PROCEEDINGS

of the

ELEVENTH PUGWASH CONFERENCE

ON SCIENCE AND WORLD AFFAIRS

"CURRENT PROBLEMS OF DISARMAMENT AND WORLD SECURITY"

Dubrovnik, Yugoslavia - September 20-25, 1963

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PREFACE

This volume contains the papers presented at the Eleventh Pugwash Conference, summaries of the discussions in the Plenary Sessions and the Reports from the Working Groups.

The sessions were held in private and, like the Proceedings of the previous Conferences, the material in this volume is for the personal use of the recipient and not for publication. Permission for the publication of any paper should be obtained from the author and the Secretary-General. Requests for such permission should be directed to the Central Office.

This volume is being distributed to the participants of all eleven Pugwash Conferences and to Heads of State and interested organizations in various countries.

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PRESS STATEMENT

Issued by the Continuing Committee of
the Pugwash Conferences on Science and World Affairs

The 11th Pugwash Conference on Science and World Affairs was held in Dubrovnik from 20-25 September 1963. These conferences bring together distinguished scientists from East and West for frank and informal discussions on important problems of common interest; particularly those related to the threat of nuclear war, the problem of achieving general and complete disarmament, and ways of ensuring the widespread application of science for peaceful purposes.

The Dubrovnik Conference was organized by the Continuing Committee of the Pugwash Conferences, of which the Secretary-General is Professor Joseph Rotblat of London, together with a Yugoslav Organizing Committee under the chairmanship of Professor Ivan Supek. The Conference was sponsored by the Council of Yugoslav Academies. Among the 64 participants from 24 countries there were 13 from the USA, 11 from the USSR, and 7 from the UK. In addition there were 14 observers.

The main theme of the Conference was "Current Problems of Disarmament and World Security", and five Working Groups were formed to consider the following topics: -

1. Problems of General Disarmament.
2. Consequences of the Spread of Nuclear Weapons.
3. Denuclearized zones, especially in Central Europe and the Balkans.
4. Role of Non-Aligned Nations in Disarmament and World Security.
5. The Partial Test-ban, the Problems of Detection, and the Next Steps.

The timing of the meeting, following so closely on the successful negotiation of a Nuclear Test-ban Treaty, was fortunate, and the friendly co-operative and hopeful atmosphere of the discussions was immediately apparent to the participants. The reports of the Working Groups were substantial and showed that much progress had been made in reaching common understanding on important practical issues, in giving consideration to clarifying different points of view, and in raising novel suggestions which can be studied and given further consideration at subsequent conferences.

Prevention of Surprise Attack

In Working Group 1, two important proposals were made relating to the prevention of surprise attack in Central Europe, where NATO and Warsaw Pact countries face each other. It is essential that both sides should assure themselves against surprise attack since this would make possible a mutual reduction of conventional defence forces, and eventually of nuclear forces also. It could thus greatly help in the creation of atom-free zones in Central Europe.

Firstly, it was suggested that rapid agreement might be obtained for establishing control posts at major transportation centres within agreed areas of Central Europe. These posts would give warning of any surprise attack which required the massing and transport of large numbers of conventional arms and forces. The control posts would be equipped with all necessary facilities for access and communication.

Secondly, it was suggested that military officers from each side should be stationed and should reside with the troops of the other side within the agreed areas. These officers would have the adequate means of communication with their own governments. It was suggested that the details should be worked out by military experts of the countries concerned.

Minimum Deterrent Force

The Group discussed as a first step in disarmament the destruction of all nuclear delivery vehicles whatsoever, except for the creation of a minimum deterrent, or "umbrella", force which would be sufficient to deter, but not sufficient to allow an aggressor to wage a major thermo-nuclear war. It was thought that a very substantial number of vehicles could be eliminated in less than a year.

The Group agreed that during the period of disarmament, world security would have to be guaranteed by the umbrella forces of the USA and USSR alone. Most participants thought, however, that the adoption of a substantial measure of nuclear disarmament by these two major powers might be sufficient to persuade the other nuclear powers to forego their nuclear forces altogether, and so make it very difficult for any further country to enter the nuclear arms race.

Control and Inspection

The Group agreed that control and inspection of the process of disarmament should be effected by a permanent International Disarmament Organization enjoying all necessary privileges and powers. They state that the possibility that any power could cheat by evading inspection has been grossly exaggerated, but that the inspection system has not only to maintain security and prevent cheating, but also has to alleviate the fears that cheating might occur. Since no inspection system can be perfect, greater efforts might profitably be made to devise machinery to deal openly with the doubts and fears which must inevitably arise from time to time. Inspection would also be eased if short-range tactical weapons could be drawn back from an atom-free zone between East and West.

