional explosives. For some experts this consideration and the existence of an important military requirement for FAE weapons, as a means for neutralizing minefields, told against the proposals. Other experts took the view that the military utility of FAE weapons was not yet fully established and that, for this very reason, proposals should be considered before it was too late.

75. The first of the proposals had been put forward in document COLU/202 (see Annex A.1). In seeking to prohibit the anti-personnel use of weapons which relied exclusively for their effect on shock-waves in the air, the proposal was criticized as being too broad in scope, since it was not specifically limited to FAE weapons: there existed other categories of munition which exerted their effects solely through blast, e.g. concussion grenades and certain types of land mine. However, the sponsor of the proposal considered there were advantages in the use of forward-looking wording.

76. The second of the FAE proposals was contained in document COLU/209/Corr.1 (see Annex A.8). This differed from the first proposal in incorporating what amounted to a definition of fuel-air explosives, and in not limiting the proposed prohibition to anti-personnel uses.

77. With regard to weapons dispersing fragments that would be difficult or impossible to detect when lodged in the human body, a proposal for a complete prohibition of use was put forward in document COLU/212 (see Annex A.11). This proposal defined the proscribed weapons as those “producing fragments which in the human body escape detection by the usual medical methods”. The sponsors of the proposal subsequently put forward amendments to meet criticisms expressed, culminating in the wording set out in para. 79 below.

78. One criticism of the COLU/212 proposal was that it would place excessive restrictions on weapons which, by chance rather than intent, sometimes gave rise to wounds in which the fragments could not subsequently be detected: it was convenient, for example, to use plastic parts rather than metal ones in some munitions. The proposal contained in document COLU/216 (see Annex A.15) was put forward to accommodate this criticism.

79. Another criticism of the COLU/212 proposal, also made of the COLU/216 proposal, arose from the consideration that medical methods which might be usual in one country might be unavailable in another. Several suggestions were made on how to cope with this criticism; the wording which attracted the most numerous expressions of support was as follows:

“It is prohibited to use any weapon the primary effect of which is to injure by fragments which in the human body escape detection by X-rays.”

80. Although there was a very wide support for this proposal it was not unanimous, for there were those among the experts who considered that the specification only of the radiographic method of detecting fragments did not take sufficiently into account such other methods of detection as might now be available, or be developed in the future, which were both superior to current X-ray techniques and perhaps also easier to use. Moreover, the effect of such a limitation would be to place, so it was argued, unreasonable constraints on weapons design. For these reasons it was suggested that the following wording was preferable:

“... fragments which cannot be detected by medical procedures, including X-rays.”

81. A suggestion was made for a wording intermediate in scope between that described in paras. 79 and 89:

“... fragments which cannot be detected by normal medical procedures, including X-rays.”

82. The question was raised whether there would be a need to attach to whatever wording might subsequently prove acceptable an annex particularizing appropriate medical procedures.

New Data

83. Some new data were submitted by experts on performance of fuel-air explosives and of certain fragmentation munitions. This is referred to in paragraph 74 above. More specifically, the data presented by one expert were the following. He had carried out an efficiency estimate based on experiments and calculations of FAE blast and on probabilities of death and injury caused by blast waves, obtained from open sources considered as reliable relating to blast effects of nuclear weapons. The estimate carried out showed that if one FAE bomblet, containing about 30 kg of fuel, was detonated close to the ground, the average number of unprotected soldiers killed relative to

the total number killed or injured would amount to about 50%. Attack by FAE on soldiers in foxholes would probably raise this figure. A simultaneous attack by several bomblets of the type described would also increase the total ratio of killed-to-wounded. For one drop pattern, which could be achieved with an older type propeller aircraft, the death probability could be estimated at 85-90%. For uses of FAE covering extensive areas, this figure could increase almost indefinitely towards the upper limit of 100% killed. Size was not, he explained, the only problem. Others that he mentioned included the difficulty of differentiating bone fragments from extraneous fragments having a density comparable to that of bone, such as fragments of glass or ceramics. In addition, there were the particular problems presented by fragments having a density comparable to that of connective tissue, such as many of the commoner plastics. He provided a list of examples of different plastics grouped according to properties which determined their X-ray detectability:

- Group 1:* plastics having a density less than that of tissue, e.g. regular and high-density polyethylenes.
- Group 2:* plastics having a density slightly greater than that of tissue, e.g. polystyrene, acrylic, nylon, polycarbonate, and epoxy, with densities up to 1.4 g/ml.
- Group 3:* plastics having X-ray attenuation coefficients twice or more that of tissue, e.g. PVC or PTFE. Group 2 plastics incorporating fillers may also fall within this group.

Fragments of Group 1 plastics would in many cases be impossible to detect radiographically; X-ray detection of Group 2 fragments would range from the difficult to the impossible; Group 3 fragments would be detectable without much difficulty if good radiographic techniques were applied.

6. Future Weapons

84. The GWG did not devote as much of its time to future weapons as it had done to other items on its agenda. The view was several times expressed, however, that efforts should be made to ensure that due constraint be observed in the design of new weapons; accounts were given of efforts being made towards this objective within the UN General Assembly and the Conference of the Committee on Disarmament. The possible emergence of

new weapons of mass destruction was given particular attention. Requests were made by some experts for greater and more detailed information from those States engaged in research and development of such weapons.

85. The point was raised, and then given some discussion, as to whether it was appropriate from a juridical standpoint to discuss future weapons within the general context of “conventional weapons”. One expert preferred the terminology “weapons other than nuclear, chemical or biological”.

86. A basic difficulty remarked by a number of experts was that, by the time sufficient knowledge had become publicly available about a newly-developed weapon for its legal and humanitarian implications to be adequately assessed within an international forum, that weapon would probably be considered overwhelmingly important for the security of its possessors. A clear reaffirmation of the applicability of humanitarian principles to weapon design might, in the opinion of one expert, exert an important dissuasive effect on weapon designers, thereby reducing the dangers inherent in this situation. In the view of another expert, such an effect could be achieved only if agreement were reached to prohibit or restrict use of an existing category of weapon, and even then only if the agreement were manifestly not a cosmetic one.

87. Views were expressed on the question of a review mechanism as a means for monitoring new weapon developments. While it was recognized that such mechanism might be developed on an international basis, references were made to internal procedures that had already been instituted by a number of governments for ensuring that the legal and humanitarian implications of new weapons were fully assessed at an early stage. The suggestion was made that an international agreement might be reached whereby all governments undertook to establish their own review mechanisms, if they had not already done so.

88. Related to the question of review mechanism was the proposal put forward in document COLU/210 (see Annex A.9), which recommended that the Conference of Government Experts be given permanent status. A forum would then become available for the continuation of studies begun at Lucerne and continued at Lugano.

7. Other Business and Final Statement by the Chairman of the General Working Group

89. On 23 February, the General Working Group took note of the reports of the various working Sub-Groups and heard statements concerning subjects dealt with by those Sub-Groups. In order of presentation, these were the

report by the Working Sub-Group on General and Legal Questions (see III. 9 below), the report of the Working Sub-Group of Military Experts on Mines and Booby-Traps (see III. 10 below) and the provisional notes and final statement of the Technical Experts Working Sub-Group on Small-Calibre Projectiles (see III. 11 below).

90. After hearing the report of the Working Sub-Group of Military Experts on Mines and Booby-Traps, and following a debate in which conflicting views were expressed, the need of reaching agreement on the meaning of the terms used was emphasized, this being particularly necessary for those terms which had already been adopted in committee by the Diplomatic Conference; the word "attack", for example.

91. One expert at this meeting proposed the banning under all circumstances of the use of booby-traps in inhabited zones, unless combat was taking place or was imminent in those zones.

92. The General Working Group discussed and adopted its report on 24 February 1976.

93. Speaking in his personal capacity, the Chairman of the General Working Group summed up his impressions about the session and about prospects. Following a decision of the General Working Group, his statement is given below:

"Dear Colleagues,

Now that we are approaching the end of our Conference and the General Working Group is about to close its deliberations, perhaps you will permit me to make some comments by way of summing up the work that has been accomplished. I should emphasize at the outset that what I am going to say is based on *my personal impressions* and is not meant as any kind of conclusions by the chair on behalf of this group. On the contrary, each one of us must draw his own conclusions after the Conference and our governments will do the same.

I am fully aware, indeed, of the complexity of the problems we faced during the last three weeks and also that this Conference was only one step further in *our continuous common efforts* in reducing human suffering caused in the course of armed conflicts which, in spite of existing prohibitions of the threat or use of force, regrettable as it is, seem to be unavoidable.

Let me now turn to the more specific task which has been entrusted to this second session of the ICRC Conference of Government Experts on the

Use of Certain Conventional Weapons. According to the comments included in the communication received by the Secretary-General of the Diplomatic Conference last year from the ICRC (Doc. CDDH/IV/203), the second session had to focus 'on weapons regarding which proposals already exist or will subsequently be placed before that session'. And it is stated in the same document somewhat later that the experts 'should seek to identify possible areas of agreement or—at least—different main conclusions'.

In compliance with Art. 1 para. 2 of the Rules of Procedure the Conference had to examine the possibility, contents and form of proposed bans or restrictions. Furthermore, the Work Programme of the second session (Doc. RO 610/1 b) suggested that the experts should consider with respect to each category of weapons new information, in particular new facts and new arguments.

In accordance with the Rules of Procedure, efforts were made to adapt working methods in a most flexible way to the actual needs of our work. While general exchanges of views were mainly carried on within the General Working Group, working-subgroups have been set up whenever it was felt that they would be useful for the study of specific questions. By this method, it also became possible to have simultaneous meetings. At this point, I should like to express my gratitude once more to those smaller delegations which, despite that their limited size made it more difficult to attend two meetings at the same time, showed an admirable spirit of comprehension and of co-operation.

Having said this, I shall now give you my personal impressions on the current situation, as I see it, of our efforts regarding the different types of weapons. In doing so, I shall follow the order in which we have been dealing with them.

To reach a certain amount of consensus on the ban or restriction of *incendiary weapons* proved to be more difficult than some of us may have expected. Although the various groups with differing views on the subject showed some flexibility and readiness to discuss opposing positions and proposals, it soon became apparent that a large gap continued to exist between those positions.

Let me sum up briefly the different views as they seem to me:

Some new data were presented relating to casualty rates, lethality and length of treatment connected with the use of napalm bombs. However, there were no agreed conclusions. The question of the utility of napalm, especially for close air support, was further argued, similarly without any agreed conclusions.

The group of experts supporting the proposal contained in document RO/610/4b continued to be of the view that a complete prohibition of most

incendiary weapons was desirable and possible. Some other experts were of the opinion that a ban on incendiary weapons could be elaborated on the basis of this proposal. The approach of the afore-mentioned group of experts was considered unrealistic or selective by another group of experts. Yet other experts considered the approach acceptable, but suggested that some exception for small incendiary weapons was needed. Reference was made to the possibility of a ban which would enter into force after a number of years, e.g. five, to enable States gradually to phase out incendiary weapons.

Four working papers containing new proposals were presented (COLU/205, COLU/207, COLU/211 and COLU/220). Two of these suggested restrictions in the use of napalm, particularly with a view to protecting civilians against its use. One of these proposals was especially criticized by some experts for containing too many exceptions from the ban on use. Others criticized it for imposing too severe restrictions. One expert questioned the concept that a prohibition on napalm was of humanitarian value, since alternative weapons would probably cause greater number of casualties.

Three of the new proposals suggested prohibitions of use of incendiary munitions on cities or other populated areas but made an exception for attacks upon military objectives in population centres. This concept, which had the support of one group of experts, was criticized by another group as not offering any meaningful advance over existing law. An amendment to one of the proposals intended to eliminate the exception for attacks on military objectives within or in close proximity to population centres (COLU/208). At a later stage a revision of the proposal in question was introduced, taking into account some of the criticism (COLU/205/Corr.1). Most of the experts commenting on the revised version paid tribute to the valuable effort of the sponsors in seeking broader agreement. Some associated themselves with the introductory remarks of the sponsors to the effect that the revised proposal did not constitute the "end of the road", but served as a good basis for future consideration. However, the revised proposal did not satisfy all the opponents of the original version. One expert commenting on it thought that a general ban on flame weapons combined with the prohibition of use of incendiary weapons against populated areas without exceptions would be a more attractive approach.

One of the three proposals, taking an intermediary view, contained specific provisions for the protection of combatants (COLU/211).

The fourth proposal was drafted in the form of an additional protocol to the Geneva Conventions and was based essentially on the working paper contained in document RO/610/4b.

After this résumé of the situation one may say that for the first time serious attempts were made to reduce the distance between opposing views, to

explore the middle ground lying between them and to show more flexibility. This attitude has to be welcomed even though for the time being it did not succeed in achieving any conclusive agreement on the subject.

Coming now to the *delayed-action weapons and treacherous weapons*, I had the impression that the preliminary discussion in both the Plenary and the General Working Group was rather promising. There was a general feeling shared by many experts that in this field substantial progress could be achieved.

Apart from the proposal contained in document CDDH/IV/201 prohibiting the laying of anti-personnel landmines from aircraft several new proposals were presented. The most extensive among them, supported by one group of experts, covered the whole range of mines and booby-traps (COLU/203), while others focused on specific weapons or aspects, like time-fused weapons (COLU/213), booby-traps (COLU/206) and on the disposal of mines (COLU/215).

In order to facilitate the work a sub-working-group of military experts was set up to study the different proposals and opinions.

This is not the place to go into details. The report of the military sub-working-group (COLU/GG/MIL/REP/1/Rev.1) gives a very comprehensive summary of areas of agreement and disagreement. I wish to thank the officers of the group for the valuable work they have accomplished. Although one may perhaps have expected more conclusive results, some progress can be discerned. Widespread agreement was reached on a revised proposal concerning the recording of minefields. Also, with regard to Article C and revised Article D of the proposal, contained in document COLU/203, broad agreement was reached that these articles were a significant advance over current regulations and that they could serve as a useful basis for future elaboration and refinement.

With regard to *small-calibre projectiles*, my personal summary can be limited to a few remarks. Since the Lucerne Conference, a number of tests have been carried out and a considerable amount of research has been initiated in many countries. In addition, a significant symposium was organized by Sweden last summer in Göteborg. As a result, four reports were presented to our Conference. I should also mention that thanks to Switzerland we all had the opportunity to attend one of a series of shootings which are under way in this country. For that I wish to express once again in the name of all of us our gratitude.

No new proposals were presented in the course of our debate. The co-sponsors of document CDDH/IV/201 maintained their proposal indicating, however, that they were willing to discuss modifications. Much new additional data was submitted. Interest was expressed in the phenomena of

tumbling and disintegration of projectiles. However, no generally agreed conclusions could be drawn. One group of experts expressed doubts about the validity and the conclusiveness of the data presented. Some experts, supported by others, suggested the establishment of a technical sub-working-group to discuss a generally acceptable standard test. On the basis of the agenda contained in document COLU/GG/INF/203, this sub-working-group discussed various aspects of a possible standard test. Although owing to the complexity of the subject no such standard test could be agreed upon, the working group did stress the importance of the continuation or initiation of future study and research at the national level. International exchanges of views and co-operation were also considered to be desirable. The officers of this group deserve our appreciation for the remarkable efforts they have made in accomplishing their difficult task.

Coming to the next item of our agenda concerning *blast and fragmentation weapons*, let me tell you briefly how I see the present stage of our work:

Some new data were presented on the rate of incapacitation and of lethality caused by fragmentation weapons. In addition, various techniques serving for the detection of fragments in the human body were explored.

One group of experts maintained the proposal in document CDDH/IV/201 aiming at the prohibition of the use of anti-personnel fragmentation weapons and fléchettes. Another group was of the view that such general prohibition was neither helpful from the humanitarian point of view nor feasible as regards military requirements. Yet other experts thought that some restriction of use could be conceivable although the proposal in document CDDH/IV/201 went too far.

Particular attention was given to the proposal in document COLU/212 presented by one group of experts. This proposal contained a ban on the use of weapons producing fragments not detectable in the human body. A revised version of this proposal, taking into account some suggestions for its improvement, was generally welcomed by many experts, who considered that it was an excellent basis for future considerations of an instrument on such a ban.

Another working paper (Doc. COLU/218) raised the question of a ban on use for fragmentation weapons, which spread irregularly shaped fragments and, as a consequence, caused extensive wounds.

In addition, two new proposals (Doc. COLU/202 and COLU/209) dealing with fuel/air explosives were submitted. One group of experts welcomed a ban on the anti-personnel use of such weapons. They suggested that because of the limited military application of those weapons at the time being, a prohibition would be more effective at this early stage. Other experts argued that fuel/air explosive devices had important military utility, e.g. in destroying

minefields, and further careful study was needed as to their alleged inhumane effects.

Lastly, there was a general exchange of views on the issue of *future weapons*. One group of experts expressed its deep concern with new weapons of mass-destruction being developed. With regard to these weapons, they felt that the prohibition of their development was more urgent than the ban of their use in the future. Reference was made in this connection to the efforts undertaken in the framework of the United Nations and in particular of the Disarmament Conference. Laser, environmental weapons, microwave devices were particularly mentioned by other experts. Yet other experts shared the concern about new weapons in general, although they pointed out that not all new developments need necessarily be inhumane. They mentioned the so-called "smart bombs" as one example. By their design such bombs would better hit their target, thus being less indiscriminate than others. However, there was general agreement that information on new weapons was lacking to a large extent. For that reason, it was difficult to suggest any specific ban or restriction at this stage. No proposal was presented on this item. No suggestion was made to establish a special working group for these weapons.

In view of the fact that some legal problems will be common to all kinds of possible future bans or restrictions, several experts felt that it would be useful to discuss them in a special *legal sub-working-group*. Accordingly, a working group on legal issues was established. Following its agenda contained in document COLU/GG/INF/202, the group considered such questions as alternative types of agreement, the nature of the obligations, reprisals, the modalities of the entry into force and national as well as international review mechanism. Although some experts argued that, without any knowledge of what might be the final outcome of the efforts made for banning or restricting the use of some specific weapons, it was premature and hence impossible to take any definite position on these legal issues, they did not object to a preliminary exchange of views on the subject. A proposal on the international review mechanism was presented (COLU/GG/LEG/201).

The debate and the different views expressed are well reflected in the report of the sub-group (COLU/GG/LEG/REP/1), to which I have nothing to add. I would only express my gratitude and appreciation to the Chairman and the Rapporteur of the group for their valuable work. Given the general and preliminary character of the discussion, it was neither intended nor possible to draw any agreed conclusions on the matter at this stage. Yet, on the whole, I think that the exchange of views on some legal aspects, which have never been discussed before, served a very useful purpose.