Limiting the Spread of Nuclear Weapons

In Working Group 2 several valuable contributions were made. First, that since the development of nuclear reactors in many countries might lead to a proliferation of nuclear weapons, control of fissile materials should be made more effective, and the major powers should transfer their fissile materials through the International Atomic Energy Agency rather than, as is often now the case, through bilateral agreements; and that IAEA should assume full control of such transfers. Further, to avoid the waste of manpower and resources by many small nations which would follow from the development of their own nuclear technology, international centres for peaceful nuclear technology, especially power-production, should be set up and should be organized along the lines of the present successful international centres for pure research. In such centres, all nations would be able to contribute and gain experience and skills on a common, open basis. The second contribution was an appraisal of the argument sometimes used to justify atomic bomb construction - that important scientific and technical forces are thus created for the strengthening of the industrial and economic capacity of a country. It was concluded that further bomb-production in our present circumstances, would be a grossly inefficient way of securing such technical and scientific advantages. They can be obtained much more economically by other methods.

As further steps for the prevention of the spread of nuclear weapons, the Group recommended that the security of countries which forego the construction of nuclear weapons should be guaranteed by the strengthening of the system of collective security, and that the Great Powers should accept a special responsibility for this within the framework of the UN. Such countries should also be supported by making available to them the scientific and technical knowledge which they might have gained from the production of nuclear weapons. The Group also agreed that some form of sanctions should be established against any power which undertakes the testing or production of atomic weapons, after

a complete test-ban has been signed and a substantial measure of disarmament achieved.

Atom-free Zones

In Working Group 3 there was a fruitful discussion about atom-free zones, and two specific recommendations were made. The first, to all Governments directly concerned in Central Europe, suggested that they should enter into negotiations leading to the lessening of tensions in the area and to the establishment of a denuclearized Central Europe. The second proposed that the Governments of the Balkans, Africa and Latin America should conclude a treaty banning nuclear weapons from that part of the world and conforming to the U. N. Charter, with arrangements for international inspection.

Non-Aligned Nations

Working Group 4 stressed the contribution which could be made by non-aligned nations by their renunciation of nuclear weapons, and by establishing atom-free zones as a contribution towards complete disarmament. The Group also suggested that the non-aligned nations, either individually or collectively, should set up institutes or groups for the study of the military, strategic and technological problems met in disarmament. Such institutes should maintain close contact with the various disarmament officials of individual states, and with the U. N. and its special agencies. Such action could allow the creation, in good time, of a competant body of personnel for the support of an International Disarmament Organization.

Extending the Test-Ban

Working Group 5 stressed the importance of early progress towards general disarmament in order that the international confidence generated by the Moscow Conference may be maintained. Even steps with no great military significance should be sympathetically considered since they may help in improving the political climate. The Group suggested that scientists should take every opportunity to influence public opinion so that the Test-ban Treaty shall be adhered to by all nations (including France and the People's Republic of China). It expressed the opinion that any further tests in the atmosphere, water, or outer space would not only increase radioactive

fallout, but could also contribute to the breakdown of the Test-ban Treaty and to a further escalatory series of atomic tests.

To assist in extending the test-ban to include underground tests, the Group suggested that not only should the work of individual states on underground explosion and earthquake detection be continued and intensified; but also that international collaboration in this field should be established. A co-ordinated seismological programme, with full interchange of records of explosions and earthquakes, should be begun by the USA, USSR and UK, with other nations contributing later. Improved methods of detection would diminish the ambiguities in the interpretation of the seismic records and increase the precision with which the origins of such events can be established. In addition, an international seismological station, manned by specialists from different nations, could be established in a politically suitable and seismologically quiet area. Another recommended step which would have the effect of increasing international confidence was that a ban on orbiting nuclear weapons should be negotiated between the major powers.

International Scientific Co-operation

Many of the proposals for international scientific co-operation made at the Seventh Pugwash Conference (Stowe, Vermont in September 1961) have already been agreed or formally proposed. They include various forms of co-operation in space, plans for a World medical and biological research centre, a broadening of the US - USSR exchange of scientists, and projects to drill deep into the Earth's crust, such as the Mohole project. The Group considers that there are still further projects worthy of serious consideration.

In spite of widespread agreement on many important issues amongst members of the Conference, a number of questions remained unresolved and several novel suggestions require further consideration. These will be taken up at the next Pugwash Conference to be held in Udaipur, India, towards the end of January 1964. The agenda for this Conference will also include discussions on technical, medical and scientific assistance to the development of new nations.

PROGRAMME OF SESSIONS

Friday, September 20th

First Plenary Session

9.00 a.m. - 12.30 p.m.

Chairman: Acad. Ivan Supek

(1) Formal Opening of Conference.

(2) Paper by Acad. V. A. Kirillin
"The Road to General and Complete Disarmament."

(3) Paper by Prof. F. A. Long
"Immediate Steps Toward General and Complete Disarmament".

Second Plenary Session

5.30 p.m. - 8.30 p.m.

Chairman: Acad. V. A. Kirillin

(1) Paper by French Pugwash Group read by Professor F. Perrin
"The Consequences of the Spread of Nuclear Weapons."

(2) Paper by Prof. L. Infeld
"An Atom-free Zone in Central Europe".