To sum up, Ladies and Gentlemen, according to my assessment the

progress made in the last three weeks—limited as it may be—is nevertheless encouraging. For those of course who came to Lugano with high expectations, the outcome of our Conference might seem disappointing. However, others who had less ambitious hopes and a more modest and realistic attitude will agree that our common endeavours were worthwhile and the few results achieved promising. There were some other, perhaps even more important, positive aspects in our work worth mentioning, such as a considerable amount of comprehension of opposing views, more flexibility, honest efforts in seeking for wider agreement on some controversial issues and the spirit of co-operation as well as the readiness to continue the work in which we are engaged. In addition, there is a growing awareness of the significance and the importance of the problems discussed.

Undoubtedly, we still have a long way to go and Lugano is but one step further on the road towards the goal of making armed conflicts less inhumane. To this goal we are all committed, otherwise we would not have been here. What is needed is patience combined with determination and goodwill. Past experience shows that you all, who are engaged in this humanitarian adventure, are provided with those virtues and I am confident that they will help us in the future—as they did in the past—to achieve our goals”.

8. Documents Produced by the General Working Group

(a) *Incendiary Weapons—General Guidelines for the Discussion*

General guidelines for the discussion

A. *Points relating to all sub-categories*

1. Definition of incendiary weapons.
2. Weapons with secondary or incidental incendiary effects.
3. Medical effects—Any review needed?
4. Conceivable technical approaches to possible regulations:
 - a. Prohibition;
 - b. Restriction;
 - c. Phasing out.

B. *Categories of incendiary weapons*

1. Air weapons:
 - a. Incendiary bombs;
 - b. Firebombs (napalm).

2. Ground weapons:
 - a. Flamethrowers;
 - b. Grenades, "Molotov cocktails";
 - c. Mortar bombs;
 - d. Small rockets;
 - e. Mines.
3. White phosphorus.
4. Combined effect of incendiary and shaped charge or fragmentation.

The following aspects should be examined for each category:

- a. Risk of injuries/suffering;
- b. Risk of indiscriminate effects;
- c. Alternatives? How indispensable?

(b) *Proposed Agenda for the Working Sub-Group on General and Legal Questions*

A. *Alternative types of agreement*

1. Number of agreements—a single agreement for all conventional weapons subject to prohibitions or restrictions on use or separate agreements for each weapon, or a combination thereof.
2. Relation to other agreements—a protocol to the Geneva Conventions of 1949, or to some other agreement—or a new independent agreement.

B. *Nature of the obligations*

1. Contractual or customary law—are the agreed prohibitions or restrictions on use to be considered as a codification of customary international law or as new contractual arrangements?
2. Application to non-parties—if the obligations are to be considered contractual, rather than customary, what are the effects of involvement in an armed conflict by non-parties? E.g.:
 - should the parties remain bound among themselves?
 - should the parties be bound to the non-parties unless the latter fail to comply with or state their refusal to comply with the obligations?
 - or for non-parties that state their intent to comply with the obligations?
3. Absolute or first use—are the prohibitions or restrictions on use to be cast in terms of absolute obligations or in terms of first use only?

4. Reprisals:

- (a) If the prohibitions or restrictions on use are to be cast in terms of absolute obligations, should there be a right of reprisal?
- (b) If there is to be a right of reprisal, should it be only with the same weapon or with other prohibited or restricted weapons or in some other manner?
- (c) Should there be other limitations on the right of reprisal, e.g., areas, persons, or groups of persons against which reprisals would be prohibited?

5. Allies—What are the effects on the obligations of belligerents in an armed conflict of violations and of reprisals by allies or by the allies of enemies?

C. *Entry into force*

1. As soon as there are two parties?
2. As soon as there is a specified number of parties?
3. As soon as there is a specified number of parties, including certain designated States?

D. *Review mechanism*

1. National review—Should each party be obligated to conduct a review of the humanitarian implications of its new weapons developments and acquisitions?
2. International review
 - (a) By conferences of the parties
 - (i) Automatic at periodic intervals, or
 - (ii) At request of a specified number of parties?
 - (b) By an international organization
 - (i) An existing organization, or
 - (ii) A new organization?
 - (c) With what powers?
 - (i) Discussion
 - (ii) Recommendation
 - (iii) Adoption of new agreements

(c) *Draft Agenda for the Technical Experts Working Sub-Group on Small-Calibre Projectiles*

Adequate methods to evaluate physical properties relevant to terminal effects in living tissue

1. Suitable tissue simulants.
2. Shape of the target.

3. Methods and means of projectile delivery.
4. Shooting distances.
5. Environmental conditions.
6. Measurements of:
 - (a) energy deposit along the trajectory inside the target;
 - (b) changes in the bullet;
 - (c) temporary and permanent changes in the target.
7. Evaluation.

(d) *Informal Proposal submitted to the Technical Experts Working Sub-Group on Small-Calibre Projectiles*

Draft proposal for adequate methods to evaluate physical properties relevant to terminal effects in living tissue. Points 2, 1 and 6. See COLU/GG/INF/203 Draft Agenda.

Shape of the target (point 2)

1. A *cylindrical target* with the projectile trajectory along the axis is suggested. This shape diminishes edge effects since the reflection of pressure waves are consistent. A cylindrical shape requires about 25% less material than a square target. Likewise a cylindrical target is less sensitive than a square one to the scatter of hits. On the other hand a cylinder is less suited for filming and photography since the reaction in the material distorts the true picture on the film. This is, however, believed to be of less importance. A cylinder might further be more difficult to suspend than a rectangular target.
2. The *diameter of the cylinder* should be sufficient to avoid disintegration of the target. Larger dimensions in addition lessen the effects of asymmetrical hits. The dimension of the target must be sufficient to avoid that the projectile leaves the target in most cases if deflected. For these reasons a diameter throughout the cylinder of 0.25 m is suggested.
3. The *length* of the target is suggested to be sufficient to catch the bullet in most cases. With this type of target the total kinetic energy is supposed to be spent in the target. The length suggested is 0.5 m for cylinder. When larger targets are required, two blocks may be placed immediately after each other. The influence on the bullet of the two surfaces to be passed after 0.5 m is judged to be negligible.
4. The *weight* of the suggested target is about 25 kg.

5. The *front surface* of the cylinder is suggested not to be perpendicular to the axis since zero degree hits are extremely unlikely. Standardization of a zero degree impact angle is further very difficult and requires extremely careful alignment.

6. The cylinder target should *not* be contained in any *envelope*. Although there are several advantages with an envelope, such as elimination of water evaporation from the target media and easier handling, the changes in energy absorption and transparency of the target are considered very disadvantageous.

7. The cylinder target should be suspended in a hammock of the same length as the cylinder. The hammock should be made of a completely elastic material such as thin rubber. If two bars are used at each end of the hammock these could be used as handles when the target is moved to and from the shooting range.

Tissue simulants (point 1)

1. Gelatine

Advantages

- It is cheap
- It has well-known elastic properties
- It is probably closer to muscle tissue than any other medium regarding elastic properties
- It is transparent which makes it possible to record bullet behaviour within the medium by means of photographic methods

Disadvantages

- It may be difficult to make blocks constant regarding composition; changes in composition may alter results substantially
- It is subject to changes in water content
- It is rather difficult to handle
- It does not permanently display the result of shooting. The result of energy transfer has thus to be obtained by measuring the length of the cracks within the medium, which is difficult
- Cutting the medium may interfere with the results by altering the length of the cracks

2. Soap

Advantages

- Tumbling point of bullet easy to assess
- It is cheap
- It is easy to handle
- It could be manufactured in large amounts with rather constant composition
- It keeps its properties well for long time
- It is easy to cut
- It displays permanently the results of projectile penetration
- It may be made transparent

Disadvantages

- Plastic properties are not fully known
- It lacks elasticity
- The relation between the cavity in the medium and the transferred energy is not fully known

3. Water

Advantages

- Very cheap
- Constant and well-known physical properties
- Completely homogeneous

Disadvantages

- Difficult to handle as it needs a container
- It has low elasticity
- Its density is too low compared with muscle tissue
- It does not display permanent changes due to projectile penetration
- Expensive, sophisticated photographic equipment is necessary to record the results of test shots.

Measurements (point 6)

1. *Impact velocity* should be measured in each shot. This is suggested to be performed by photocells or by photography. Photographs in two planes of the bullet to assess

impact yaw angle could be done at the same time but is suggested optional since it complicates the set-up. Triggering of cameras or recording of velocity must, however, be done by means which do not affect the bullet.

2. The test must make it possible to determine energy transfer along the trajectory. This may be achieved in two ways.

(a) *Direct methods*, such as spark or flash photography at suitable intervals, multiple flash X-rays, or Doppler laser measurements. Also thin foils suspended at intervals in the medium may be used, but are probably less accurate and may disturb the behaviour of the bullet. Common high-speed filming may reveal the overall behaviour of the bullet but does not give sufficient accuracy to determine retardations.

Spark photography, pulsed laser or flash X-rays must be triggered by a signal immediately before the projectile impacts the target, by means of, e.g. a photocell or a magnetization coil. The photograph must be taken at predetermined intervals, and the time for each exposure must be accurately measured by at least 10 MHz counters. The number of exposures must be sufficiently large to allow the calculation of retardations at several points along the trajectory—a feasible minimum estimated to be about 10 exposures. From the pictures, the position of the centre of gravity of the bullet must be estimated as accurately as possible, which may give rise to some difficulties for a tumbling projectile. In order to obtain better values than this method can give, co-ordinate follower or co-ordinate densitometer methods may be utilized. The mentioned recording methods in addition give a very good picture of the gross behaviour of the bullet, and the optical methods—requiring transparent media—may also give Schlieren pictures yielding information about flow pattern, possible appearance of strong shock-waves, point of bullet break-up, etc. Also other factors of interest, such as rate of tumbling, etc., may be evaluated from the recorded information, but in order to be able to do this, pictures in two orthogonal directions should preferably be taken. This is possible to achieve by, e.g. mirror arrangements, two cameras or suchlike. If the bullet breaks up into not too large a number of fragments, each fragment may be traced individually and, provided they can be recovered and weighed, their contribution to energy transfer may be estimated. If they cannot be retrieved or identified, their mass may be estimated from the pictures.

Doppler laser measurements, performed along the axis of the target, preferably from the side opposite to the point of impact, may yield very precise information about retardation, in particular by examining one derivation step necessary for the other methods. In order to produce acceptable results for a tumbling projectile, it must, however, be combined with at least high-speed filming. Even so, it is difficult to say whether this type of measurement may yield acceptable results when the bullet is tumbling.

All the methods mentioned have the disadvantage of being fairly complicated, requiring rather expensive equipment and technically skilled personnel. In addition, the optical methods may require rather complicated set-ups to keep stray light out if experiments are to be performed outdoors.

(b) *Indirect methods*, such as shooting into a suitable medium and evaluating energy transfer from the changes in the target, such as crack formation or deformation.

One suitable medium would be an elastic medium of low internal friction, exhibiting brittle fracture behaviour, e.g. gelatine. The formation of a crack normally requires a precise amount of energy per unit area, and thus if the medium is well-known and with a homogeneous distribution of crack nuclei the energy could be calculated from measurements of the area of the cracks along the trajectory. This would necessitate the medium to be cut in discs of suitable thickness at right angles to the trajectory, a process which is not so easy with, e.g. gelatine if you want to avoid enlarging the cracks. Furthermore, crack formation energies may vary much depending on the purity of the medium, gas content, etc. The medium must, at any rate, have reproducible properties, and then it may be possible to calibrate it by shooting, e.g. spherical bullets of a well-known impact velocity into it.

Another type of suitable medium is an elastic-ideally-plastic medium. Soap would be an example of a medium approaching this. In principle, the cross-section area of the permanent cavity displayed in the medium, after the shot, is proportional to the retardation force on the projectile, and thus to the transferred energy per length unit. The evaluation of such tests could be achieved in two ways—by cutting the test specimen along a plane through the trajectory of the bullet, as done in the Swedish experiments reported in *Acta Chir. Scand.*, suppl. 459, 1976, or by cutting it in discs at right angles to the bullet trajectory as in the case of the aforementioned type of medium. The latter method of evaluation may be facilitated if the target consists of discs of the medium, put together to form the final shape of the test block.

With the indirect methods, changes in energy transfer caused by, e.g. bullet break-up cannot be distinguished from other effects.

3. When the test specimen is of limited length, allowing the bullet to pass through, the best method of measuring total energy transfer would probably be to suspend the target in a ballistic pendulum, yielding fairly precise information about the impulse transferred to the target. In this case, the target should be kept at low weight to allow sufficient displacement amplitudes for the pendulum to yield accurate values. This may contradict the wish to keep the target from disintegrating. If necessary the target may be weighed after the shot if there is doubt as to whether, e.g. material was ejected from it.

4. *Changes in the bullet* should be recorded and, if the bullet is deformed, photographed. If the bullet is contained in the target, which the method used supposes, X-ray pictures in two planes should be taken of the whole target before it is cut up. If target material is completely transparent ordinary photographs may suffice. Careful records of the appearance of the bullet are important especially when break-up is present. X-ray pictures are thus probably the safest method. The X-ray equipment may be very simple to meet the requirement.

(e) *Statement concerning Unnecessary Suffering presented by the Informal Working Group of Medical Experts*

During the Conference the medical experts participating have convened regularly for informal meetings. The purpose of the meetings have been to discuss medical matters of complicated nature which would have been too tiring for the whole Conference to endure. At a meeting on the 12th of February the subject of unnecessary suffering was on the agenda. Most of the medical experts attending the Conference were present at the meeting. It was unanimously agreed that the following opinion concerning "unnecessary suffering" should be presented to the Conference.

"Unnecessary suffering" is a term implying numerous medical parameters. From a strictly medical standpoint it seems impossible at the present stage of medical knowledge to objectively define suffering or give absolute values permitting comparisons between human individuals. Pain, for instance, which is but one of many components of suffering, is subject to enormous individual variations. Not only does the pain threshold vary between different human beings: at different times it varies in the same person, depending upon circumstances.

It was the opinion of all the medical experts that instead of "suffering", *the wound or injury* caused by a weapon offered a better but still very complex way of defining the effect of that particular weapon. It is still very difficult to compare an injury in one part of a human body with one in a different location. Likewise, general effects caused by a local injury are subject to many variables and make comparison between different individuals difficult. However, if such parameters are taken into consideration, it seemed to the medical experts preferable to use *injury instead of suffering*.

9. Report of the Working Sub-Group on General and Legal Questions

Within the framework of the General Working Group, a special Working Group on General and Legal issues was established at the request of the experts of Switzerland. Mr. Prvoslav Davinic (Yugoslavia) served as Chairman and Mr. Pierre Chenier (Canada) as Rapporteur.

In order to facilitate its work, the Group adopted an agenda providing basic guidelines for the discussions (III.8.(b)). The Group had five meetings between the 6 and 19 February 1976. The procedure followed was informal and all participants were free to address themselves to any item of the agenda though in the last two meetings discussions were focussed on more specific items of the agenda.

The experts agreed that these discussions were only of a preliminary nature, and many questions were discussed in the abstract because their

answers depended upon the substance of the agreement to be reached. It is also to be noted that not all delegations present at the Conference were represented at the informal meeting, and also, that not all items of the agenda attracted equal interest, many of those reported upon herein having been discussed by only a few experts.

A. Alternative types of agreement

1. The issues to be discussed under this heading were the number of agreements that should be made and what relation, if any, they should have to other international agreements and, in particular, to the Geneva Conventions of 1949.

2. One expert, supported by others, pointed out that this question of the number of agreements was premature and that it would be possible to answer it only when the final outcome of negotiations on the substantive matters of the agreement were known. They added, however, that from an abstract point of view, it would appear that more than one instrument would be required since it was possible that different provisions relating to entry into force and the right to take reprisals would be applicable to different categories of weapon and therefore would necessitate separate instruments for each category of weapon or even for specific weapons.

Another expert said that agreement on all categories might not be reached at the same time and for that reason separate instruments were required.

One expert suggested that such different international instruments might be grouped under an “umbrella” instrument, and become chapters or sections, each section having its own separate provisions on entry into force, right to take reprisals, etc.

Another expert, accepting this “umbrella” concept, was of the opinion that it was not necessary that this concept be expressed in terms of a legal instrument, but that it could also be considered from a functional approach, a review mechanism, that then would cover all the different instruments.

One expert took the view that only one instrument should be drawn up, in order to avoid repetition in each instrument of the same provisions.

3. On the question of the relation of these instruments to other international agreements, one expert expressed the opinion that agreements to be reached should ideally be embodied in Protocol I, but that there would probably have to be several separate instruments, preferably linked to the Geneva Convention of 1949.

Another expert felt that this matter should be left open. A few others, even though they would have liked these instruments to be linked to the CDDH, did not consider that Protocols I and II should be delayed by the consideration of the question of conventional weapons. All the other experts who commented upon this issue considered that any instrument should be independent of any other international agreement. Some of these experts expressed the opinion that these instruments could be related to the principle of disarmament.

4. A third question, namely regional agreement, was incorporated by the Chairman as item A3 of the Group's agenda, at the request of one expert who wanted to hear the views of his colleagues on it. No one spoke on this subject.

B. *Nature of the obligations*

5. The issues considered under this heading were: the character of the instruments as a codification of existing customary international law or as new conventional law; the effects of the involvement in an armed conflict of a non-party to the instrument; the formulation of the prohibition; the question of the right to take reprisals; and the effects of the violation of the instrument by or in relation to an ally.

6. One expert, whose view was supported by others, stated that while he favoured a new conventional law approach, he felt it was premature to deal with this question, since the substance of the future instruments would probably dictate the answer, which answer might vary according to the categories of weapon covering the instrument. Other experts expressed the opinion that any such instrument should not contain any implications as to whether or not its rules reflect already existing customary law, because some States would not accept the implication that these rules were merely elaborations of pre-existing customary law, and their positions should not be prejudiced. One expert was of the view, supported by others, that any agreement is always a development of international law, and for that reason was conventional law. One expert was of the opinion that the future instrument should derive its source from existing customary law.

7. As to the effects arising from the involvement in an armed conflict of a non-party State, certain experts were of the view that the instrument could be binding only on parties to it. On this point, an expert said that if the *si omnes* clause was to be applied, one had, when many theatres of operations existed, to consider the possibility of limiting its application to the theatre where the non-party was involved. Another group of experts thought that common Article 2 of the 1949 Geneva Conventions should be the example to follow.