(3) Paper by Prof. H. A. Tolhoek
"Some Thoughts on a Denuclearized Zone in Europe".

Saturday, September 21st

9.00 a.m. - 12.30 p.m.; 5.30 p.m. - 8.30 p.m.) Meetings

Sunday, September 22nd) of

9.00 a.m. - 12.30 p.m.) Working Groups

Monday, September 23rd

Third Plenary Session: Chairman: Prof. Bentley Glass

9.00 a.m. - 12.30 p.m. (1) Paper by Acad. I. Supek and Dr. V. Knapp
"The Role of Non-aligned Countries in Disarmament and World Security".

(2) Paper by Sir John Cockcroft
"The Nuclear Test-ban".

5.30 p.m. - 8.30 p.m.) Meetings
) of
Tuesday, September 24th) Working Groups
)
9.00 a.m. - 12.30 p.m.; 4.30 p.m. - 6.45 p.m.)

Wednesday, September 25th

Fourth Plenary Session Chairman: Prof. M. G. K. Menon

Reports from Working Groups

Fifth Plenary Session Chairman: Prof. C. F. Powell

Discussion on Reports from Working Groups.

Close of Conference.

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Working Group 2

CONSEQUENCES OF THE SPREAD OF NUCLEAR WEAPONS

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D.A. Glaser
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Working Group 3

DENUCLEARIZED ZONES, ESPECIALLY IN CENTRAL EUROPE AND THE BALKANS

Conveners: K. Lapter and H. A. Tolhoek

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Working Group 4

ROLE OF NON-ALIGNED NATIONS IN DISARMAMENT AND WORLD SECURITY

Conveners: J. W. Burton and L. Mates

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Working Group 5

THE PARTIAL TEST BAN, THE PROBLEM OF DETECTION, AND THE NEXT STEPS

Conveners: H. Barwich and A. Rich

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I. REPORTS

from

WORKING GROUPS

Report of Working Group 1

PROBLEMS OF GENERAL DISARMAMENT

The Working Group affirmed its belief that the ultimate goal of disarmament, a goal to be reached within the shortest time compatible with world security, is general and complete disarmament. Nevertheless, it recognized that mutual mistrust was still at a high level, and it therefore considered that a number of preliminary steps might be taken which, by tending to create greater confidence, would ease the introduction of a comprehensive treaty. This was the general framework of our discussions regarding the abolition of delivery systems, the problems of inspection and control during the first stage, and the question of surprise attack.

A. Abolition of Delivery Systems

It is widely agreed that the first stage in disarmament should be achieved through the abolition of all nuclear delivery systems except for the creation of a minimum deterrent, or "umbrella" force under adequate control. This minimum level should be sufficient to deter, but not sufficient to enable an aggressor to wage a major war; and it was recognized that this minimum deterrent might need to be retained by the two major powers in order to maintain security beyond the end of the first stage.

We agreed that the examination of disarmament problems in the first stage is of exceptional importance and that this examination would be carried out within the framework of a single Treaty on General and Complete Disarmament.

It was also suggested that a very substantial immediate reduction in nuclear delivery systems was essential, coupled with a halt in further production and the conversion of the fissile material so released to peaceful purposes. It was thought that this reduction, if agreed to, could be achieved in less than a year. If such a first step could be achieved, it was thought that a further reduction to minimum deterrent level could take place quite quickly. This suggestion was not generally agreed to, however.

It was agreed that it would be essential that the two major powers should work towards an effective parity in their minimum deterrent forces rather than being subjected to proportionate reductions. However, it was stressed that parity could not even be roughly determined in terms of

numbers alone. Numbers of delivery systems might indeed be an important factor, but fire-power, type and range would also have to be taken into account.

The Working Group admitted that the size of the minimum deterrent should be based on decisions of experts of the parties to the Treaty, but that in any case, the number of retained vehicles for nuclear rockets should be strictly minimal.

We discussed a proposal that the vehicles for delivery of nuclear rockets, the nuclear protective umbrella, should be placed under international control on the launching sites and that there should be only one launching site per rocket. In the course of discussion, it was stated that the inclusion within the umbrella of submarines with nuclear armaments is unacceptable, since, owing to their specific characteristics and manner of operation, they do not lend themselves to appropriate control. These proposals were not completely agreed to.

It was proposed that the first stage should encompass destruction of all means of delivery without exception, including those specially constructed and produced as well as those adapted for the delivery of nuclear weapons of whatever yield and range. Amongst such equipment should be included rockets of all types, with parameters allowing the delivery of nuclear warheads of any range; all types of aircraft, the construction parameters and special equipment of which enables their use for nuclear bombs and rockets of whatever power from strategic to the minimal tactical ones; all surface warships with rocket installations for the launching of missiles of whatever yield; all submarines of whatever class and type; all aircraft carriers, artillery guns and mortars, with atomic shells of whatever calibre and yield; together with all other equipment designed for use with nuclear weapons in any form. The question was raised whether this would not create difficulties of inspection.