One expert thought that a *de facto* application by the non-party State should suffice to render the instrument binding on all parties.

8. As far as the formulation of the prohibition was concerned, most experts agreed that the principle of reciprocity should apply in the event of the non-fulfilment by one party of the obligation created by the instrument. A group of experts held the view that because national security was involved, it was of the utmost importance that the principle of reciprocity be applied by wording the prohibition in terms of "non-first-use" only. Another group was of the opinion that the prohibition should be absolute, because the "non-first-use" prohibition would cause all obligations to cease as soon as one party used the prohibited weapon. This last group of experts considered that the right to take reprisals could also reflect the principle of reciprocity and that it should suffice to enforce the instrument and protect the injured party.

9. On the question of the right to take reprisals, one expert expressed the view that this approach was repugnant to the nature of humanitarian law. Some experts refused to consider the question of reprisals since the principle of reciprocity would apply and be worded in terms of "non-first-use" only. Some experts were of the view that reprisals "near in kind" should be allowed, since one party may not have the prohibited weapon that was unlawfully used by its adversary. One expert was of the view that only a reprisal in kind should be allowed. Another expert remarked that the concept of reprisal was not limited to "in kind" or "near in kind", but that any act, which otherwise would be unlawful, was allowed under this concept. Two other experts added to this that the rule of proportionality of the reprisal to the unlawful act committed by an adversary may be studied, but one of these doubted that any useful discussion could ensue. This expert also said that in this context of reprisal it should be sufficient to assure the respect of the protected person under the 1949 Geneva Conventions, and that although one might wish to add to the list of protected persons, one had to ensure that, by doing so, one would not in fact deprive those persons of their protection. He said also that it was unrealistic to believe that any State would accept a complete ban on reprisals.

10. One expert was of the view that there was no necessity to include in the instrument a provision on the violation of the agreement by an ally, while other experts reserved their opinions on this matter.

C. *Entry into force*

11. Different possibilities were studied, including the minimum number of parties required for the entry into force of the instrument; the specification of a number of States as parties to the agreement before it enters into force and;

a specified number of parties, plus some specially designated States that should be parties to the agreement before it enters into force.

12. As to the minimum requirement, some experts considered that the example of the 1949 Geneva Conventions should prevail and only two parties to the instrument should be required for it to enter into force. Other experts, while recognizing the value of having a minimum requirement included in the agreement, believed that the nature of the agreement was closer to the question of disarmament than to humanitarian law and therefore that a number of States should ratify the agreement before it entered into force. Other experts thought that the most important aspect of this question was the principle of universality, and that not only should a number of States but also certain specified States ratify it before it entered into force. One expert added that it was not necessary to name the specifically designated States in the agreement, but that individual States should be allowed to name others at the time of ratification. He suggested the possibility of a conditional ratification, whereby a State would not become bound unless, at the same time, certain other States, designated by that State, were also bound. He added that in this way each State's particular national security interests could be safeguarded. Some other experts found that to allow such conditional ratification might lead to a series of conditions such that the failure of one State to ratify might prevent entry into force for any.

D. Review mechanism

13. The discussion dealt with the desirability of States' establishing a national review mechanism, and the possibility of establishing an international review mechanism. For this last purpose, an expert produced a working paper which appears at the end of this document.

14. One expert expressed the view that the national review mechanism was of the utmost importance to ensure respect of international law. Few experts said that their own States had already established or were studying the implementation of such procedure, having accepted it in principle. One expert mentioned the fact that this point was already covered by Article 34 of Protocol I to the Geneva Conventions and that it should not be discussed at this Conference for that reason.

15. Many experts expressed the view that an international review mechanism was a requirement to ensure the constant development of international law. One expert believed that a new international organization should be established for that purpose. One expert introduced a working paper which appears at the end of this document, on review mechanisms. After some

experts had commented upon this document, the expert who had produced it welcomed in particular the proposal made by another expert according to which a certain period of time should be provided for States to give their consent to the convocation of the conference. He added that one or two years would probably be appropriate for that purpose. Many experts commented upon the document, and it was generally welcomed by them.

16. Details of the document were discussed by many experts, and while some experts approved the suggestion of having automatic review mechanisms to convene a conference within a specified number of years, others objected to it, saying that recent experience had proved that when that procedure was tried it failed when the international community did not support such conference. Those in favour of automatic review referred to the history of humanitarian law showing that a voluntary system of convening a conference as a review mechanism had failed in the past, and automatism was therefore required. One expert then suggested the possibility of having automatically convened conferences at certain intervals upon condition that a minimum number of States each time approved of such a meeting. This group also considered that the time between these conferences should not exceed 10 years; some experts proposed 5 years as a fixed period between conferences. One expert proposed that the variants proposed for the review mechanism should be combined: review conferences might be held automatically at fixed intervals, but other review conferences might also be held during such intervals if a definite number of States requested their convocation.

17. Many experts were of the view that the voluntary system elaborated in the proposal which appears at the end of this document was exactly what was required to ensure the constant development if it was felt necessary by the international community at the time when the request to convene it was made. In this context, the question of the number of States needed to request the convocation was raised. Some experts considered that one-third of the parties to the agreement was reasonable, while others considered that it should be two-thirds of the States parties to the Geneva Conventions of 1949.

18. A last point considered by the group of experts was what type of conference should be convened. Some experts believed that a diplomatic conference should be convened, while another expressed the view that an expert conference was a pre-condition to a diplomatic conference.

19. Some experts expressed doubt about all of the proposed forms of international review mechanism and for that reason were not able to support any such review.

20. The group of experts was also presented with another document, COLU/210. The expert that produced this document told the group that it would be presented in the plenary session under agenda item 8. The group did not consider this document.

21. This concluded the deliberations of the informal Legal Group after its fourth meeting.

REVIEW MECHANISM

(Informal proposal by the Austrian Experts)

1. Any Party may present amendments to the Convention (Protocol) and/or to any of the additional (annexed) Protocols. Such Party may also submit new proposals for further prohibitions or restrictions of use of specific weapons. The text of any such amendment or proposal shall be transmitted to the Depositary Government which shall circulate it to all Parties of this Convention (Protocol) and of the additional (annexed) Protocols. Thereafter, if requested to do so by one-third (half) of those Parties, the Depositary Government shall convene a Conference for the purpose of considering such amendments or proposals. (All the Parties to the Geneva Conventions of 1949 shall be invited to such a Conference.)
2. Seven (five or ten) years after the entry into force of this Convention (Protocol) the Depositary Government shall convene a Conference for reviewing the operation of this Convention (Protocol) as well as of the additional (annexed) Protocols and for considering any proposals for further prohibitions or restrictions of use of specific weapons. (All Parties to the 1949 Geneva Conventions shall be invited to such Conference.)

10. Report of the Working Sub-Group of Military Experts on Mines and Booby-Traps

Chairman: Colonel K. Troughton (Canada)

Rapporteur: Mr. R. Akkerman (Netherlands)

Procedure

It was first agreed that there be two basic approaches to the subject, namely the French-Anglo-Dutch working paper (doc. COLU/203) and the

proposal contained in document CDDH/IV/201, and that the former be taken as the basis for discussion in the Group. Discussion of the latter would arise automatically when discussing Article C of the former working paper. It was also agreed that discussion of definitions be left until substantive discussion had been concluded. Formal proposals on the subject of mines and booby-traps are listed in the table of contents.

Discussion on the merits of Proposals

1. *Recording of Minefields*

Discussion centred on three issues:

- (a) whether the term “so far as is feasible” was sufficiently mandatory and whether it afforded the civilian population adequate protection. Some experts generally felt that this sentence should be rephrased in a more mandatory way since it left too much room for interpretation. Other experts were generally of the opinion that this provision should be maintained in order to exempt the soldier from the obligation to record minefields under circumstances preventing his compliance. In this connection, an expert raised the question of the accuracy of minefield recording;
- (b) whether “20 mines” was acceptable as a threshold. Some experts were of the opinion that the number of 20 was rather high. Other experts were of a contrary opinion, finding that number rather low. Again, some other experts thought that the number should be replaced by the *density* as a criterion, that being opposed by other experts;
- (c) whether the provision for a post-hostilities exchange of information had been drafted in a satisfactory way. Suggestions were made by several experts that records of minefields should be handed over to civilian authorities after cessation of hostilities. One expert thought that the word “cessation” in Article B of COLU/203 should be replaced by “close”. However, no agreement was reached thereon.

A proposal was made by one of the sponsors of doc. COLU/203, supported by another expert, amending Article B as follows:

“The location of pre-planned defensive minefields shall always be recorded. So far as is feasible, the location of all other minefields containing more than 20 mines shall be recorded. Such records shall be retained until after the cessation of active hostilities, at which time the location of all recorded minefields situated in territory controlled by an adversary party shall be made public.”

Widespread agreement was reached on Article B as quoted above.

2. *Disposal of Mines*

It was furthermore discussed whether a provision would have to be added to the paper as suggested by the representative of SIPRI and implied in doc. COLU/215, submitted by the experts of Spain and regarding the disposal of mines. The submitting experts suggested that the word “safely” be deleted in the SIPRI document. However, no agreement could be reached as to the insertion of such a provision.

3. *Use of Remotely-Delivered Mines*

The following issues were discussed by the experts:

- (a) the concept of “remotely-delivered mine”
- (b) the definition of “neutralizing mechanism”
- (c) “marking” of minefields
- (d) the extent of protection of the civilian population arising from this provision.

(a) *The concept of “Remotely-Delivered Mine”*

An expert of a delegation co-sponsoring doc. COLU/203 explained that one had here to deal with a weapon that, to a great extent, belonged to the future weapons category and that this feature had been a factor when drafting the relevant provisions in the above document.

(b) *The definition of “Neutralizing Mechanism”*

A number of experts were of the opinion, along the lines of doc. COLU/213, that this definition should contain a time-limit of 24 hours. Another expert thought that such a limit would not be realistic for many delegations and that it would indeed not be acceptable for the same delegations to accept any limit expressed in hours, days, etc.

One expert thought that the definition contained in doc. COLU/203, Article A, was a good one since the distinction that could be made with regard to neutralizing mechanisms, namely in devices that could be destroyed by remote control, those that were self-destroying and those that were self-sterilizing, was covered thereby.

(c) *Marking Devices*

Many experts thought that the marking of mines would reduce the military advantage thereof to a considerable extent. Several other experts thought that marking would establish the only real protection for the civilian population.

(d) *Protection of Civilians*

Some experts thought that the only way of protecting civilians in a satisfactory way was to provide all remotely delivered mines with a neutralizing mechanism. Experts from other delegations were of the opinion that marking remotely-delivered mines was the only means of full protection of the civilian population. One expert thought that remotely-delivered mines should, at the same time, be provided with marking devices and a neutralizing mechanism. Other experts thought that all mines delivered outside the battle zone should contain neutralizing mechanisms.

Experts from delegations co-sponsoring doc. COLU/203 defended the wording thereof (offering an alternative choice between the two devices) by stressing the future character of this application of mines and the relative novelty of the weapon-type itself. Many experts from delegations co-sponsoring doc. CDDH/IV/201 thought that the proposal contained therein and forbidding the use of air-delivered anti-personnel land mines was more protective of the civilian population.

An expert stressed that air-delivered minefields, when they have served their defensive purpose, ought to be eliminated or placed under control of civilian authorities at the close of hostilities.

Some experts were of the opinion that the use of devices to which this proposal applied should be expressly prohibited in any civilian population area, only allowing for some specific exceptions to that main rule in combat situations and if the civilian population would be duly protected.

A similar proposal was contained in COLU/215. Some experts expressed themselves in favour of the amendment proposed in that document.

One expert advocated the prohibition of anti-lifting devices in all mines.

There was broad agreement in the group that the proposed text of COLU/203, Article C, was a significant advance over current regulations and that it could serve as a meaningful basis for future elaboration and refinement. There was consensus that the proposed text was sufficiently complete to satisfy all concerned.

4. *Use of Mines, Booby-Traps and Similar Devices*

After considerable preliminary discussion on the meaning and implications of the original proposals, it was agreed that a revised version of Articles D and E would serve as a basis for discussion, reading as follows:

“D. USE OF MANUALLY EMPLACED MINES AND OTHER MANUALLY EMPLACED DEVICES IN POPULATED AREAS

1. This proposal applies to manually emplaced mines and all other manually emplaced devices (explosives and non-explosive) which are designed to kill, injure or damage and for that purpose actuated:

- (a) by the presence or proximity of a person or vehicle;
- (b) when a person disturbs or approaches an apparently harmless object or performs an apparently safe act;
- (c) by remote control; or
- (d) automatically after a lapse of time.

2. In any city, town, village or other area containing a concentration of civilians in which combat between ground forces is not taking place or does not appear to be imminent, devices to which this proposal applies may not be used unless either:

- (a) they are placed on or in the close vicinity of a military objective; or
- (b) due precautions are taken to protect civilians from their effects.

E. PROHIBITIONS ON USE OF BOOBY-TRAPS

1. It is forbidden in any circumstances to use any apparently harmless portable object (other than an item of military equipment or supplies) which is designed or adapted to contain explosive material and to detonate when it is disturbed or approached.

2. A. This paragraph applies to all explosive or non-explosive devices or other material deliberately placed to kill or injure when a person disturbs or approaches an apparently harmless object, or performs an apparently safe act.

B. It is forbidden in any circumstances to use any device to which this paragraph applies and which:

- (i) is designed to kill or injure by a non-explosive means which stabs, impales, crushes, strangles, infects or poisons the victim; or
- (ii) is in any way attached to or associated with:
 - (a) internationally recognized protective emblems, signs or signals;
 - (b) sick, wounded or dead persons;

- (c) burial and cremation sites or graves;
- (d) medical facilities, medical equipment, medical supplies and medical transport;
- (e) children's toys.

(a) *Discussions relating to the Use of Manually-Emplaced Mines and Other Manually-Emplaced Devices in Populated Areas*

Proposals were made, in order to widen protection of the civilian population and suggesting deletion of the words “manually emplaced” in sub-para (a) of para. 1 of the original article D of COLU/203 (thus including remotely-delivered mines) and replacing the first sentence of para. 2 of Article D by the following sentence: “Outside the combat area the placing of any munition or delayed-action device functioning mechanically or electronically is prohibited unless:...”

Furthermore, several experts proposed that in para. 2 of Article D, the word “either” be deleted and, subsequently, in sub-para. (a) the word “or” be replaced by the word “and”, while some other experts were in favour of deleting sub-para. (a) entirely. These experts generally felt that due precautions could in fact be taken by the soldier under all circumstances. Other experts, however, stipulated that when a device was placed on a military objective or in a situation in which combat between ground forces was taking place it was either impossible or militarily unwarranted to take due precautions to protect the civilian population. Some experts thought that general warning would be the only feasible precaution.

One of these experts was therefore in favour of deleting sub-para. (b) entirely.

Many experts felt that the revised wording of Article D was satisfactory for achieving agreement on that article.

Widespread agreement was reached that Article D as revised and as laid out hereabove, and without prejudice to the other proposals, was an advance over the existing body of regulations concerning the protection of the civilian population against the indiscriminate use of manually-emplaced mines and other manually-emplaced devices, and could serve as a useful basis for further elaboration and refinement in future discussion.

(b) *Discussions Relating to Prohibition on Use of Booby-Traps*

Several experts proposed deletion of sub-para. B (i) of para. 2 of Article E, E, considering it an unnecessary repetition of existing international law. Other experts considered this was also true of Article B (ii) (a) to (d).

Some of those experts therefore suggested that in Article E reference be made to relevant rules of international law. One of the co-sponsors of COLU/203, however, considered that it was valuable to reaffirm existing rules but saw drawbacks of a technical legal character in specific reference to such rules. Some experts felt that no distinction should be made between explosive and non-explosive devices, or between objects that contained booby-traps and those that were attached to traps, and that all should be prohibited when relating to objects in general use among the civilian population. One expert suggested that booby-traps be totally prohibited.

On the other hand, other experts thought that the specifically mentioned category of non-explosive devices should be referred to, being indiscriminate between civilians and combatants and no less cruel in its effects than explosive devices. One expert, agreeing in principle with that statement, was of the opinion that specific reference to non-explosive devices causing unnecessary suffering was perhaps warranted albeit in a separate article, since Article E dealt with devices in the context of perfidy.

Some experts stated that in their opinion the word “domestic” should be inserted after the word “harmless” in para. 1 of Article E.

In one expert’s opinion, the words “moveable” and “in general use among civilians” could also be considered with regard to para. 1 of Article E.

Some experts suggested the prohibition of prefabricated booby-traps designed as harmless objects in common use among civilians.

Some experts thought that the word “designed” in the same para. could be deleted; others that the words “adapted to” could be deleted; again, in other experts’ opinion the words “designed or adapted to” could be deleted, replacing the word “contain” by “contains”.

A number of experts stated that a category should be added to sub-para. B (ii) of para. 2 of Article E alternatively reading [moveable] [apparently harmless] [domestic] [portable] objects [in general use among the civilian population] [in particular children’s toys].

Some experts suggested the inclusion of food and religious objects after children’s toys in Article E.2.B (ii).

A number of experts stated that in their opinion the present text of Article E formed a good basis for consensus.

A measure of agreement was reached that, with regard to the prohibition on the use of booby-traps, Article E as set out hereabove was an advance over existing regulations concerning the use of booby-traps and could serve as a useful basis for further elaboration and refinement in future discussion.

5. *Definitions*

One expert suggested that the definition of booby-trap in article A of COLU/203 be deleted since the expression “booby-trap” no longer appeared in the text. The definition itself was now contained in the revised Article E.2.A.

Another expert, however, thought that there would be no logic in deleting one definition and retaining others, especially in view of his opinion that para. E.2.A. required improvement.

One expert suggested a different definition of booby-trap reading as follows:

“A booby-trap is any contrivance or device, whether explosive or not, which is designed to wound or kill after deceiving” (COLU/219).

Some experts suggested that the definition of a mine should be reworded in order to cover mines used in land warfare but placed under water. Another expert, having taken part in the drafting of the present definition, explained that drafters had aimed at excluding sea-mines from the definition since these were dealt with by the Hague Regulations and that the present draft was as precise as it could be in view of the complexities involved.

Several experts questioned the validity of the definition of “military objective”. However, other experts pointed out that this definition had been taken from Article 47 of Draft Additional Protocol I adopted in Committee III of CDDH.

One expert felt that the question of “2,000 metres” in the definition of remotely-delivered mines required further examination.

In that there was no agreement on the precise wording of the definitions in Article A, it was agreed to accept them on an interim basis for later discussion.

6. *Time-Fused Weapons*

(a) Document COLU/213 (Mexico and Switzerland) was introduced by the sponsor-experts who were of the opinion that the general sense of the proposal would, when applied in the discussion of various weapons categories before the Conference, generate consideration of the need to protect the civilian population as much as possible from the effects of indefinitely fused weapons.

(b) During the brief discussion, some experts expressed the view that such an application could be made in the case of certain elements of the mines and booby-traps proposal, particularly with regard to remotely-delivered mines.

An expert emphasized that the concern he expressed when discussing the protection of the civilian population against the effects of remotely-delivered

mines and his proposal regarding their elimination or placing them under control of civilian authorities was also applicable to discussion of this more general category of weapon.

(c) A non-governmental expert commented that a 24-hour rule would not meet the humanitarian objection to delayed-action munitions due to the danger they presented to the wounded and to rescue personnel.

(d) Other experts were of the opinion that consideration of limited time-fusing of neutralizing mechanisms on remotely delivered mines had been previously discussed inconclusively and that because the COLU/213 proposal ranged across such a wide spectrum of weapons, much further examination and discussion should be devoted to the matter.

(e) Several experts stated that the fundamental thrust of the proposal would not be acceptable in the light of military requirements.

(f) Due to lack of time, discussion of the proposal ended without conclusions being drawn.

11. Technical Experts Working Sub-Group on Small-Calibre Projectiles

Chairman: Mr. S. M. Soriano (Philippines)

Rapporteur: Mr. E. B. van Erp Taalman Kip (Netherlands)

(a) Provisional Notes on the First Meeting

The Working Sub-Group met to draft recommendations on co-operation in future research and on the possible approach to reach an agreement on standard test procedures.

The Chairman invited the meeting to discuss the various aspects that might be involved in establishing standard procedures, with a view to reaching an agreement on a working-agenda.

Several experts pointed out how complex the matter of testing munitions of this kind could be. It was stated that in many cases relatively small changes in weapons, ammunition or environment had in fact proved to have great impact on test results. In some cases no explanation could be found for failure to obtain similar results in later experiments. Great emphasis was laid also on the very complex problem of comparing results obtained from experiments on simulants with the injury in the human body.

For these reasons serious concern was expressed by several experts on the possibility that results from standard tests might be misinterpreted.

Several experts explained that trials could only be developed if there was a clear picture of the purpose to be served.

One expert questioned whether tests such as those being discussed should be to assess weapons and terminal ballistics or to improve equipment. If the effect on the target should be the focussing point, should one concentrate on energy deposit, shock wave propagation or penetration ?

One expert, supported by others, said that if the aim of standard trials should be to prevent escalation of the wounding capacity in future developments, a rather simple test might be sufficient. In his opinion a test might be developed to show large differences in the wounding capacity of various small-calibre munitions.

Another expert, being involved in experiments and the development of test methods and procedures, expressed his concern about the tendency to assume that weapon designers were aiming at increasing the terminal effects of munitions. He felt this to be a totally wrong and unfair assumption. This speaker also explained that in the process of optimizing small-calibre weapons systems, the actual trend would be to have a limited effect in the target. Several other experts supported his opinion.

One expert proposed to carry out the work in two steps, firstly the development of standard test procedures and secondly the establishment of criteria to evaluate the results of the tests. Following this line of thought, one speaker proposed to exchange information on test methods in the various countries concerned, to reach a better understanding on the various approaches.

Not being able to reach a conclusion on the agenda at this point, the Chairman proposed to have another working session.

(b) *Provisional Notes on the Second Meeting*

The Working Sub-Group at its second meeting discussed a draft agenda for future work, published under reference-number COLU/GG/INF/203 (III.8(c)). This agenda was drafted by a group of medical experts at an informal meeting.

After opening the meeting, the Chairman asked the Rapporteur to read the provisional summary record of the first meeting. One delegate asked for this summary record in writing. It was agreed that this summary record would be circulated.

Several questions were asked about possible parameters and their relation to the agenda. It was agreed upon that :

- shockwaves and penetration were to be dealt with under agenda item 6;
- description of weapons and ammunition would be covered under agenda item 3;

— military requirements should not be explicitly included in any of the agenda items 1 through 6. It was understood, however, that in several cases there would be a relation between the required test criteria and military requirements.

The agenda was accepted.

To have a better basis for discussion, one expert suggested that working papers be prepared on every agenda item. These papers should be drafted by pilot countries and if possible be circulated before the meeting. Agreement was reached on the preparation of the following papers:

- Agenda item 1 — U.K.
- Agenda items 2 and 6 — Sweden
- Agenda item 4 — Switzerland.

No pilot countries could be found at this stage for agenda items 3 and 5.

(c) *Provisional Notes on the Third Meeting*

At the opening of the meeting, the Chairman asked the Rapporteur to read the summary of the second meeting. No comments were received. The summary will be circulated.

Two delegates, each representing a country actively involved in trials and testing of small-calibre weapons, expressed their concern and reservations on the attempt to establish simple standard test procedures. It was pointed out that a lot of work and skilled time was involved and little might be gained. Problems might arise of a political, military or commercial nature. The results might probably well take the form of a compromise which would be misleading and serve no humanitarian purpose.

Another reason for having reservations was the fact that national security could be involved. It was pointed out that some of these reservations might be reduced if those countries, nationally active in work in this area, which had not yet taken any active part in the discussion, could begin to do so. Even though these two delegates did not consider the attempt to agree on a simple standard test procedure to be feasible, nevertheless they expressed their willingness to consider sympathetically future co-operation and exchange of information in this field of interest.

The expert who had volunteered to give an introduction on simulants presented some considerations on this matter, which will be briefly summarised as follows:

“Possible simulants are:

- earth. This simulant has been used for many years for the testing of bullet penetration related to field fortifications.
- wood. In battlefield situations both in built-up areas and in forests this simulant was of interest.
- paper. This simulant was used to measure yaw, tumbling motions and/or penetration depth. Relation to the Swedish tests was mentioned.
- water. The use of water for this purpose has a long history. It can be used to get information on hydrodynamical effects. Temporary cavities can be studied. Water was also used in the Japanese tests referred to during this Conference.
- clay. This material has been in use for over 100 years as a simulant. It has good plastic properties. Decrease of spin can be studied when using this simulant. However, it is not elastic and requires X-ray methods to observe the passage of the bullet, differs in retardation coefficient when compared with the human body and is not constant in physical properties.
- gelatine. The elastic properties are good. It is possible to use high speed photographic methods, if the gelatine is of the right transparency. The cavity can easily be studied, but it is difficult to locate the bullet. This expert considers gelatine to be the most useful simulant. The control of the physical properties is a problem. If some kind of a screen is placed in front of the target, the behaviour of the bullet might significantly alter.
- soap. In his country, this expert stated, soap is not used any more as a simulant. The differences in physical properties and chemical structure of different soaps are great. The Swedish, Indonesian and Swiss trials have illustrated this aspect. Not only is the composition of importance, but also the temperature which will have great influence on possible test results. Although non-elastic, soap blocks are well suited for demonstration of cavitation, although the results cannot be directly related to tissues. The bullet retardation differs from that in human tissues. In his country, the expert explained, experiments were carried out on sheep. If the length of track to maximum haemorrhage was compared with the length of the neck where in soap trials the cavity started to expand, differences were noted, indicating that bullets behave differently in living tissues compared with soap blocks.
- bone. If the behaviour of a bullet in the human body is the subject of study, bone is an important factor to be considered. Trials have been

carried out using cow-bones. The physical properties of these bones, however, do differ from those of human bones.”

The main objection against all simulants is the fact that they are not representative of the vital organs. In the cavitation process, arteries showed less damage than muscle tissue. The influence of the cavitation process on bone has been studied. Cavitation may cause a fracture even when the bullet does not pass through the bone. Little was known, however, about the resulting longer term changes in living bone.

The head is the most vulnerable part of the body. Simulants in this case are very complex. Skulls in combination with gelatine and a skin simulant were used in trials. In some classical studies, cavitations due to penetrating missiles had been demonstrated in cat's heads. The effect of a helmet should be considered. Many experiments have been based on the use of animals, but extreme penetrations cannot be studied in this way. In general, the expert stated, experiments using sedated animals gave the most medical information. Long ago trials were carried out on dead bodies in which most wounds showed a nearly straight penetration trajectory. As a general conclusion this expert stated that every test had some value and gave some information on the terminal effects.

One expert, representing a country actively involved in trials and testing of small-calibre weapons, agreed with the two first-mentioned speakers on the complexity of the matter, and the risk of producing incorrect information. He also did not support the idea of developing simple test criteria. He considered international exchange of information to be of great importance, although he realised that much time might be involved before any substantial result might be produced. This expert complimented the expert who made the introduction on simulants.

Another expert, after also having complimented the speaker on simulants, gave some consideration on gelatine, soap and water. See COLU/GG/INF/204 (III.8.(d)). After this, he introduced the subject of “Shape of the target”. See COLU/GG/INF/204.

After this an expert presented considerations on the subject of “measurements”. See COLU/GG/INF/204.

The meaning of point 5 on page 2 of COLU/GG/INF/204 was discussed. One expert stated that in his opinion a variety of angles should be studied.

One expert offered to draft a paper on environmental conditions. Another expert tried to assess the present situation. In his opinion a simple standard test seemed not to be acceptable to a number of delegations. For this reason no agreement whatsoever could be expected during this Conference on test methods or criteria. It was clear in his mind that only when a basis of

international confidence on this matter could be established, could a start be made with exchange of information. Some of the reservations expressed during this meeting might be lifted if other countries showed their willingness to participate actively. He proposed to discuss the subject of to-day again at the next meeting of the sub-group when delegations would have had more time to prepare comments. Also the other agenda-item could be discussed after working papers had been distributed.

Having completed this and having reported the most important points of the discussion, the working sub-group might give a recommendation on future co-operation and exchange of information. He did hope that other countries than those which participated in the discussion would show their willingness to co-operate.

(d) *Provisional Notes on the Fourth Meeting*

At the opening of the meeting the Chairman said that three more meetings, including the present one, were scheduled to conclude the work of the sub-group.

The rapporteur read the summary of the third meeting. No comments were received. The summary will be circulated.

An expert stated that the promised working paper on shooting distances was not ready. An effort would be made to have it available at the next meeting.

COLU/GG/INF/204 (III.8.(d)) was discussed. One expert complimented the authors of the paper on the quality of their work. Referring to page 2 point 5, he advised having a front surface perpendicular to the axis. He also explained the advantages of the methods used in the Indonesian trials to record cavities.

An expert offered to produce a working paper reviewing some blood circulation experiments on dogs.

An informal working paper (III.11.(j)) on environmental conditions was introduced by its author.

One expert pointed to the importance of the kind of weapons to be used. In his opinion trials should not be limited to assault rifles. Machine-guns and sub-machine-guns should also be studied. The description of the equipment used, both in shape and material, has to be recorded in detail.

The expert who drafted the part of COLU/GG/INF/204 (III.8.(d)) on measurements asked the other experts to present their experience of the validity of the indirect method of measuring energy transfer.

One expert, making a comparison with trials on metal targets, elaborated on the complexity of the problem. In his opinion it was highly doubtful that

conclusions on the energy transfer could be made on the bases of the study of crack-propagation in gelatin.

One expert pointed to information on projectile break-up based on studies of combat casualties. In gelatin trials this effect could not be produced. This might be caused by foliage or helmets and other equipment carried by the victims. This also might be a subject to be studied.

The shape of the target was discussed. The author of the working paper explained that the possibility of edge-effects had led to his proposal. In other countries rectangular targets were used.

One expert proposed to introduce a constant target temperature of about 18-20 degrees Centigrade.

Another expert questioned the length of the target. The author of the working paper explained his wish to catch the bullet in the target, so as not to have end-effects. The relative importance of end-effects in the cavitation or wounding process was discussed. One expert, supported by others, explained his doubts on the length of the described target. To catch the bullet, a much longer target might be needed. End-effects in his opinion might not be too big a problem.

One expert offered to give a brief exposé on the cavity formation in dense media. His notes on this subject however, to support his introduction, were not yet in the hands of the other experts. The Chairman proposed to postpone the discussion on the subject to the next day.

When no other expert wanted to take the floor, one expert proposed the following method to finish the work of this informal working group. In his opinion it was clear that no conclusions could be reached. The informal working group for this reason should finish its work on the morning of the next day. First the two remaining subjects would have to be discussed, namely, "cavity formation in dense media" and "shooting distances". After this the expert proposed to draft a very short final statement, to be presented by the Chairman to the General Working Group. This statement should explain why no conclusions could be reached and should refer to the provisional summaries to show what efforts were made.

Several experts supported this proposal.

One expert thought that the reasons for not reaching conclusions might be misunderstood. In his opinion most delegations in this informal sub-working group did not have the right composition for the specific subject.

In the following discussion it became clear that most delegations had not been prepared to discuss the problem of standard tests in detail.

Another expert expressed his admiration for the effort made by the authors of the draft informal working papers and all the preparation that was behind it. He pointed out how complex the matter really was and said that he

considered the matter to be too far-reaching for the group of experts. Nevertheless, he thought that the work done should not be underestimated. The world's conscience had been activated. Scientific work had been done in several countries, and in some cases legal review systems had been established.

The Chairman proposed that the sub-group meet again next day.

(e) *Provisional Notes on the Fifth Meeting*

At the opening of the meeting the Chairman asked the rapporteur to read the summary of the fourth meeting. No comments were received.

An expert introduced an informal study on the cavity formation in dense media.

Another expert read the informal working paper on shooting distances (III.11.(g)). This paper analysed the choice to be made between distances for experimental purposes and those in accordance with the combat range. The paper advised using two distances less than the normal combat range, namely 30 m and 100 m.

In the ensuing discussion, several experts showed their preference for greater distances. One expert pointed out that when comparing the results of two different calibres the distance is of great importance because the smaller calibre projectile will have a greater reduction of speed.

Another expert stated that it might be difficult to decide on the preferred distance when the purpose of the experiment was not known. Experiments with a purely medical purpose could differ from tests of weapons.

One expert mentioned the influence of the terrain. In jungle combat 100 m might be sufficient.

One expert questioned the validity of the 30 m distance mentioned in the working paper. The answer showed that the author of the paper considered 30 m to be sufficient to avoid the effects of muzzle yawing.

An expert explained the complex motion of a bullet in flight. Both precession and nutation would occur. In his country, a method to measure this had been developed. Only two firing-ranges have this capability. Operating them is very expensive and time-consuming.

Another expert mentioned a method using thin paper screens.

Another expert, explaining the difficulty of introducing controlled yaw, mentioned the muzzle compensator as a means of increasing yaw at the beginning of the trajectory.

A representative of a non-governmental organization expressed his concern about developments that might lead to the possibility of multiple injuries. He referred specifically to those weapons which fired in short bursts, or fired several projectiles at the same time. He expressed the hope that

designers of weapon systems would pay attention also to humanitarian aspects.

One expert presented the results of trials on dogs where circulatory disturbances were found. In these trials a steel sphere was fired into a dog's leg. The blood from the injured dog seemed to have a disturbing influence on the circulation system of an uninjured dog. These trials had not been completed but there seemed to be some correlation between the changes in the blood circulation and the energy deposit.

A discussion of a highly technical medical nature took place. Some experts pointed out the complexity of this kind of experiment. Several expressed their doubts about the validity of the conclusions and findings of this study of the relation between the energy transfer and the blood flow. It was admitted that further study and research were required.

When no more experts wanted to take the floor, the Chairman asked the rapporteur to read a draft final statement.

After this was done several experts expressed their willingness to accept the statement. Some, however, would have liked to include in the final statement the opinion that future international co-operation was desirable.

One expert expressed his concern on the terminal effect of some kind of projectiles. He wished to introduce in the final statement a sentence on the desirability of prohibiting certain bullets that might cause unnecessary suffering. In this respect he mentioned tumbling and breaking-up effects of certain projectiles.

In answer to this request some experts pointed out that this sub-group had concentrated on standard test-methods and that no specific weapons, munitions or parameters had been discussed. For that reason it would be impossible to accept the proposal of the previous speaker and insert in the final statement a subject which had not been discussed and which fell completely outside the scope of the work of the sub-group.

The Chairman concluded that the Working Sub-Group could agree with the wording of the final statement and that it was accepted.

After expressing his gratitude for the collaboration of all the experts in the Working Sub-Group and after mentioning that much work had been done in a spirit of good co-operation, the Chairman stated that for well-known reasons no consensus on the subject under discussion and no conclusions had been reached. After expressing his hope that future deliberations would be more fruitful, the Chairman declared the work of the Technical Experts Working Sub-Group on small-calibre projectiles to be concluded.

(f) *Informal Working Paper on Environmental Conditions*

Several environmental parameters may influence the outcome of the simulation test. The parameters may be classified as follows:

1. *Factors influencing internal ballistics:*

Most important is the temperature of the propellant, which should either be accurately measured, or adequately controlled. The temperature, however, mainly affects the muzzle velocity, and if a certain scatter is acceptable, a measurement of impact velocity, and possibly of muzzle velocity, may be sufficient. Other properties of weapon and ammunition should be discussed under point 3: "Methods and means of delivery".

2. *External ballistics:*

The external ballistics of the bullet are influenced by the delivery system, viz., the weapon, the properties of the bullet, and the ambient atmospheric conditions. Factors that should be measured include ambient pressure, ambient temperature and relative humidity. It might be preferable to control these factors which, however, presupposes indoor shooting. Other factors may be of some importance, e.g. turbulence in the air, side winds, etc. Rain in the air may also affect the bullet's behaviour, and should, at any rate, be noted and, if possible, avoided.

3. *Terminal ballistics:*

The properties of the target may change very much with temperature, and it would be preferable to control it. Further, ambient pressure may affect the results, although probably to a very limited extent.

(g) *Informal Working Paper on the Methods for Evaluating the Physical Characteristics of the Terminal Effects in Living Tissues*

Shooting Distances (item 4)

It is necessary to know:

The effect at the target of projectiles fired from a practical combat distance.

Shooting from combat distance:

Advantage: Real environment conditions.

Disadvantage: Owing to scattering, reduced hit probability; hence more work involved and, possibly, reduced reproducibility.

Shooting from Distances Shorter than Combat Distance (Test Distance):

Advantage: High hit probability, hence simplification of work.

Disadvantage: The impact conditions differ from the real conditions. There are differences, *inter alia*, in:

1. the impact velocity;
2. the rotation of the projectile;
3. the impact angle; and
4. the angle of yaw (oscillations due to faulty shooting, which are significant up to a distance of about 30 m).