We also noted that, together with the liquidation of all means of delivery of nuclear weapons, all production thereof should be suppressed, and all plants, assembly lines and workshops designed for the production of vehicles should be liquidated, together with ground and coast installations set up to insure operation of the means of delivery.

Opinions varied on what form the minimum deterrent should take as well as on its size. One proposal called for a force consisting only of long-range rockets with warheads of limited and agreed yield. At the opposite extreme was a proposal that in addition to a force of essentially invulnerable long-range missiles, anti-missile missiles, and anti-aircraft missiles should be included.

We agreed that during the period of disarmament, world security would have to be guaranteed by the umbrella forces of the U. S. A. and the U. S. S. R. alone. Most participants further believed that the adoption of a substantial measure of nuclear disarmament by the two major powers should be sufficient to persuade the U.K. and France to forego their respective nuclear forces altogether. This in itself would be a major contribution to world security since it would make it very difficult for any further country to enter the nuclear arms race.

We considered briefly the role of the so-called tactical nuclear weapons by which we meant weapons of short range and low yield to be deployed on the battlefield. It was generally agreed that they would play no part in the minimum deterrent force, from which it followed that they should be abolished in the first stage, or perhaps as a preliminary measure drawn back from the East-West borders beyond an adequately controlled atom-free zone

Finally, we discussed briefly the reduction in conventional forces over and above those required to maintain national security. The U. S. A. and the U S. S. R. have already agreed to a rough parity, and although there are problems in equating different kinds of forces, the remaining difficulties did not seem insuperable. However, it was stressed that no substantial reductions in the armed forces of the two major nuclear powers could reasonably be expected until other major powers, at present non-nuclear, were induced to disarm too.

B. Inspection and Control in the First Stage

We consider that the function of control and inspection should be implemented from the beginning of disarmament by a permanent International Disarmament Organization invested with priveleges and immunities necessary for efficient fulfilment of the functions assigned to it. It was generally acknowledged that the Organization would contain inspecting personnel selected on an international basis and enjoying all necessary privileges and immunities, and would have access to all reasonable information and facilities they required to verify the processes of destruction of delivery vehicles. In particular, they would be empowered to employ appropriate procedures for checking factories which seemed to them to warrant suspicion.

In the view of many of us, the International Disarmament Organization would have, in addition to its task of verification and inspection of the process of disarmament, the important duty of exercising control over the umbrella force. Several agents of the I. D. O. would, in this view, be attached to each unit of this force and would inspect it continuously.

We agreed unanimously that the problem of a power cheating and trying to retain or to build up a clandestine nuclear force has been grossly exaggerated, and we felt that the inspection system had not only to maintain security and prevent cheating, but also to alleviate present fears, resulting from mutual mistrust, that cheating might occur. Since no inspection system can be 100% effective, and so can never completely eliminate the possibility of non-compliance with the disarmament agreement, greater efforts might more profitably be made to devise machinery to deal with fears and doubts of non-compliance which must inevitably be expected to arise from time to time.

We were also briefly informed of a scheme of inspection by graduated access whereby there would exist only a low level of inspection and verification until the first stage of disarmament was well under way. The paper* on which this proposal was based was too closely reasoned for more than a superficial discussion, but many believed that it deserved further study.

Finally, it seemed clear that the problem of inspection and control in the earliest stages of disarmament could be eased if the so-called tactical weapons of short-range could be drawn back from an atom-free zone between East and West.

C. Surprise Attack

Our group unanimously stressed the importance of an agreement to be achieved as rapidly as possible, for the establishment of control posts at major rail centres, highway junctions, airports and harbours, in an agreed region in which the Nato and Warsaw powers are confronting each other.

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* Leonard S. Rodberg: Journal of Arms Control, Vol. 1, No. 2, April, 1963.

The purpose of the control posts would be to provide information necessary to warn of surprise attack requiring the massing and transport of large numbers of conventional arms and forces. It was generally agreed that the control post personnel should have appropriate status and skills and must be given the types of access and communication facilities necessary to perform their assigned task.

The boundaries of the region to be controlled would be sufficiently far back from the present lines of confrontation between the NATO and Warsaw powers so as to reduce any element of surprise from an attack launched from outside the controlled area.

We believe to be most valuable a further proposal, which goes beyond that of the control posts, that military officers from each side be stationed with the troops on the other side in the agreed areas. These officers would reside with the staffs of the forces to which they were assigned and would be assured adequate means of communication. The group fully agrees to this in principle, and suggests that detailed arrangements and limitations should be worked out by military experts of the countries concerned.

Report of Working Group 2

CONSEQUENCES OF THE SPREAD OF NUCLEAR WEAPONS

In the present situation, where a partial test ban has been concluded giving hope of early concrete steps towards disarmament, the extension of the number of states equipped with nuclear weapons would represent a serious retrograde step. It would greatly complicate the international situation and tend to undermine the recent growth in international confidence; it would increase world tension, add to the burden of armaments, and make war more probable.

The need to prevent the proliferation of nuclear arms is urgent, for every extension produces pressures in neighbouring countries for a similar capability. The problem of disarmament is already grave and any extension of the arms race multiplies the complications and difficulties.

The spread of nuclear weapons can come about by a state producing them independently with its own resources, or through their supply by other states. In the second case, the form of the proliferation may be widely different, ranging from the acquirement of an independent nuclear capability, to such devices as the multilateral nuclear force. In the transfer of nuclear weapons, there may be several forms and degrees of control exercised by a supplying state.

There are a number of areas where the spread of nuclear weapons would raise problems of particular urgency.

a) Europe

In the tense and heavily armed region of Central Europe, an increase in the number of states with nuclear weapons would produce a situation of the utmost gravity. In particular, the acquirement of such weapons by Germany could be a potent cause of war. We believe that such a development ought to be firmly resisted by the maintenance of existing treaties or by ensuring that this principle is preserved in future agreements. The establishment of a multilateral force could itself lead to a proliferation of nuclear weapons and we view it with anxiety since it could facilitate the acquirement of a nuclear capability by West Germany.

France's decision to develop thermo-nuclear weapons and not to adhere to the Moscow test-ban agreement makes it more difficult for the world to move towards a reduction of armaments. Among other reasons

advanced to justify these decisions are considerations of fundamental scientific progress and industrial development. We believe it is possible to find much more effective methods, other than that provided by bomb production, for the development of such science and technologies and we set out our reasons for this view in the Appendices.

b) Eastern Asia

The production of nuclear weapons by the People's Republic of China would be likely to stimulate several neighbouring states, at present without such weapons, such as Japan, India and Australia, to attempt to secure them. In the absence of our Chinese colleagues which we greatly regret, we have not attempted an analysis of the consequences of such a development. We urge the Continuing Committee to express to our Chinese colleagues the earnest hope that they will be strongly represented at the next Pugwash Conference at Udaipur.

We feel that the isolation of China from the Community of nations is a factor which may contribute to the proliferation of nuclear weapons, that this isolation of China is neither in her own interest nor in that of the world community. We, therefore, urge that China should take her place in the United Nations as soon as possible.

c) The Middle East

The politically explosive situation in the Middle East, particularly in the Arab-Israeli area, gives rise to a serious danger of the proliferation of nuclear weapons. It would be prevented by an agreement not to transfer nuclear weapons or missiles to the area or to assist in their local production. Immediate action, based on the co-operation of the great powers with the states in this area, could, we believe, forestall a potentially very dangerous situation.

In order that the spread of nuclear weapons may be prevented, we believe that the following measures are necessary:

(i) The test ban should be made complete.

(ii) Substantial steps towards comprehensive disarmament. It will be difficult for the great powers to persuade others to forego nuclear weapons, if they themselves have not reduced their own armaments.

(iii) Concrete steps to ensure the security of those states which forego the construction of nuclear weapons. Such steps include:

1. the guarantee of their security through the strengthening of the system of collective security. The great powers should accept a special responsibility within the framework of the United Nations for the security of those nations which have willingly foregone nuclear weapons.

2. making available the scientific and technical knowledge, which may be a by-product of the production of nuclear weapons, and which can be applied to peaceful industrial processes.

(iv) An agreement not to transfer nuclear weapons to other states should be negotiated. In this respect, atom-free zones would be a most important factor against the proliferation of nuclear weapons.

(v) In view of the over-riding importance of preserving world peace, some form of sanctions should be established against any power which undertakes the testing or production of atomic weapons, after a complete testban has been signed and a substantial measure of disarmament achieved.

The working group recommends to the Conference that it should publicly ask our scientific colleagues in those states which have not yet adhered to the Moscow test ban treaty, to urge their peoples and governments that they should do so in the earliest future.

APPENDIX 1

INTERNATIONAL AGENCIES FOR THE PEACEFUL USE OF ATOMIC ENERGY

The development of nuclear technology represents an investment expensive both in money and in trained manpower. Further, the development of centres of nuclear technology all over the world could be the basis of a proliferation of nuclear weapons.

a) The working group, therefore, notes with warm approval the recent agreement for the extension of the supervisory responsibilities of the United Nations International Atomic Energy Agency over any fissile materials which it has made available. It believes that this supervisory function should be strengthened. It suggests that the major powers should channel their transfer of fissile materials through the Agency; and that IAEA should assume full control over the use of all fissile materials transferred through its agency.

b) The working group also considers that it would be of great value to set up appropriate international centres. These could be under the International Atomic Energy Agency or could be bodies specially created. Such a centre could carry out research and development in the field of nuclear technology for peaceful purposes, particularly that of power production. They could be organized in a manner similar to that of the established international centres for high energy physics. They include, for example, reactors of various designs, and equipment for isotope production.

Centres of nuclear technology of this type would enable all nations to contribute and benefit on a common, open basis in the development of this important but expensive area. They would remove the need for each state to set up equivalent facilities of its own. If the need for the use of nuclear explosions for peaceful purposes arises, however, they should only be conducted by international collaboration under the auspices and control of UNO.