Conditions 1 to 3 may be changed if necessary:

- the impact velocity may easily be changed, by varying the powder charge,
- the rotation velocity may be changed in theory but it is difficult in practice and requires a considerable amount of workshop and testing work,
- changes in the yaw can, however, be virtually eliminated by extending the shooting distance sufficiently.

It would be better to shoot from two distances for the test, thereby making it possible to show the variable interaction between the projectile and the target.

Proposed ranges of fire for testing purposes:

Short range: from 30 to 50 m.

Long range: 100 m.

Differences between results obtained at test distance and those obtained at combat distance will probably vary from one weapon system to another and, with a given weapon system, from one type of munition to another.

(h) *Final Statement*

1. The Technical Experts Working Sub-Group discussed the matter of standard test methods on the basis of the agenda, published under reference number COLU/GG/INF/203 (III.8.(c)).

Much work was done, mostly on the basis of informal working papers, but owing to the complexity of the subject no conclusions could be reached.

2. Even though no conclusions were reached, the Working Sub-Group was of the opinion that a positive purpose had been served, because governments and experts would realise the importance of the matter.

Much scientific study and research was being carried out and might be stimulated by the discussions at the Conference. Furthermore, some governments had already set up review systems to advise on the legal acceptability of newly designed weapon systems.

3. The working sub-group stresses the importance of the continuation or initiation of study and research in this field at the national level. International exchange of views and co-operation are also considered to be desirable.

4. The work carried out and the information exchanged is reflected in the provisional notes on the various meetings (III.11(a) to (e)), and in the informal working papers mentioned in those notes (III.11 (f) and (g)).

IV ANNEXES

A. PROPOSALS SUBMITTED TO THE CONFERENCE

1. COLU/202¹ (Original: English)

*Working Paper
submitted by the Experts of Sweden*

FUEL-AIR EXPLOSIVES

“The anti-personnel use of weapons which for their effects rely exclusively on shock waves in the air is prohibited.”

2. COLU/203² (Original: English)

*Working Paper
submitted by the Experts of France, the Netherlands and the United Kingdom*

LAND MINES AND BOOBY-TRAPS AND PROPOSALS FOR THE REGULATION OF THEIR USE

1. Land mines, booby-traps and similar devices were discussed by the first session of the Conference of Government Experts on the Use of Certain Conventional Weapons held at Lucerne between 24 September and 18 October 1974 (hereinafter called “The Experts’ Conference”). It was noted that these weapons might be used in a manner which could be characterised as “perfidious” and, further, that their use in certain circumstances might involve a degree of indiscriminate between military and civilian targets. The Experts’ Conference reported that “it was widely felt that in further deliberations on the subject stress should be laid on use against the civilian population”.

¹ COLU/201 is a glossary compiled by the ICRC.

² Takes account of document COLU/203/Add.1.

Recording of Minefields

2. Many armed forces today have a sophisticated system for recording the location of minefields, whether remotely delivered or manually emplaced. Such recording is primarily for the benefit of the armed forces themselves, but it does provide a ready means of locating such minefields in order that they may be removed after the cessation of active hostilities. Although it may not be possible to provide for the recording of the location of isolated mines hastily laid during combat, it would seem desirable to make a formal requirement for the recording of the location of even small minefields (exceeding 20 mines) and for public disclosure after the cessation of active hostilities of the location of all such minefields in territory controlled by an adverse party.

“Scatterable” (or “Remotely Delivered”) Mines

3. One category of mines which was discussed in detail during the Experts' Conference was there referred to as “Scatterable mines”. This category embraces mines delivered by tube and rocket artillery and, more commonly, by aircraft. The Experts' Conference recognised that these mines, which are a comparatively recent development, serve much the same function as emplaced mines but with the additional utility that follows from the rapidity with which they can be deployed. This category of mines can perhaps be better described as “Remotely Delivered Mines” since they will normally be delivered from comparatively long ranges.

4. It was generally agreed at the Experts' Conference that the tactical use of remotely delivered mines had a greater propensity for endangering friendly troops and civilians than the use of emplaced mines. It was also agreed, however, that for the selfsame reason it would normally be in the interests of the user to maintain particularly tight control over mine scattering.

5. It was suggested at the Experts' Conference, and again subsequently during the deliberations of the *ad hoc* Committee at the Geneva Diplomatic Conference, that it would be possible to mark the location of remotely delivered mines through the use of markers such as flags or pyrotechnic flares, delivered simultaneously with the mines. An alternative suggestion was to incorporate in these mines a self-destruct or neutralization mechanism; it was noted that some such mechanisms were already in existence and were extremely reliable.

6. The adoption of either of the alternatives mentioned in the last paragraph would counter the potential for indiscriminate employment of remotely delivered mines and it is suggested that a proposal to this effect should be considered.

Booby-Traps

7. A booby-trap *stricto sensu* is an apparently harmless device concealing an explosive charge designed to go off when tampered with. However, the expression has come to include certain other devices; examples include concealed pits, sharpened wooden stakes under vegetation, and explosive devices connected to, although not

concealed by, a harmless object. Additionally, as was recognized by the Experts' Conference, there may be little or no difference between an unmarked, isolated mine and a booby-trap; similar considerations may also apply to anti-personnel munitions which detonate automatically after a lapse of time or which are remotely detonated. The feature common to these devices is, of course, the inability to control the type of target against which they operate. There is an obvious danger that such a target may be civilian.

8. The greatest danger to civilians from the use of booby-traps and similar devices will occur in populated areas. It may well be difficult to place realistic prohibitions on the use of these weapons in such areas when combat between ground forces is taking place or is imminent, but in such circumstances civilians are normally either no longer present or have taken shelter. It is outside the battle zone, where the life of the community may well be proceeding relatively normally, that the use of the devices in question may often lead to the death or injury of civilians. Evidence of the grave danger to civilians in these circumstances was given at the Experts' Conference and it was suggested by the President that the Conference might reach a consensus on prohibiting the use of booby-traps which represent such a danger. Although there was considerable support for the President's suggestion, the Conference felt that some clarification was needed. It is therefore now suggested that in populated areas outside the battle zones, the use of booby-traps and similar devices should be forbidden except on or in the close vicinity of a military objective or unless due precautions are taken to protect civilians from their effects.

9. The President of the Experts' Conference also suggested that there might perhaps exist a consensus on the prohibition of explosive devices perfidious by their very nature. Again, there was support in the Conference for the President's suggestion but it was felt that further careful examination was needed. It is now suggested that certain specific and obviously perfidious booby-traps could be forbidden, such as devices used in connection with recognized protective emblems, the sick, wounded or dead, graves, medical facilities or supplies and children's toys.

10. From time to time use has been made of non-explosive booby-traps designed to kill or injure by such means as stabbing, impalement, crushing or strangulation. In many cases these have been associated with matter likely to infect or poison the victim. Devices of this nature are likely to cause a cruel death or, at the least, very considerable suffering and from the military point of view are ineffective except for the purpose of intimidation. The use of such devices is in most cases already prohibited by Article 23(e) of the Hague Regulations as being calculated to cause unnecessary suffering but it would seem desirable to reinforce this ban by a further express prohibition.

Formulation of Prohibitions—scope of application

11. An attempt to formulate the prohibitions and restrictions in this paper is at Annex A.

12. The work of this second session of the Conference of Government Experts on Conventional Weapons, like that of the first session and that of the Diplomatic Conference on Humanitarian Law, has application only to conventional weapons as indeed is clear from this Conference's title itself. Accordingly, the prohibitions and restrictions on use suggested below must be taken as having no application to atomic, bacteriological or chemical weapons. The use of such weapons is of course already in part controlled by existing instruments of international law, such as the Geneva Protocol of 1925 and the Biological Weapons Convention of 1972.

PROPOSALS ON THE USE OF MINES AND BOOBY-TRAPS

A. Definitions

For the purpose of these proposals:

- “booby-trap” means an explosive or non-explosive device or other material deliberately placed to kill or injure when a person disturbs or approaches an apparently harmless object, or performs an apparently safe act;
- “military objective” means, so far as objects are concerned, any object which by its own nature, location, purpose or use makes an effective contribution to military action and whose total or partial destruction, capture or neutralization in the circumstances ruling at the time, offers a definite military advantage;
- “mine” means an explosive or incendiary munition placed under, on or near the ground or other surface area and designed to be detonated by the presence or proximity of a person or vehicle but does not include an underwater mine;
- “neutralizing mechanism” means a self-actuating or remotely controlled mechanism which is designed to render a mine harmless or cause it to destroy itself when it is anticipated that the mine will no longer serve the military purpose for which it was placed in position;
- “remotely-delivered mine” means any mine delivered by artillery, rocket, mortar or similar means at a range of over 2,000 metres or dropped from an aircraft.

B. Recording of Minefields

So far as is feasible, the location of all minefields containing more than twenty mines shall be recorded. Such records shall be retained until after the cessation of active hostilities, at which time the location of all recorded minefields situated in territory controlled by an adversary party shall be made public.

C. Use of Remotely-Delivered Mines

The use of remotely delivered mines is forbidden unless either each such mine is fitted with a neutralizing mechanism or the area in which they are delivered is marked in some distinctive manner.

D. Use of Mines, Booby-Traps and other Devices in Populated Areas

1. This proposal applies to:

- (a) mines (other than remotely-delivered mines);
- (b) booby-traps; and
- (c) all other manually emplaced munitions designed to kill, injure or damage and for that purpose to detonate automatically after a lapse of time or to be remotely detonated.

2. In any city, town, village or other area containing a concentration of civilians in which combat between ground forces is not taking place or is not yet imminent, devices to which this proposal applies may not be used unless either:

- (a) they are placed on or in the close vicinity of a military objective; or
- (b) due precautions are taken to protect civilians from their effects.

E. Prohibition of Use of Certain Booby-Traps and other Devices

It is forbidden in any circumstances to use any booby-traps or similar device which:

- (a) is designed to kill or injure by a non-explosive means which stabs, impales, crushes, strangles, infects or poisons the victim; or
- (b) is in any way attached to or associated with:
 - (i) internationally recognized protective emblems, signs or signals;
 - (ii) sick, wounded or dead persons;
 - (iii) burial sites or graves;
 - (iv) medical facilities, medical equipment, medical supplies and medical transport;
 - (v) children's toys.

3. COLU/204 (Original: English)

*Working Paper
submitted by the Experts of Indonesia*

STUDY OF COMPARISON BETWEEN THE EFFECTS CAUSED BY 7.62 mm AND 5.56 mm CALIBRE BULLETS SHOT IN A BLOCK OF SOAP

I. Introduction

This working paper contains the results of tests of 7.62 mm and 5.56 mm calibre bullets shot in a block of soap and intends to show the difference in several

effects obtained. These tests were performed by the Material Research and Test Command of the Indonesian Army in Bandung.

II. Personnel and Equipment used for the Test

(a) Personnel

- observers to record the bullet hits
- ballistic expert
- meteo expert
- photographer
- marksman
- assistant

(b) Equipment

- B.M.—59 rifle, cal. 7.62 mm, 9.3 gram
- AR—70 rifle, cal. 5.56 mm, 3.6 gram
- table for fixing the rifle
- table for the blocks of soap
- complete ballistic counter
- measuring tape
- boussole
- meteo equipment
- blocks of soap (50×50×30 cm)
 - composition: coconut oil 63%
 - soda water 37 B 30%
 - water glass 5%
 - pinus resin 2%

III. Data Collected

1. Entrance velocity
2. Exit velocity
3. Energy on entrance
4. Energy on exit
5. Absorbed energy
6. Volume of cavity
7. Maximal diameter of cavity
8. Length of the neck of the cavity

IV. Performance

1. Standard bullets were used for both calibres.
2. The rifle was fixed on the table and one bullet was fired for test.
3. Five bullets were fired horizontally one by one in the blocks of soap at 25 m distance. The aiming of each firing was done with a boussole.
4. The entrance and exit velocities were measured with a ballistic counter.
5. The cavity in each block of soap was filled with cement.

The same procedures were repeated at distances of: 50 m, 75 m, 100 m, 125 m, 150 m, 300 m, 450 m, 750 m, and 1000 m.

V. Results

See Appendix I

VI. Conclusion

1. The percentage of loss of energy in the air is greater for the 5.56 mm calibre than the 7.62 mm calibre.
2. The energy absorbed by the soap is at all distances greater with the 7.62 mm calibre than the 5.56 mm calibre, although in percentage the smaller calibre shows a greater figure.
3. Cavities caused by the 7.62 mm calibre have greater volumes than those made by the 5.56 mm calibre.
4. Enlargement of the neck of the cavities begins earlier with 5.56 mm calibre than the 7.62 mm calibre bullet (5.56 mm cavities have a shorter neck).
5. The thickness of the object penetrated by the bullet is an important factor in the formation of cavities for both calibres.

APPENDIX I

**FIGURES OF THE DATA COLLECTED FROM TESTS
WITH 7.62 mm AND 5.56 mm CALIBRE IN BLOCKS OF SOAP**

No.	Distance m	Entrance Velocity		Exit Velocity		Energy on entrance		Energy on exit	
		7.62 m/sec	5.56 m/sec	7.62 m/sec	5.56 m/sec	7.62 kgm	5.56 kgm	7.62 kgm	5.56 kgm
1.	25	778	957	510	425	288	168	124	33
2.	50	754	926	446	328	270	157	94	19
3.	75	745	893	477	318	264	147	108	19
4.	100	717	845	452	316	244	131	90	18
5.	125	687	813	441	309	224	121	92	17
6.	150	673	791	437	293	214	115	87	16
7.	300	587	641	427	265	163	75	86	13
8.	450	511	512	327	209	124	48	51	8
9.	750	320	289	197	0	48	15	18	0
10.	1 000	220	197	167	0	23	7	13	0

No.	Distance m	Absorbed Energy		Max. diameter of cavity		Volume of cavity		Length of neck	
		7.62 kgm	5.56 kgm	7.62 cm	5.56 cm	7.62 cc	5.56 cc	7.62 cm	5.56 cm
1.	25	164	135	11	8	1 460	520	14	7
2.	50	176	138	12	10	1 540	640	12	11
3.	75	156	128	11	8	1 070	510	14	11
4.	100	154	113	10	8	1 040	460	13	10
5.	125	132	104	9	6	980	320	13	10
6.	150	127	99	9	6	720	300	13	12
7.	300	77	65	6	5	380	180	14	9
8.	450	73	40	5	3	240	120	14	8
9.	750	30	15	4	—	165	—	11	—
10.	1 000	10	7	4	—	120	—	11	—

4. COLU/205³ (Original: English)

*Working Paper
submitted by the Experts of the Netherlands*

**USE OF INCENDIARY WEAPONS ON A MASSIVE SCALE AND
USE OF NAPALM**

1. In the framework of the search for rules that prohibit or limit the use of means of warfare which tend to cause unnecessary suffering or have indiscriminate effects, certain restrictions on the use of incendiary weapons should be explored, especially with a view to banning the indiscriminate use of those weapons against civilians and combatants.

2. Massive use of incendiary weapons could easily lead to widespread suffering of the civilian population because of the inherent indiscriminate effects of large area bombardments and of the spread of fire as a secondary effect. The report of the first session of the Conference of Government Experts on the Use of Certain Conventional Weapons held at Lucerne, 24 September-18 October 1974, indicates that many experts were of the opinion that the large-scale use of incendiary weapons against cities (as in the Second World War) is an obsolete method of warfare, either proscribed by existing international law or as a result of the Diplomatic Conference on the Reaffirmation and Development of Humanitarian Law Applicable in Armed Conflicts. Nevertheless, several experts suggested that it would be preferable to supplement any general rule applicable with a specific prohibition on the use of incendiary weapons against civilian population centres. It is proposed, therefore, that possible prohibitions on the use of incendiary weapons should include the elimination of the use of these weapons against civilian population centres. A proposal to this effect is attached as Annex A to the present working document.

3. Although most incendiary weapons, like most other weapons for that matter, can be used in an indiscriminate way, it cannot be denied that a number of incendiary weapons lend themselves to a discriminate application in specific military operations. Thus, incendiary weapons should not be treated as one class. In formulating prohibitions on use, one should rather focus on specific incendiary weapons and on the specific targets they are being used against.

4. The remainder of the working paper will deal exclusively with one specific type of incendiary weapon, *napalm*. For humanitarian reasons one should strive to reach agreement on the tightest possible restrictions on the use of napalm. It should be borne in mind, however, that in a limited number of situations napalm could be used in

³ Takes account of documents COLU/205/Corr. 1 to 3.

a highly accurate and discriminate way. The use of alternative weapons (blast weapons, fragmentation weapons) in those situations would probably have less discriminate effects. These situations comprise e.g. the use in close combat support, i.e. in situations that due to the close proximity of friendly forces, require the use of highly discriminate area weapons. Likewise, no civilians will be involved when napalm is used against fortified positions, such as bunkers and pillboxes, against military airfields, against seaborne attacks on the coast line as long as the attacking forces are in the water or on the beach.

Furthermore, it has to be doubted whether the use of alternative weapons would have caused less suffering in the situations mentioned here. Personnel in bunkers, tanks and armoured personnel carriers would probably be more vulnerable to attacks with certain types of high explosives than to attacks with napalm. Restrictions on the use of napalm should therefore also be aimed at protecting *unprotected* personnel in the open with the exception, however, of those situations where the military advantage clearly outweighs the arguments against such use. In view of the foregoing, a prohibition of the use of napalm is proposed with a very limited number of exceptions, i.e. only those that are justified for one or more of the reasons set out above. Such a proposal is set out in Annex B to this working document.

ANNEX A

1. *Definitions*

- (a) An incendiary munition is any munition which is primarily designed to set fire to objects or to cause burn injury to persons through the action of flame and/or heat produced by a chemical reaction of a substance delivered on the target.
- (b) A flame munition is any incendiary munition in which the incendiary agent to be delivered on the target is based on a gelled hydrocarbon. Napalm is a flame munition.

2. *Rules*

- (a) As a consequence of the rules of international law applicable with respect to the protection of the civilian population against the effects of hostilities, it is prohibited to make any city, town, village or other area containing a concentration of civilians the object of attack by means of any incendiary munition.
- (b) Specific military objectives that are within such an area may be made the object of attack by means of incendiary munitions provided that the attack is otherwise lawful and that all feasible precautions are taken to limit the incendiary effects to the specific military objectives and to avoid incidental loss of civilian life or injury to civilians.
- (c) In order to reduce to a minimum the risks posed to civilians by the use of flame weapons, it is prohibited to make any specific military objective that is within such an area the object of aerial attack by means of napalm or other flame munition unless that objective is located within an area in which combat between ground forces is taking place or is imminent.

ANNEX B

Proposal on the use of napalm

The use of napalm is forbidden unless it is employed:

- A. in close combat support i.e. in situations that, due to the close proximity of friendly forces, require the use of highly discriminate area weapons;
- B. against fortified positions such as bunkers and pillboxes;
- C. against military airfields;
- D. against armoured targets in an interdiction action;
- E. against seaborne attacks on the coast line as long as the attacking forces are in the water or on the beach.

5. COLU/206 (Original: French)

*Working Paper
submitted by the Experts of Switzerland*

BOOBY-TRAPS

The camouflage of explosive devices in objects in general use among civilians shall be prohibited.

6. COLU/207⁴ (Original: English)

*Working Paper
submitted by the Experts of Australia, Belgium, Canada, Denmark, Federal Republic of Germany, France, Ireland, Italy, Japan, Philippines, and United States of America*

INCENDIARY WEAPONS

With a view to ensuring that incendiary attacks against urban areas, which have in the past caused extensive damage and suffering, are clearly prohibited and that there

⁴ Takes account of documents COLU/207/Add. 1 and Corr. 1.

can be no question about this prohibition, the experts of the delegations listed above suggest the following proposal:

“1. It is prohibited to make any city, town, village or other area containing a concentration of civilians the object of attack by means of any incendiary munition.

2. Specific military objectives that are within such an area may be made the object of attack by means of incendiary munitions, provided that the attack is otherwise lawful and that all feasible precautions are taken to limit the incendiary affects to the specific military objectives and to avoid incidental loss of civilian life or injury to civilians.”

7. COLU/208 (Original: English)

*Working Paper
submitted by the Experts of Indonesia*

INCENDIARY WEAPONS (COLU/205)

Annex A of Working Paper COLU/205 (original submitted by the experts of the Netherlands) should be amended and supplemented as follows:

Para. 2 should be replaced by the following:

It is prohibited to attack with incendiary weapons military objectives within or in close proximity to population centres.

The following para. should be added as para. 4:

In case of doubt whether an object normally used for civilian purposes is being used to make an effective contribution to military action, it shall be presumed not to be so used.

8. COLU/209⁵ (Original: French)

*Working Paper
submitted by the Experts of Switzerland*

FUEL-AIR EXPLOSIVES

It shall be forbidden to detonate for military purposes gas-air and dust-air mixtures which release gas pressure.

⁵ Takes account of document COLU/211/Add. 1.

9. COLU/210 (Original: Spanish)

*Working Paper
submitted by the Experts of Mexico*

PROCEDURE FOR CONTINUING STUDIES

The Conference of Government Experts on the Use of Certain Conventional Weapons

Convinced of the need to establish new rules reaffirming and developing existing international humanitarian law and to ensure the full observance of human rights applicable in all armed conflicts pending the earliest possible cessation of such conflicts by means of adequate agreements,

Aware of its terms of reference as granted by the 1973 International Conference of the Red Cross which directed it to study the question of banning or limiting the use of certain conventional weapons likely to cause unnecessary suffering or to have indiscriminate effects,

Encouraged by the progress made by the present Conference,

Concerned by the as yet incomplete state of its work,

RECOMMENDS to governments that the Diplomatic Conference on the Reaffirmation and Development of International Humanitarian Law Applicable in Armed Conflicts should grant this Conference of Government Experts permanent status in order that it may, in accordance with the terms of reference granted to it, continue working for the conclusion of agreements to prohibit the use of conventional weapons likely to cause unnecessary suffering or to have indiscriminate effects, and

Calls on governments to intensify their efforts to reach such agreements.

10. COLU/211⁶ (Original: Spanish)

*Working Paper
submitted by the Experts of Spain*

**INCENDIARY WEAPONS AND ANALYSIS OF THE PROPOSALS
SUBMITTED CONCERNING INCENDIARY WEAPONS**

I. Protection of civilians

1. In order to ensure the protection of civilian persons and property, in accordance with the dictates of international law, attacks with any kind of incendiary

⁶ Takes account of document COLU/211/Add.1.

weapon on all civilian concentrations such as towns, villages and the like are prohibited.

2. In addition to any other restrictions applicable to such areas, it is forbidden to attack with napalm or other incendiary weapons any specific military objective situated in towns, villages or other areas containing civilian concentrations unless such objective is in a zone in which combat between land forces is taking place or is about to take place.

3. Should a military objective in a town, village or other area containing civilian concentrations be attacked with napalm or any other incendiary weapon in the circumstances referred to in the preceding paragraph, all possible precautions shall be taken to avoid accidental loss of life or injury among civilians.

II. Protection of combatants

The use of incendiary weapons, and of napalm in particular, is forbidden except against fortified positions, casements and pillboxes, military airfields or armoured targets or in interdiction operations, provided that such operations are not aimed at populated areas even though such areas may lie in the way.

ANALYSIS OF THE PROPOSALS SUBMITTED CONCERNING INCENDIARY WEAPONS

Incendiary weapons belong to the group of those which, by their very nature or their normal use, are likely to have indiscriminate effects or to cause unnecessary suffering.

For that reason, they would be covered by a general ban as established in the rules contained in the Hague Regulations respecting the Laws and Customs of War on Land (arts. 22 and 23(e)), annexed to the Hague Convention of 1907 (IV).

They would also be covered by articles 33 and 46-3 of Draft Protocol I, additional to the Geneva Conventions.

Despite that, it has been considered advisable, and even necessary, to examine in greater detail the possibility of prohibiting the use of incendiary weapons or, depending on the case in point, of limiting their use on the battlefield, in accordance with the proposal in United Nations General Assembly resolutions 2852(XXVI) and 3032(XXVII) and with the general feeling of the Diplomatic Conference on the Reaffirmation and Development of International Humanitarian Law.

To that end, various proposals on the possible banning or limiting of the use of such weapons have been submitted to the consideration of the experts attending the second session of the Conference on the Use of Certain Conventional Weapons, being held in Lugano.

All of these proposals have one thing in common, in that they consider solely the protection of civilians, that is to say, they take account only of the propensity of those weapons for producing indiscriminate effects.

That common trait apart, the terms in which the extent of the ban is couched, or the assumption contained in the proposals and on which the exceptions are based, vary widely.

An analysis of these proposals shows that they contain various rules which, for ease of study, we have here listed, starting with the points that have been generally accepted and following up with the points on which there is disagreement.

The use of incendiary weapons in general and that of napalm in particular are dealt with separately.

I. Incendiary weapons in general

1. General ban on their use against civilians

This can be found in document COLU/205, Annex A:

“1. In order to ensure respect and protection for individual civilians, the civilian population and civilian objects on land, as generally recognized by the applicable rules of international law, it is prohibited to attack any civilian population centre, such as a city, town, village or other area of civilian concentration, by means of any incendiary weapon.”

and in document COLU/207:

“1. It is prohibited to make any city, town, village or other area containing a concentration of civilians the object of attack by means of any incendiary munition.”

The idea expressed is the same. Document COLU/205 is more complete in that it refers to existing international rules (contained both in customary law and in Article 25 of the Hague Regulations), thereby avoiding any mistaken interpretation that the banning of incendiary weapons meant that civilians could be attacked with other sorts of weapons.

As the general terms of these two proposals are implicit in para. A (I) of the proposal made in document CDDH/IV/201, submitted to the Diplomatic Conference by 13 countries in February 1975 and in the amended text of document 610/4 b—supported by 21 countries—dated May 1975, it would seem that a consensus exists to the effect that a rule should be evolved banning the use of incendiary weapons as they are weapons having indiscriminate effects (protection of civilians).

The other effect of the use of such weapons—the causing of unnecessary suffering—refers to their use against combatants and has not yet been examined, except in passing and in connection with one specific weapon, i.e. napalm.

2. Assumption that military targets are situated in civilian areas

Document COLU/205 (Annex A) states:

“2. This prohibition does not, however, prevent attacks directed at specific military objectives that are within or are in close proximity to such population centres, provided the effects of the methods and means of combat employed in such attacks are limited to these military objectives.”

Document COLU/207 states:

“2. Specific military objectives that are within such an area may be made the object of attack by means of incendiary munitions, provided that the attack is otherwise lawful and that all feasible precautions are taken to limit the incendiary effects to the specific military objectives and to avoid incidental loss of civilian life or injury to civilians.”

and document COLU/208, amending the foregoing, states:

“It is prohibited to attack with incendiary weapons military objectives within or in close proximity to population centres.”

The assumption is approached from the same angle in both of the first two documents, i.e. an exception to the general ban previously established is allowed provided that the effects do not extend beyond the military targets.

In document 208, the assumption appears with no conditions attached and is merely a more specific version of the general prohibition. In this respect it is more in keeping with the humanitarian principle which has met with general consensus, namely that civilians must be kept beyond the range of weapons and must be protected by the rules of war.

Documents 205 and 207, on the other hand, approach the assumption from the factual angle that the existence of military targets in populated areas is often a fact which has nothing to do with the temerity of the enemy, the classic example being the existence of a railway junction in a township.

Therefore, any humanitarian law approach which is not pragmatic would be pointless. An effort is made, in these two documents, to reconcile military and humanitarian necessities—as required by the general ban—by placing the exception before the general rule; this contradicts the problem that we are trying to settle.

The wording proves the point: “. . . This prohibition does not . . . prevent . . .” (doc. 205); “. . . may be made the object of an attack . . .” (doc. 207).

The general prohibition protecting civilians subsists, despite the existence of the military objective in their midst, for as long as there is no assurance that the exception to that prohibition required for military purposes is accompanied by measures to limit the effects of the weapons used against those objectives.

The indiscriminate character of incendiary weapons, their horrific effects and the secondary propagation of the fire are reasons enough for forbidding the use of incendiary weapons against such objectives.

Having accepted that point, it might be possible when proposing a rule to cover the

assumption here being considered, and which cannot be ignored in formulating the general prohibition, to couch it in terms satisfying humanitarian considerations, which are, as all experts agree, the primary concern of this Conference.

Moreover, everyone seems to be of the opinion that the military objectives to which this assumption refers are not soldiers but buildings and equipment.

3. Assumption that some doubt may exist as to the military use of a civilian object

An addendum to proposal A in document 205 appears in document COLU/208 and reads:

“In case of doubt whether an object normally used for civilian purposes is being used to make an effective contribution to military action, it shall be presumed not to be so used.”

This was not accepted by most experts.

Let us say that it is a *juris tantum* presumption which would require confirmation.

Should such evidence settle the doubt in the affirmative, the military use could be considered perfidious.

4. Assumption that the combat zone has reached civilian areas

This assumption was alluded to during the discussions and, by virtue of its importance, it deserves to be included in the proposed text agreed on.

General opinion would have it that once contact is made between the population centre and the combat line, the former is inexorably subjected to the effects of the weapons in use.

Should the attacking forces be using incendiary weapons, they will continue to do so. However, a text could be drafted which, while complying with the general prohibition, could easily make an exception, not just of napalm, but also of any anti-personnel use.

5. Total prohibition of incendiary weapons

This is considered in document CDDH/IV/201, submitted by 21 countries, part I of which refers to all incendiary weapons.

This is the proposal which best expresses the humanitarian aims of this Conference of Experts in that the general prohibition contained therein covers all weapons and protects civilians and combatants alike.

This attitude—being the ideal—has met with general approval but it is very difficult to accept it as a text for submission to governments in view of the arguments advanced by both military and non-military experts.

A general and total prohibition would, as things stand at present, be rejected by the governments of a large number of countries, including the great powers, and would render virtually useless all efforts to find an effective legal solution to the problem posed by these weapons.

II. Napalm

Only one proposal has dealt with this matter and that is COLU/205, Annex B.

This, too, has been drawn up solely with respect to protecting civilians. From this point of view, the general prohibition contained in the first line was unanimously accepted and the shocking effects of this weapon justify its being expressly banned even though it falls within the general prohibition already mentioned.

Of the five exceptions contained in that document, those which were approved by a majority of experts—for purely military reasons—were exceptions B, C and D.

It is doubtful that exception A will be accepted, not just because of the opinion of some of the military experts but for the humanitarian reason that it implies disregard for unnecessary suffering and for the very serious consequences to the victims.

Exception E has not been explained clearly enough and, as a result, there was some reluctance to accepting it.

In all cases napalm causes unnecessary suffering and serious or irreparable consequences. This means that the most important aspect of the problem—the protection of combatants—is not covered by this proposal.

For this reason it will be difficult for most experts to accept it.

Anything approaching a satisfactory text would have to extend the prohibition to all forms of anti-personnel use. That explains why the paragraphs which most easily met with approval were those covering the military need for the effective use of napalm against equipment and machinery.

11. COLU/212 (Original: French)

*Working Paper
submitted by the Experts of Mexico and Switzerland*

NON-DETECTABLE FRAGMENTS

The use of weapons producing fragments which in the human body escape detection by the usual medical methods shall be forbidden.

12. COLU/213 (Original: English)

Working Paper
submitted by the Experts of Mexico and Switzerland

TIME-FUSED WEAPONS

The use of

- bombs and all other dropped ammunitions,
- projectiles, shells, grenades, rockets and all other projected ammunitions,
- all other “remotely delivered” ammunitions,

is forbidden if these ammunitions are equipped with a fuse or other initiating mechanisms of the long-delay type exploding 24 hours or more after the impact, either by themselves or on contact.

13. COLU/214 (Original: English)

Working Paper
submitted by the Experts of the Philippines

USE OF MINES AND BOOBY-TRAPS (COLU/203)

Delete paragraph E (a) of the “Proposals on the Use of Mines and Booby-Traps” attached to Working Paper COLU/203 (submitted by the Experts of France, Netherlands and United Kingdom).

14. COLU/215 (Original: Spanish)

Working Paper
submitted by the Experts of Spain

LAND MINES AND BOOBY-TRAPS (COLU/203)

The following amendments are proposed to document COLU/203, submitted by the experts of France, the Netherlands and the United Kingdom:

to paragraph B. *Recording of minefields*

Replace with the wording proposed by the expert of SIPRI, which is fuller and more accurate.

to paragraph C. *Use of remotely delivered mines*

Replace the words after “delivered” (third line) with the words: “. . . is easily identifiable”. Then add a separate paragraph, reading: “In every case, their use in populated areas is prohibited.”

to paragraph D. *Use of mines, booby-traps and other devices in populated areas*

We propose the following text:

“1. This proposal applies to:

(a) mines; and

(b) any other device emplaced with the intent of causing death, injury or damage by delayed action or remotely controlled detonation.

2. The use of the above-mentioned devices is prohibited in any city, town, village or other populated area in which combat between ground forces is not taking place or is not imminent.

3. Remotely detonated devices may be used in populated areas only when they are placed in or near military objectives and when due precautions can be taken to protect civilians from their effects.

Note: This text requires the deletion of the word “booby-traps” from the title of paragraph D.

to paragraph E. *Prohibition of use of certain booby-traps and other devices*

Insert in the first line, after the word “circumstances”, the words: “,in accordance with the regulations already established,”.

15. COLU/216 (Original: English)

*Working Paper
submitted by the Experts of Australia*

NON-DETECTABLE FRAGMENTS (COLU/212)

Replace in working paper COLU/212 (submitted by the experts of Mexico and Switzerland) the word “producing” by the words “which rely for their injurious effect on”.

16. COLU/217 (Original: English)

*Working Paper
submitted by the Experts of Israel*

USE OF MINES AND BOOBY-TRAPS (COLU/203)

Add a sub-paragraph:

(vi) “objects in general use among civilians”

to paragraph E of the “Proposals on the Use of Mines and Booby-traps” attached to Working Paper COLU/203 (submitted by the Experts of France, Netherlands and United Kingdom).

17. COLU/218 (Original: English)

*Working Paper
submitted by the Experts of Norway*

ESPECIALLY INJURIOUS PRE-FRAGMENTED ELEMENTS

The use of weapons acting through the release of pre-fragmented elements which because of their irregular shape are likely to cause extensive wounds when hitting a human body and thus lead to excessive suffering is prohibited.

18. COLU/219 (Original: Spanish)

*Working Paper
submitted by the Experts of Venezuela*

DEFINITION OF BOOBY-TRAPS

A booby-trap is any contrivance or device, whether explosive or not, which is designed to wound or kill after deceiving.

19. COLU/220 (Original: Spanish)

*Working Paper
submitted by the Experts of Mexico*

**DRAFT ADDITIONAL PROTOCOL TO THE GENEVA CONVENTIONS
OF 12 AUGUST 1949 ON THE PROHIBITION
OF THE USE OF INCENDIARY WEAPONS**

The Mexican Government has repeated on innumerable occasions its view that the prohibition or limitation of the use of certain types of conventional weapons which cause unnecessary suffering or have indiscriminate effects, including incendiary weapons which are outstanding for their cruelty, constitutes an essential element of the new International Humanitarian Law.

Even though it may appear that there is, at this time, no general consensus concerning the rules to be adopted, Mexico is convinced that sufficient information is already available on the nature and effects of these weapons for the question to be discussed and recommendations on the subject to be approved at the forthcoming third session of the Diplomatic Conference. For this reason, it is submitting the present working paper, which does not affect its position as co-sponsor of the proposal contained in working paper CDDH/IV/201, as a:

**“Draft Additional Protocol to the Geneva Conventions of 12 August 1949
on the Prohibition of the Use of Incendiary Weapons”**

The High Contracting Parties

Reaffirming their determination to draw up rules to strengthen and develop existing international humanitarian law and their desire to ensure the full observance of human rights applicable in all armed conflicts pending the earliest possible termination of such conflicts,

Mindful not only of the fact that all armed conflicts and the use of any weapon cause cruel suffering but also that certain kinds of conventional weapons, including incendiary weapons, may cause unnecessary suffering or have indiscriminate effects,

Pointing out that the international community has long demonstrated its repulsion at the inhuman effects of such weapons, by adopting in the United Nations General Assembly a number of resolutions specifically condemning the use of napalm and other incendiary weapons while urging States to ban their use under a general agreement,

Agree as follows:

Article 1. The use of incendiary weapons shall be prohibited.

Article 2. The prohibition contained in the preceding article shall apply to the use of all ordnance intended primarily to burn objects or persons by the action of flame, heat or both, produced by chemical reaction on hitting the target. Such ordnance shall include flamethrowers, projectiles, rockets, grenades, mines and incendiary bombs.

Article 3. The prohibition referred to in article 1 of this Protocol shall not apply to ordnance which may have accidental or incidental incendiary effects, such as flares, tracer ammunition, smoke munitions or signaling devices.