APPENDIX 2

BY-PRODUCTS OF ATOMIC BOMB DEVELOPMENT

Development of an atomic bomb is not an effective way for a country to improve its scientific, technical and industrial strength. Direct government support of research in science and industrial technique is a much cheaper and more efficient method for economic and industrial development which has great educational and other advantages.

1. APPLICATIONS OF ATOMIC EXPLOSIVES

A) Applications of Atomic Explosions in Scientific Research

There are several fields of science in which atomic explosives may be useful. These include studies of the propagation of seismic waves and the geological structure of the earth, properties of extraterrestrial radiation belts, experiments in nuclear physics, particularly using neutrons, and studies of high temperature and high pressure phenomena.

B) Industrial Applications of Atomic Explosives

It has been suggested that atomic explosions may be useful in converting coal into oil underground, in constructing canals and harbours, and for some other earth-moving projects.

None of these projects requires a costly independent redevelopment of atomic bombs since existing bombs are adequate and can presumably be made available for worthwhile applications, under suitable international arrangement and safeguards.

Very few new scientific results were obtained in the development of military atomic explosives that were not already learned in the development of nuclear reactors. Those few results are already publicly available and scientists do not expect that new independent bomb projects are likely to contribute much to science, especially on bomb projects being carried out by small countries already burdened by the great cost of developing the bomb for military uses. It is, therefore, very difficult to justify undertaking to produce atomic bombs because of the hope that scientific or technical discoveries might be made.

II EDUCATION OF SCIENTISTS AND ENGINEERS

A) Scientists

Little original scientific work is required to duplicate the development of atomic bombs. Scientists who work on the project are, therefore, diverted from more profitable scientific experiments and teaching. Countries which have already developed bombs have experienced a loss of several years in physics, for instance, in which few students were trained and little new scientific knowledge gained.

B) Engineers

Engineers who work on the bomb or receive training during its development could be employed on a reactor project or other industrial project whose end result has real economic value for the country. Training in bomb research has less direct application to industrially valuable skills than training in medical X-ray, television, or computer technology, for instance.

III. INDUSTRIAL DEVELOPMENT ACCOMPANYING A BOMB PROJECT

Building and testing an atomic bomb requires special techniques in the metallurgy of plutonium and other heavy metals, but similar techniques can be developed for nuclear reactors, which have real economic value. Other special methods in electronics, high vacuum technique, isotope handling, etc., are needed to make bombs, but they are also needed in the radio and television industries, in high energy nuclear physics research, in modern hospital instrumentation, in the chemical industries, and for many, many other peaceful activities with their obvious real scientific, economic and humanitarian products.

About half the cost of developing an H-bomb is for the diffusion plant. This plant is filled with thousands of high-speed compressors which are difficult and expensive to build, and virtually useless for any other purpose. Diffusion barrier technology must also be worked out at great expense. In fact, Euratom found that for peaceful reactor applications, it was cheaper to purchase reactor grade fissile material than to build its own community diffusion plant. Of the remaining cost of developing an H-bomb, a large fraction is associated with the logistics and instrumentation required for testing the weapons, money which produces nothing directly useful to the country.

Only one-quarter of the cost of the diffusion plant goes into advanced technology. The remaining three-quarters of the cost is simply for the factory building with its utilities, access roads, etc. Spending this three-quarters of the cost on schools, housing, public roads and hospitals, would have the same direct effect on the economy as building the diffusion plant!

We seek other ways to achieve the same benefits which are so costly when they come only as a by-product of a bomb development. The best way is to spend increased amounts of money directly on scientific and industrial research. Since development of some industrial

technologies is beyond the resources of private companies in many countries, a government desiring more rapid and intense industrialization must be prepared to establish industrial research institutes or grant industrial research contracts for development of especially elaborate technologies.

The first countries that developed an atomic bomb needed to expand some of their specialized industrial capacity to succeed. The economic value of this expansion was a small fraction of the total cost of the effort. To duplicate their history just to achieve industrial growth would be a costly folly. Direct large scale support of scientific and industrial research is the economical way.

Governments must learn that they need to spend increased amounts of money on scientific and industrial research if they desire to accelerate the industrialization of their countries. But there are much cheaper and more effective ways to do this than to manufacture atomic weapons.

Report of Working Group 3

DENUCLEARIZED ZONES, ESPECIALLY IN CENTRAL EUROPE AND THE BALKANS

A. INTRODUCTION

A denuclearized zone is understood to be a clearly defined area where

(i) existing nuclear weapons and medium and long-range missiles for their delivery have been removed; and

(ii) no production, acquisition, stockpiling and testing of nuclear weapons takes place.

Denuclearization may be reached either in one stage or by a series of stages, agreed upon by the states of the zone and by nuclear powers, especially those which are allies of one or more states in the denuclearized zone.