Article 4. The provisions of the Geneva Conventions on the repression of infringements shall apply to infringements of this Protocol.

Article 5. Parties to the Geneva Conventions of 12 August 1949 may sign the present Protocol before the 197., at

Article 6. The present Protocol shall be ratified as soon as possible. The instruments of ratification shall be deposited with the Swiss Confederation, the Depository of the Conventions.

Article 7. Any Party to the Conventions which is not a signatory to the present Protocol may accede to it. The instruments of accession shall be deposited with the Depository of the Geneva Conventions.

Article 8. The present Protocol shall come into effect six months after the deposit of two instruments of ratification. The present Protocol shall come into effect for each Party to the Conventions, or for each Party subsequently acceding to it, six months after the said Party has deposited its instrument of ratification or accession.

Article 9. Any of the High Contracting Parties may propose amendments to the Protocol. The text of draft amendments shall be communicated to the Depository of the Conventions which, after holding consultations with all of the High Contracting Parties and with the International Committee of the Red Cross, shall decide whether a conference should be convoked to consider the proposed amendment.

Article 10. The Depository of the Conventions shall inform the High Contracting Parties of:

- (a) the signatures appended to the present Protocol and of the instruments of ratification and accession deposited in accordance with articles 6 and 7 thereof,
- (b) the date on which the present Protocol comes into effect, in accordance with article 8 thereof,
- (c) communications and declarations received, in accordance with article 9 thereof.

Article 11. When the present Protocol comes into effect, the Depository of the Conventions shall forward it to the United Nations Secretariat for registration and

publication in compliance with article 102 of the United Nations Charter. The Depository of the Conventions shall likewise inform the United Nations Secretariat of all ratifications and accessions received in connection with the present Protocol.

Article 12. The original of the present Protocol, the French, English and Spanish texts of which shall be equally authentic, shall be deposited with the Depository of the Conventions which shall send certified copies to all Parties to the Conventions. The Depository of the Conventions shall ensure that the present Protocol is officially translated into

20. COLU/221⁷ (Original: English)

*Working Paper
submitted by the Experts of Japan*

**SMALL-CALIBRE PROJECTILES:
EXPERIMENTS TO DETERMINE BULLET BEHAVIOUR IN WATER**

The results of the experiments presented here are the background to the comments made by the Japanese expert on the item discussed at the Eighth Plenary Meeting held on 9th February, 1976. The data have been presented in the hope of clarifying projectile behaviour in a dense medium such as water.

Contents

- Part 1. Behaviour of the small-calibre, low-velocity, spin-stabilized bullet in water.**
- Part 2. Bullet penetration and break-up in water.**
- Part 1. Behaviour of the small-calibre, low-velocity, spin-stabilized bullet in water.**

This working paper contains the results of an experiment conducted for the purpose of confirming the behaviour of small-calibre projectiles going through the air into water at a low velocity of 290 m/s. A K-22 Masterpiece Revolver, model 17, Smith & Wesson and Dynamit Nobel, R-50 rounds were used for the firing test. The projectiles were shot vertically into water and their behaviour patterns were recorded by photography using 5 successive strobo flashes which were triggered by the electric signals transmitted from the velocity-measuring devices.

⁷ Takes account of document COLU/221/Corr.1. Documents COLU/221 and COLU/221/Corr.1 have been submitted after the end of work on small-calibre projectiles.

The following results were noted:

1. R-50 rounds, Dynamit Nobel, shot by K-22 Masterpiece Revolver, model 17, Smith & Wesson, begin to tumble immediately after entry into water.
2. A small yaw angle on impact may decisively affect the yaw angle of the bullet in water.

This experiment was performed by the members of the ballistic research group of the National Defence Academy of Japan.

Part 2. Bullet penetration and break-up in water.

1. Many questions remain unanswered concerning projectile break-up in a dense medium such as water.

The data which are presented here were disclosed recently by Dr. Takashi Isobe, Professor Emeritus of Tokyo University. They were obtained for the purpose of clarifying the relations between penetration depth in water and impact velocity at the surface. Though the research equipment was relatively old, there does not seem to be much doubt about the reliability of data on bullet break-up propensity. But it should be noted that the firing range was extremely short. Consequently, the bullets may have had an increased propensity to tumble in water owing to muzzle yaw.

The test samples were normal rounds of old Japanese Model 38 infantry rifle and brass-made rounds of equal shape and size.

2. Summary of the Results:

(1) Increase in penetration, in proportion to the increase in impact velocity was observed up to the point where the bullets disintegrated. When the bullets disintegrated, the penetration depth was sharply reduced. Tests with normal bullets and brass bullets of like size and shape seemed to show that penetration was a function of the mass of the bullets at any given impact velocity provided that the bullets did not break up. In this test the ratio between the mass of the brass and the normal bullets was 0.8.

(2) The bullets broke up, i.e. the lead core separated from the jacket, at an impact velocity of more than 750 m/s. The separation of the lead cores occurred at a depth of 50-60 cm in water.

The recovered lead cores were found to be stretched and expanded, particularly around the centre of gravity and to be twisted clockwise at the tail part, much in the same manner as rifling twist.

It is noteworthy that neither the lead core nor the copper jacket of the nose parts was deformed.

When the charge was reduced to 30/32 of the normal round (impact vel. approx. 720 m/s), the separation of the lead core was not observed. However, the tail parts of bullets were twisted clockwise and the cutting sector of the tail part deformed into an ellipse.

At 16/32 of the normal charge (impact vel. approx. 420 m/s), no deformation occurred in the normal bullets.

The brass bullets were not deformed at the test velocity.

3. The fact that the nose parts of bullets did not deform probably indicates that the force of break-up did not work at the nose of the bullet. According to the estimation made by Dr. Hagihara, the break-up of the nose part would occur when velocity on impact with the surface of the water exceeded 1,300 m/s.

The fact that the lead cores are stretched and extended, and that the deformation is observed only at the tail part, which is the weakest part of the jacket, suggests the work of centrifugal force. Mathematical estimation indicates that to be the possible cause.

Reference:

ANNEX

Impact Velocity—Penetration Depth—Deformation (normal rounds)

ANNEX

**IMPACT VELOCITY—PENETRATION DEPTH—DEFORMATION
(Normal Rounds)**

No.	Quantity of charge		Impact velocity (m/s)	Penetration depth			The depth at which cores separated (cm)
	(Ratio)	(gr)		Separation (cm) Jacket	Core (cm)	No separation (cm)	
1	32/32	2.150	780	65	75	—	60
2	32/32	2.150	780	80	90	—	50
3	32/32	2.150	780	80	100	—	65
4	32/32	2.150	780	—	—	85	—
5	32/32	2.150	780	—	—	80	—
6	32/32	2.150	780	—	—	105	—
7	32/32	2.150	780	—	—	85	—
8	32/32	2.150	780	—	—	85	—
9	32/32	2.150	780	80	80	—	85
10	32/32	2.150	780	—	—	90	—
11	36/32	2.419	840	85	85	—	—
12	32/32	2.150	780	80	90	—	—
13	31/32	2.084	750	90	90	—	—
14	31/32	2.084	750	75	85	—	—
15	30/32	2.017	720	—	—	100	—
16	30/32	2.017	720	—	—	105	—
17	28/32	1.882	690	—	—	110	—
18	28/32	1.882	690	—	—	105	—
19	24/32	1.613	600	—	—	100	—
20	24/32	1.613	600	—	—	105	—
21	20/32	1.334	510	—	—	95	—
22	16/32	1.075	420	—	—	90	—
23	16/32	1.075	420	—	—	85	—

21. CDDH/IV/201 *

Working Paper

submitted to the CDDH by Algeria, Austria, Egypt, Lebanon, Mali, Mauritania, Mexico, Norway, Sudan, Sweden, Switzerland, Venezuela, Yugoslavia

Incendiary Weapons, Anti-Personnel Fragmentation Weapons, Fléchettes, especially Injurious Small-Calibre Projectiles, Anti-Personnel Land Mines

Explanatory Memorandum

Document CDDH/DT/2 of 21 February 1974, submitted by Egypt, Mexico, Norway, Sudan, Sweden, Switzerland and Yugoslavia contained a working paper with draft proposals for the prohibition of the use of specific conventional weapons. The proposals are now revised somewhat in the light of the discussions at the Lucerne conference of government experts on the use of certain conventional weapons (24 September-18 October 1974) and resubmitted. The comments which were submitted together with the draft proposals in the working paper at the 1974 session of the diplomatic conference are now presented in revised form and embodied in an accompanying explanatory memorandum.

I. Incendiary weapons

Incendiary weapons shall be prohibited for use.

A. This prohibition shall apply to:

the use of any munition which is primarily designed to set fire to objects or to cause burn injury to persons through the action of flame and/or heat produced by a chemical reaction of a substance delivered on the target. Such munitions include flame-throwers, incendiary shells, rockets, grenades, mines and bombs.

B. This prohibition shall not apply to:

1. Munitions which may have secondary or incidental incendiary effect, such as illuminants, tracers, smoke, or signalling systems.
2. Incendiary munitions which are designed and used specifically for defence against aircraft or armoured vehicles. *

* This document takes account of the addenda and corrigenda submitted to the CDDH.

* The Mexican Government is in favour of eliminating the second exception in order that the prohibition of incendiary munition be total.

II. Anti-personnel fragmentation weapons

Anti-personnel cluster warheads or other devices with many bomblets which act through the ejection of a great number of small-calibred fragments or pellets are prohibited for use.

III. Fléchettes

Munitions which act through the release of a number of projectiles in the form of fléchettes, needles and similar, are prohibited for use.

IV. Especially injurious small-calibre projectiles

It is prohibited to use small-calibre projectiles which are so designed or have such velocity that they:

- (a) break or deform on or following entry into a human body, or
- (b) tumble significantly within the human body or,
- (c) create shock waves which cause extensive tissue damage outside the trajectory,
or
- (d) produce secondary projectiles within a human body.

V. Anti-personnel land mines

Anti-personnel land mines must not be laid by aircraft.

ANNEX

Explanatory Memorandum

The two draft Protocols contain some essential rules regarding methods and means of warfare. In one area, however, that of weapons, the draft rules hardly amount to more than a reaffirmation of existing law. Thus, in Article 33 of the first Draft Protocol the following rule is proposed:

“Prohibition of unnecessary suffering

1. The right of parties to the conflict and of members of their armed forces to adopt methods and means of combat is not unlimited.
2. It is forbidden to employ weapons, projectiles, substances, methods and means which uselessly aggravate the sufferings of disabled adversaries or render their death inevitable in all circumstances.”

These fundamental rules largely reflect the contents of articles 22 and 23(e) of the Regulations respecting the laws and customs of war on land found in the Hague Conventions of 1899 (II) and of 1907 (IV) and the preamble of the 1868 St. Petersburg Declaration. This reaffirmation of the general prohibition of use of one kind of weapon is in itself welcome.

A similar general prohibition of use of another category of weapon, namely, those which are by their nature or normal use indiscriminate in their effects, would be of interest *inter alia* in response to the expressed desire for rules against weapons which may cause ecological damage. However, such a rule is perhaps redundant in view of the even broader general rule proposed in article 46:3 to reaffirm the customary rule prohibiting indiscriminate warfare:

“The employment of means of combat, and any methods which strike or affect indiscriminately the civilian population and combatants, or civilian objects and military objectives, are prohibited . . .”

These rules of a general scope also express the philosophy behind the prohibitions of use which in the past have been adopted regarding specific types of weapons, e.g. the dum-dum bullet (1899) and the automatic unanchored contact mine (1907).

It is submitted that the general prohibitions of weapons apt to cause unnecessary suffering and of means and methods of warfare which are by their nature or normal use indiscriminate—proposed for reaffirmation—should now, as in the past, be supplemented with prohibitions of use of specific weapons which are deemed to fall within the

general categories prohibited. Time would seem to be ripe for an examination of specific conventional weapons the use of which currently may be questioned from the viewpoint of compatibility with the general prohibitory rules which are to be reaffirmed. In the present working paper proposals are advanced for the prohibition or restriction of use of a number of such conventional weapons.

Proposals for the prohibition or restriction of use of other conventional weapons than those covered by this working paper could easily be added on the grounds that they risk having indiscriminate effect or causing excessive suffering. The list of proposed bans is thus not exhaustive, but may well be supplemented by other proposals.

In connection with the adoption of prohibitions of use, such as those contained in the working paper, consideration would have to be given to some related matters, viz. the question whether the rules should be absolute in character or binding only as between adversaries which have assumed the obligation to abide by the rules. Moreover, the question should be examined how, in the future, surveys can be made with a view to identifying weapons the use of which should be prohibited or subjected to restrictions for humanitarian reasons. A mechanism should be devised to facilitate such surveys to recur without too long intervals in order to ensure that weapon developments are always assessed in the light of humanitarian principles. Only in this way can there be some assurance that the broad prohibitory rules relating to the use of weapons will in fact be applied to specific weapons. But for such periodic review the technological development could lead to the production of ever-more cost-effective—but inhumane—weapons and weapon systems. Should the efforts fail to prohibit the use of specific weapons and to create mechanisms for review, the temptation to produce such new and cost-effective—but inhumane—weapons would be strong *inter alia* for the purpose of deterrence. The introduction now of prohibitions of use of specific weapons and agreement of regular reviews could discourage development of new particularly inhumane weapons.

Comments to the Proposed Prohibitions

I. Incendiary weapons

Recent international debate, particularly following publication of the United Nations Report on Napalm and other Incendiary Weapons, shows that there exists a widely spread wish to examine the possibility of explicit bans on the use of incendiary weapons. The Report mentioned and other available evidence indicated clearly that the use of these weapons must be deemed to cause unnecessary suffering. Severe wounds inflicted by incendiary weapons are exceptionally frightening and painful, difficult to treat and likely to result in death or permanent deformities and disabilities. Toxic and asphyxiating effects also occur. Although a distinction is sometimes made as regards incendiary weapons, between larger area weapons and weapons of smaller calibre, it remains true nevertheless that due to their construction all these weapons may be indiscriminate in their effects.

Fire is susceptible of spreading. In some situations this risk may be limited, e.g. where smaller calibre weapons with a combined explosive and incendiary effect are used against aircraft or armoured vehicles.

There is an important body of opinion which maintains that the military value of incendiary weapons is rather low. The effects seem to be the greatest where the use is most questionable, namely, against residential areas and against unprotected persons. It is immaterial that the current military planning of many States may not envisage the use of incendiary weapons against cities. In the absence of a legal prohibition of such use current planning could evidently be changed at any moment to comprise attacks with incendiaries on cities or other densely populated areas. It is not doubted that certain uses of some incendiary weapons may have specific military value. This has been argued as regards the use of incendiary bombs in close air support to friendly forces. It must be noted, however, that such use of incendiary weapons may in fact, cause injuries involving excessive suffering. Moreover, to except from a ban such methods of using some incendiary weapons might seriously reduce the reliability of the ban. With continued production and extensive deployment of the weapons in question, abuses of the permitted exceptional use might easily lead to controversies and to a breakdown of the rule.

The draft proposal of 1974 was modelled upon a provision in a draft disarmament convention submitted in 1933 by Great Britain. During the 1974 Lucerne conference of government experts there was almost complete unanimity upon a definition of incendiary weapons. This definition excluded munitions which may have secondary or incidental incendiary effect, such as illuminants, tracers, smoke and signalling systems. (This category of munitions had been excluded from the ban proposed in 1974.) Most of the experts in Lucerne wished to include under incendiary munitions those which combine their incendiary effect with other destructive effects (e.g. shaped charge effect), and which are designed and used specifically for armour-piercing and defence against aircraft. (This category of weapons which does not include incendiary bombs was proposed in the 1974 working paper to remain outside the proposed ban.) The revised proposal now submitted is not intended to be different in substance from the draft tabled in 1974 but merely to build upon the definition which emerged in Lucerne.

One final comment may be offered. The draft rule now submitted is one that would prohibit the use of most incendiary weapons in all circumstances. No method of using the weapons falling under the ban would remain permitted. It is submitted that this is a much safer construction of the rule than one which would except from the ban certain uses as regards which there might be a reluctance to accept a ban. Such a limited ban on use should be much more susceptible to breaking down than a ban which is complete and which would not justify any deployment of the weapons in question. Moreover, complete bans on use evidently constitute much better points of departure for subsequent efforts at the disarmament level for the elimination of production, stockpiling and dissemination of the weapon, than do bans on certain uses, which still justify production for other than merely retaliatory purposes.

II. Anti-personnel fragmentation weapons

A wide variety of weapons are based on fragmentation effects. Many of these weapons have been so constructed and so used that no questions have been raised as to their legality. Modern developments, however, have brought into production some fragmentation weapons which are apt to be indiscriminate in their effects and/or to cause unnecessary suffering. It would certainly be desirable to introduce a broad prohibition or restriction of use of fragmentation weapons which typically are employed against a very large area, with the substantial risk of indiscriminate effects that such use entails. The formulation of such a broad rule raises great difficulties.

A specific ban on use is less difficult to devise in regard to one type of fragmentation weapons, namely, those which are constructed in the form of cluster warheads or other devices with many bomblets and which are primarily suited for use against personnel. These anti-personnel fragmentation weapons tend to have both indiscriminate effects and to cause unnecessary suffering. At detonation a vast number of small fragments or pellets are dispersed evenly covering a large area with a high degree of probability of hitting any person in the area. The effect of such a detonation on unprotected persons—military or civilian—in the comparatively large target area is almost certain to be severe with multiple injuries caused by many tiny fragments. Multiple injuries considerably raise the level of pain and suffering. They often call for prolonged and difficult medical treatment and the cumulative effect of the many injuries increases the mortality risk. If a person is hit by fragments at the beginning of their trajectory, the injuries may be aggravated by high velocity effects.

It is queried whether the military value of these weapons is so great as to justify the suffering they cause. It may also be noted that some important military manuals prohibit the use of projectiles filled with glass—presumably because of the risk of multiple injuries resulting.

It has been suggested that cluster bomb units may have indiscriminate effects not because of their construction but rather because of their operational use. However, when the normal weapon effect is so extensive as to cover areas of several square kilometers in an attack by a single aircraft, these weapons are hardly capable of use anywhere without hitting civilians incidentally.

In the text now submitted, the 1974 text has been subjected to the following change: The beginning of the rule is worded “cluster warheads or other devices with many bomblets” in order to cover both cluster bombs and dispensers containing bomblets. The qualifying word “anti-personnel” is added in order more clearly to exclude cluster warheads or dispensers designed for anti-material use. As the title of section II of the 1974 text indicates, the original proposal, too, had regard only to anti-personnel weapons. The modification is thus not one of substance.

III. Fléchettes

A category of weapons which have effects akin to those discussed above are the so-called *fléchettes*—small metal arrows or needles. They can be used in ammunition for rifles and guns but the most common use is instead of fragments in warheads. At burst these latter weapons eject a great number of *fléchettes*. The victims suffer

multiple injuries with the high degree of pain and suffering characteristic of such injuries. When the fléchettes hit a person at high velocity they bend or break at impact and the wounds resulting are aggravated by the high velocity effect.

As in the case of the anti-personnel fragmentation weapons discussed, the medical treatment of so many injuries is difficult and the mortality risk substantial. It is queried whether the military advantage of these weapons is so great as to outweigh the humanitarian concern which is raised by their use. It is submitted that the answer is in the negative.

IV. Especially injurious small-calibre projectiles

Small calibre projectiles, fired for instance by infantry rifles, are an important source of injuries in armed conflicts. It is therefore of signal importance when weapon producers in many countries abandon or contemplate abandoning one common standard for such projectiles to adopt another one. Such changes occur only over very long intervals. At the present juncture there is in production—and some use—a variety of new standard small-calibre projectiles. Most of these are characterized by a small calibre and a higher velocity than has been common during the last 70 years. The military advantages sought by this change are lighter bullets, cartridges and weapons and a flatter trajectory.

It appears, however, that the military advantages sought by the new high velocity projectiles are outweighed by the much more severe wounds which they are apt to cause. It is urgent that the nations of the world concert with a view to avoiding the imminent risk of a general escalation in the wounding effects of some of the most common weapons in the world, effects which seem very similar to those of the so-called dum-dum bullets.

It will be recalled that the Hague Declaration of 1899 prohibiting the use of so-called dum-dum bullets, covered bullets which expand or flatten easily in the human body, such as bullets with a hard envelope which does not entirely cover the core or is pierced with incisions. The rationale of the ban was that rather than piercing a wound channel roughly of the diameter of the bullet through human tissue, the bullets, having flattened or expanded, would tear their way through the tissue with a broad face, thereby creating a very large wound.

It is of interest that the field manuals of some important States have gone beyond the language of the Hague Declaration. One prohibits also the use of “irregular shaped bullets . . . and the like”. The characteristic feature of such bullets is that they are apt to tumble on impact and thereby present a broad face to the human tissue and create a much graver injury than an ordinary bullet. Such bullets would seem to be covered by the rationale of the Hague Declaration, although not by its wording.

It would seem urgent to attain an international prohibition of use of all small-calibre projectiles which achieve injurious effects which are much beyond what is needed to disable an adversary, whether such excessive injurious effects are due to the bullets' flattening, expansion, velocity or tumbling or some other feature. In the cases of the new high-velocity bullets excessive injuries result from the projectile's high velocity and strong tendency to tumble fast upon impact and to present a broad face to the tissue, normally deforming and disintegrating during its penetration of the

human body. This passage—due to the high velocity—also creates intense hydrodynamic shock-waves, which are the main cause of the large mutilation of tissue outside the actual trajectory. The exact figure of the impact velocity which will normally have such effect may be discussed, but many experts would place it around 800 m/sec. There seems to be ample justification for a prohibition of use of high-velocity projectiles for small arms. The rationale for such prohibition is the same as for the dum-dum bullet.

A new prohibitory rule should preferably avoid the limited language of the Hague Declaration and aim at all projectiles which, because of shape, velocity, material or other feature deform or tumble on or following entry into a human body or create especially injurious shock-waves or secondary projectiles, rather than aiming only at bullets of a certain technical feature, such as high velocity.

Only some minor modifications have been introduced in the draft which was presented in 1974. Since bullets which tumble only slightly on or following entry into a human body do not necessarily create a very large wound channel, it has seemed desirable to limit the formulation to those bullets which tumble significantly on impact, that is to say, to such a degree that a much larger injury is caused than would have been the case but for this tumbling effect. Lastly, since many small-calibre projectiles are apt to cause some tissue damage immediately outside the wound channel without much consequent aggravation, only those projectiles have been proposed for a ban on use which have such strong effects that they cause extensive tissue damage outside the trajectory.

V. Anti-personnel land mines

The use of anti-personnel mines is a generally accepted means of hampering enemy advance and of putting combatants out of action. However, certain ways of employing anti-personnel land mines may easily lead to injuries indiscriminately being inflicted upon combatants and civilians alike. The risks of such results are especially high if such mines are laid, perhaps in very large numbers, by aircraft. The limits of the mined area will often be very uncertain with this method. The results are apt to be particularly cruel if the mines are not equipped with self-destruction devices which will function reliably after a relatively short time. The risk of indiscriminate effects may be reduced also through marking of minefields—this is not possible, however, when the mines are scattered over a vast area.

22. RO 610/4b⁸

INCENDIARY WEAPONS

To the International Committee of the Red Cross

The delegations of Algeria, Austria, Egypt, Iran, Ivory Coast, Lebanon, Lesotho, Mali, Mauritania, Mexico, New-Zealand, Norway, Romania, Sudan, Sweden,

⁸ Takes account of document RO 610/4/Add.1.

Switzerland, Tunisia, United Republic of Tanzania, Venezuela, Yugoslavia and Zaire, attending the Diplomatic Conference on the Reaffirmation and Development of International Humanitarian Law Applicable in Armed Conflicts, would like to inform you that, after further examination of the proposal relating to incendiary weapons included in the working paper contained in document CDDH/IV/201 of 7 February 1975, they have agreed upon a modified text, which they are ready to advance for inclusion in an international instrument relating to the prohibition or restriction in the use of certain conventional weapons.

It is assumed that the preamble of an international instrument relating to the prohibition or restriction in the use of certain conventional weapons might contain references to the Charter of the United Nations and other relevant instruments, notably to the duty of States, in accordance with Article 2 (4) of the United Nations Charter, to refrain in their international relations from the threat or use of force, and to the inherent right of individual or collective self-defence in accordance with Article 51 of the Charter.

The text of the modified proposal reads as follows:

Article ... Incendiary weapons

1. Incendiary weapons shall be prohibited for use.
2. This prohibition shall apply to:
the use of any munition which is primarily designed to set fire to objects or to cause burn injury to persons through the action of flame and/or heat produced by a chemical reaction of a substance delivered on the target. Such munitions include flame-throwers, incendiary shells, rockets, grenades, mines and bombs.
3. This prohibition shall not apply to:
 - (a) munitions which may have secondary or incidental incendiary effects, such as illuminants, tracers, smoke, or signalling systems;
 - (b) munitions which combine incendiary effects with penetration or fragmentation effects and which are specifically designed for use against aircraft, armoured vehicles and similar targets.

The Government of Mexico continues to be in favour of eliminating the exception contained in subparagraph 3(b) in order that the prohibition of incendiary munition be total.

The International Committee of the Red Cross is kindly requested at its early convenience to acquaint all those invited to the forthcoming second session of the Conference of Government Experts on the Use of Certain Conventional Weapons of the above by circulating copies of this letter to them and to ensure that it be included in the documentation submitted to the Conference.

I have been authorized by the delegations enumerated at the outset to communicate this letter to you on their behalf.

Stockholm, 15 May 1975

Hans Blix
Head of the Swedish Delegation

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Military Expert
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Delegation Secretary
Lance Corporal S.A. Brown
Driver/Courier

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Jurisconsulte du Département politique fédéral
Chef de la délégation

Mme le Ministre Francesca POMETTA
Directrice-suppléante de la Direction
des organisations internationales
Suppléante du Chef de la délégation

Divisionnaire Hans EICHIN
Ancien commandant de la division mécanisée 4
Expert pour l'armement

Colonel Wilhelm MARK
Adjoint scientifique du Groupement de l'Etat-major général
du Département militaire fédéral
Expert pour l'armement (remplaçant)

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Vice-directeur du Groupement de l'armement
Expert pour les questions techniques relatives aux armes

M. Hans-Jörg RYTZ
Adjoint scientifique du Groupement de l'armement
Expert pour les questions techniques relatives aux armes

Dr Jean-Pierre PAUCHARD
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Conseiller juridique et politique du Département politique fédéral

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Membre de l'Etat-major

M. Omer ERSUN
Consul général adjoint
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Professor of international law
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Coronel-Jefe, Departamento Explosivos
Ministerio de la Defensa
Jefe de la delegación
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Mr. Hans J. SCHLENZKA
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Head of Delegation
Mr. Julian P. PERRY ROBINSON
Temporary Adviser

LEAGUE OF RED CROSS SOCIETIES

M. Markus Jorst ROSENBERG-POLAK
Ambassadeur
M. Jacques MEURANT
Conseiller spécial du
Secrétaire général, chargé des questions statutaires

NATIONAL SOCIETIES OF THE RED CROSS (RED CRESCENT, RED
LION AND SUN)

Iran

Général de Brigade Mohammad CHALTCHI
Etat-major de l'Armée Impériale
Mme Pery SHAHIDI
Attaché de presse

Philippines

Colonel Claro C. GLORIA
Vice-President, Philippine Airlines

INTERNATIONAL COMMITTEE OF MILITARY MEDICINE
AND PHARMACY

Divisionnaire R. KÄSER
Membre d'honneur

STOCKHOLM INTERNATIONAL PEACE RESEARCH INSTITUTE (SIPRI)

Dr. Malvern LUMSDEN
Researcher

INTERNATIONAL CONFEDERATION OF FORMER PRISONERS OF WAR
(ICFPW)

Dr. Hans GAWLIK

LEAGUE OF ARAB STATES

Col. Dr. Mohie El Dine Ali ASHMAWI

NON-GOVERNMENTAL ORGANIZATIONS

Comité spécial des ONG pour le désarmement

Mr. John Duncan WOOD

Friends World Committee

Dr. Eric PROKOSH

OFFICERS OF THE CONFERENCE

Mr. Jean PICTET – ICRC. President
Mr. D.M. MILLER – Canada. Vice-President
Mr. S. ANWAR ABOU ALI – Egypt. Vice-President
Mr. P. M. AGBEKO – Ghana. Vice-President
Mr. R. CHASPURI – Indonesia. Vice-President
Mr. C.A. VAN DER KLAAUW – Netherlands. Vice-President
Mr. R. FELBER – German Dem. Rep. Vice-President

Mr. H. BLIX – Sweden. Vice-President
Mr. J. MENA-PORTILLO – Venezuela. Vice-President
Mr. C. PILLOUD – ICRC. Secretary-General
Mr. J.-L. CAYLA – ICRC. Assistant Secretary-General

RAPPORTEUR

Mr. F. KALSHOVEN – Netherlands

SECRETARIAT OF THE CONFERENCE ICRC

Mr. C. PILLOUD. Secretary-General
Mr. J.-L. CAYLA. Legal expert, Assistant Secretary-General
Mr. B. ZIMMERMANN. Legal expert
Mr. U. WASSER. Administrator
Miss F. BORY. Press attaché
Mr. P. EBERLIN. Technical Advisor
Mr. F. de MULINEN. Military Advisor

alternatively:

Mr. J. MOREILLON. Director, Department of Principles and Law
Mrs D. BUJARD. Head of Legal Division
Mr. Y. SANDOZ. Legal expert
Mrs. S. JUNOD. Legal expert
Mr. J.-J. SURBECK. Legal expert

*
* *

Mr. G. FUMAGALLI. Director, Convention Bureau, Lugano
Mrs. U. ENGLER. Convention Bureau, Lugano

C. WORK PROGRAMME

1. Brief review of the report of the first session and of the discussions in the *ad hoc* Committee.
2. *Incendiary Weapons*
 - (a) Introduction and consideration of new information. New facts and new arguments.

(b) Study of the possibility, contents and form of any ban or restriction on use. This would include examination and clarification of data, definitions related thereto, alternative weapons systems and conclusions as to what the data suggest as desirable and possible.

3. *Delayed-action weapons and treacherous weapons*
(same sub-division as in para. 2).
4. *Small-calibre projectiles*
(same sub-division as in para. 2).
5. *Blast and fragmentation weapons*
(same sub-division as in para. 2).
6. *Other categories of weapons and new weapons*
(same sub-division as in para. 2).
7. *Other business.*
8. *Report and follow-up.*

D. RULES OF PROCEDURE

Rule 1

1. The Conference is convened and organized by the International Committee of the Red Cross (ICRC).
2. The purpose of the second session is to continue work on conventional weapons that may cause unnecessary suffering or have indiscriminate effects, in accordance with the work programme submitted by the ICRC and approved by the *ad hoc* Committee at the second session of the Diplomatic Conference on the Reaffirmation and Development of International Humanitarian Law Applicable in Armed Conflicts (CDDH, Geneva, 3 February-18 April 1975). The second session will focus on such conventional weapons as have been, or may become, the subject of proposed bans or restrictions of use; it will ascertain the essential facts on which international rules could be based, to the extent that these rules appear desirable and possible, and will examine the possibility, contents and form of such proposed bans or restrictions.

Rule 2

1. The following shall take part in the Conference:
 - (a) the experts appointed by the governments of the States invited to the second session of the said Diplomatic Conference (Geneva, 1975);
 - (b) experts appointed by the national liberation movements invited to the second session of the said CDDH;

- (c) representatives of the Secretary-General of the United Nations and of specialized agencies.
- 2. A number of technical experts shall take part in the proceedings as advisers. They may ask to speak in order to furnish technical information, once the persons mentioned in the preceding paragraph have spoken.
- 3. In addition, some representatives of the National Red Cross (Red Crescent, Red Lion and Sun) Societies and of the non-governmental organizations shall follow the proceedings as observers.

Rule 3

The Conference documentation shall consist essentially of the following:

- (a) report prepared by an international group of experts, under the auspices of the ICRC, entitled "Weapons that may Cause Unnecessary Suffering or have Indiscriminate Effects" (ICRC, Geneva, 1973), and report on the work of the "Conference of Government Experts on the Use of Certain Conventional Weapons" (ICRC, Geneva, 1975);
- (b) report of the Secretary-General of the United Nations entitled "Napalm and other incendiary weapons and all aspects of their possible use" (United Nations, 1973, A/8803/Rev.1);
- (c) report of the Secretary-General of the United Nations entitled "Napalm and other incendiary weapons and all aspects of their possible use", replies received from Member States (United Nations, 1973, A/9207);
- (d) survey prepared by the United Nations Secretariat on "Existing rules of international law concerning the prohibition or restriction of use of specific weapons" (United Nations, 1973, A/9215, volumes I and II);
- (e) any working documents and proposals on the above-mentioned weapons that governments may have submitted for consideration at the first two sessions of the Diplomatic Conference, and the reports of its *ad hoc* Committee;
- (f) any documents that governments may make available to the Conference to facilitate its work, if possible in all its working languages, and in particular the results of any additional study and research which the Government Experts have considered necessary;
- (g) any studies on the aforementioned weapons which organizations, scientific institutes or individuals may communicate to the Conference, if possible in all its working languages.

Rule 4

- 1. The opening meeting shall be public.
- 2. The ICRC shall regularly supply information on the progress of work to the press.

Rule 5

1. A general working group and, as needed, special working groups shall be set up.
2. The Secretariat of the Conference, organized by the ICRC, shall provide the necessary services for the Conference.

Rule 6

The President, the eight Vice-Presidents and the Rapporteur or Rapporteurs appointed at the first session shall remain in office; if one or more of them were unable to take part in the second session, the Conference should appoint new incumbents to the vacant offices.

Rule 7

1. The President, the Vice-Presidents, the Secretary-General and a representative of the ICRC shall constitute the Bureau to ensure the smooth working of the Conference. It shall be convened at the request of the President or of three of its members. Decisions shall be taken by a majority of its members.
2. The Secretariat shall prepare records of the decisions of the Bureau, which shall be communicated to the Conference.

Rule 8

1. Experts shall speak in their personal capacity, and their statements shall not bind in any way the government that appointed them.
2. The Conference shall not adopt any resolution; it may, however, formulate proposals or express wishes to governments, especially to the participants in the CDDH. The Conference shall reach its conclusions by consensus; when this procedure is not possible, the different opinions expressed shall be reflected in the report.
3. Questions relating to procedure, organization of work and working methods are within the competence of the Bureau.
4. The purpose of the Conference, under the auspices of the ICRC, is humanitarian, and it shall therefore abstain from any discussion of a controversial or political nature.

Rule 9

1. Participants may submit short notes or proposals in writing, in one of the working languages; such notes or proposals shall be translated into the other working languages by the Secretariat, which shall distribute them to the members of the Conference.
2. The Secretariat shall also arrange for the distribution of any documents relevant to the subject of the Conference submitted to it by members of the Conference, in one or more languages and in an adequate number of copies. These documents will not bear a symbol and will not be annexed to the report.

Rule 10

1. French, English and Spanish shall be the working languages of the Conference.
2. The Secretariat shall arrange for the interpretation of speeches delivered in any of these languages at two meetings held simultaneously. It shall endeavour to provide other meetings with the same facilities or at least with consecutive interpretation into English and French.

Rule 11

1. The Secretariat shall arrange for the preparation of records, in anonymous style, of the plenary meetings.
2. The records of the plenary meetings and the reports of the working groups shall constitute the substance of the report of the Rapporteur on the work of the Conference.
3. The ICRC shall send the report to the participants in the CDDH as early as possible and in any case before the third session of that Conference.

Rule 12

All cases not covered by the present rules shall be dealt with on the basis of the Statutes of the International Red Cross and the Rules of Procedure of the International Conference of the Red Cross, as well as by generally accepted parliamentary usage.

E. STATEMENT OF FINANCIAL CONTRIBUTIONS (as at 10 March 1976)
(in Swiss francs)

Australia		32.000
Austria	(Sch. 100.000)	14.245
Belgium		15.000
Canada		38.000
Denmark		12.000
Finland		10.000
France		20.000
Germany, Federal Republic of	(DM 10.000)	10.060
India	(US\$ 5.000)	12.850
Ireland		3.000
Japan		38.000
Netherlands	(Flh 25.000)	24.325
Nigeria	(US\$ 1.600)	4.116
Norway	(Kr. 42.000)	20.370
Spain		6.000
Sweden		45.000
Switzerland		100.000
United Kingdom	(£5.000)	26.306
Venezuela		4.405
Alliance of Red Cross and Red Crescent Societies of the USSR		15.000
		<hr/>
		450.677
Total brought forward from the first session		85.009
		<hr/>
		535.686
Contribution paid after 10 March 1976:		
Mexico	(US\$ 800)	2.040