The creation of denuclearized zones in different parts of the world would be useful in promoting peaceful relations for the following reasons:

(i) it would help to prevent the spread of nuclear weapons and consequently the danger of nuclear war;

(ii) it would relieve international tensions, and help to build a climate of opinion that would facilitate general and complete disarmament; and

(iii) it would provide experience in matters of inspection that would be exceedingly useful in later steps toward general and complete disarmament.

The formation of denuclearized zones constitutes a limited step toward general and complete disarmament. Perhaps such zones cannot even be maintained indefinitely if no further steps toward general and complete disarmament are taken.

The usefulness of denuclearized zones in different parts of the world varies with the regions. In some parts of the world, where there is no great tension, the advantage lies in a contribution to improvement of the psychological climate favouring disarmament. In other parts of the world where strong political tensions exist and where nuclear weapons are already located, the advantage would be greatest and a considerable détente could be expected. We believe that the formation of various denuclearized zones of the former sort would help to create an improved atmosphere of mutual trust; and that preliminary steps toward formation of those of the second type can now be made, unilaterally or multilaterally, that would lessen the engagement of the major nuclear powers and diminish the probability of escalation to nuclear war.

B. A DENUCLEARIZED ZONE IN CENTRAL EUROPE

1. Avoidance of Unilateral Advantage

Any treaty for the establishment of a denuclearized zone in Central Europe should satisfy the requirement that no appreciable one-sided military advantage would result for either bloc (NATO or Warsaw Pact).

This condition can be satisfied for the Central European Zone (containing the German Federal Republic, German Democratic Republic, Poland, and Czechoslovakia, together with whatever adjoining states might adhere) provided the following points are contained in the treaty:

i) The adhering countries will not be obliged to abandon their present military alliances (NATO or Warsaw Pact);
ii) The existing line dividing the NATO and Warsaw Pact countries of the zone, including free access to West Berlin, will be guaranteed against change by force through pledges of the countries of the proposed zone, the present nuclear powers, and the United Nations;
iii) The conventional armed forces of the nations of the zone will be reduced by the treaty to an agreed level;
iv) The denuclearization treaty will contain clauses to permit a further reduction of conventional forces.

It is to be hoped that conventional forces of the present nuclear powers situated in the zone will by mutual agreement be reduced, until eventually they are entirely withdrawn and the military pacts are dissolved.

2. Problems of the Creation of the Denuclearized Zone in Central Europe

A great difficulty is represented by the reluctance of the Federal German Government to enter into such a pact. Certain aspects of the German problem are therefore closely bound with the creation of the denuclearized zone in Central Europe.

It was agreed that the creation of a denuclearized zone in Central Europe will be favoured by the diminution of existing tensions, and may serve to promote the eventual peaceful unification of Germany. To this end it is essential that the territorial status quo in Central Europe be recognized. Creation of the denuclearized zone may thus help the Federal and Democratic German Governments to make a real effort to diminish the existing tension between them and this may lead to removal of the obstacles to genuine communication (including travel) between their territories.

We are of the opinion that it will be most useful for the Eleventh Pugwash Conference on Science and World Affairs to appeal to all governments directly concerned with the situation in Central Europe, and to urge them to enter into negotiations leading to the lessening of tensions in this area and to the establishment of a denuclearized Central Europe. Thus we may hope to achieve a peaceful Central Europe and bring nearer the ultimate unification of Germany.

C. STAGING

The first step toward the complete denuclearization of Central Europe might take place by unilateral declarations that no long-range and intermediate-range nuclear weapons would any longer be kept within the area. These steps might be followed (or even preceded) by agreement to denuclearize a smaller region extending for, say, 50 to 100 km to either side of the line dividing the NATO and Warsaw Pact countries.

Such declarations could be accompanied by pledges of the nuclear powers maintaining armed forces in Central Europe not to transfer nuclear weapons to any of the countries of the denuclearized zone.

The above steps will bring about a nuclear "freeze" in Central Europe and thus allow the more complicated staging of the denuclearization of Central Europe to start. We think that no material obstacles exist to an immediate execution of these steps by the interested states, for these steps involve no change in the balance of military power in the zone.

Simultaneously or thereafter there would need to be a declaration of desire, on the part of all countries concerned, to enter into negotiations for the creation of a Central European denuclearized zone, also with reduced conventional armaments.

The whole relationship between the states of the zone would be further improved if the freezing of the existing military balance of forces in Central Europe could be accompanied by a non-aggression treaty between NATO and the Warsaw Treaty Organization. Such a treaty would ensure that under no circumstances would the armed forces of one country violate the frontiers of any other state within the pact, or of West Berlin and the accesses to that city. These accesses shall remain uninterrupted.

The creation of a denuclearized zone in Central Europe does not depend upon the negotiation of a non-aggression treaty between the NATO and Warsaw Treaty powers, but such a treaty would assuredly promote the creation of the denuclearized zone in Central Europe. On the other hand, the freezing of the nuclear status quo in this region does appear to be essential to the beginning of negotiations for the denuclearization of Central Europe.

The negotiated stages in the further withdrawal from Central Europe of all kinds of nuclear weapons and their special delivery mechanisms, should be instituted under effective international control. The scope of the inspection machinery should be directly related to the specific stages of denuclearization.

Clearly, these first proposed steps do not constitute full denuclearization, just as the Moscow agreement on a partial nuclear test ban does not constitute disarmament. But they will open the road to real denuclearization and will profoundly lessen tension in this area. A better climate for future negotiations may well be essential to the realization of complete and general disarmament.

D. DENUCLEARIZED ZONES ELSEWHERE THAN IN CENTRAL EUROPE

Denuclearized zones would also be useful to the cause of peace and disarmament in other parts of the world, such as the Balkans, Scandinavia, Africa, Latin America, and other regions.

A denuclearized zone in the Balkans was given special consideration. It was defined as including Albania, Bulgaria, Greece, Rumania, European Turkey and Yugoslavia. To the establishment of such a denuclearized zone the West would probably raise no objections, since MRBM's have been withdrawn from Greece and Turkey.

Difficulties may be anticipated, because of the attitudes of the governments of Albania, Greece and Turkey. If, however, the proposal meets the support of the governments of the U. S. A. and U. S. S. R., these problems might be solved.

We have considered the declarations of governments in Africa and Latin America that they would not acquire nuclear weapons. Such declarations should be unified through treaty, conforming to the U. N. Chapter, and agreement should entail a certain international inspection. We propose that the Eleventh Pugwash Conference should appeal to the governments of Africa and Latin America to conclude such a treaty. Reduction of conventional armaments should also be considered.

E. RELATION TO GENERAL AND COMPLETE DISARMAMENT

We do not consider the formation of denuclearized zones as a final goal, but as a step towards general and complete disarmament. However wide the extent throughout the world of denuclearized zones involving non-nuclear powers, there remains the vital problem of disarmament within the territories of the present nuclear powers.

An extension of the concept of denuclearized zones to embrace biological and chemical weapons would be highly desirable, though it entails serious problems of inspection. Reduction of conventional armaments must also be effected. Yet the formation of various denuclearized zones, which can be achieved more quickly and more certainly, would promote general disarmament by creating a greatly improved atmosphere of mutual trust.

This must be one of our first steps toward peace.

F. RESOLUTIONS

(1) The Eleventh Pugwash Conference on Science and World Affairs urges all Governments directly concerned with the situation in Central Europe to enter into negotiations leading to the lessening of tensions in this area and to the establishment of a denuclearized Central Europe.

(2) The Eleventh Pugwash Conference on Science and World Affairs urges the Governments of the Balkans, Africa and Latin America to conclude a denuclearization treaty embracing that part of the world and conforming to the U. N. Chapter. The agreement should entail arrangements for international inspection. Reduction of conventional armaments should also be considered.

Report of Working Group 4

ROLE OF NON-ALIGNED NATIONS IN DISARMAMENT AND WORLD SECURITY

The activities of the non-aligned nations in connection with disarmament are well known, and most of their governments are continually watchful of opportunities to assist in reducing world tensions. Additional steps will be determined by the course of events, and therefore any significant contributions in the future will depend on developments and opportunities arising in a fast-changing world, and in particular on developments in the attitudes of major powers on specific questions relevant to the advancement of general disarmament. The contributions that the non-aligned nations will be able to make will also depend on increased technical knowledge necessary to enable them to carry out the responsibilities that might confront them in a disarming or in a disarmed world.

In this perspective the following viewpoints emerged:

1. A greater number of scientists from non-aligned nations should be invited to participate in Pugwash discussions. The group was aware of attempts which had been made by the Continuing Committee to accomplish this, and recommends that each of the non-aligned nations be acquainted with the nature and objectives of the Pugwash Movement, and the desirability of providing foreign exchange and in other ways facilitating attendance by scientists invited to conferences by the Pugwash Continuing Committee.

2. The non-aligned and other nations that have not already done so are urged to sign the agreement for the partial test ban, to affirm their support for a comprehensive test ban, to affirm their opposition to the spread of nuclear weapons and all other weapons of mass destruction, and to affirm their determination never to possess them.

3. The non-aligned nations could assist in bringing about a complete test ban by establishing their own appropriate seismographic stations, manned by their own technical personnel.

4. Nuclear free zones were not within the scope of inquiry of our Group; however, the Group wishes to record its view that the establishment of nuclear free zones in regions containing non-aligned nations would be a substantial step toward complete disarmament and deserves intensive study, and even the calling of special regional Pugwash conferences. Scientists from these regions might be asked to take the initiative in the convening of such conferences.

5. It is recognized that the problems of disarmament have become increasingly complex. It is recommended that the non-aligned nations, individually or jointly, set up groups or institutes to study the military-strategic-technological problems of disarmament. Furthermore, it is recommended that such institutes specifically undertake studies and training programmes in the fields of international inspection and control. For these purposes, such non-aligned study groups or institutes should be in close touch with the various national disarmament officials, and with the United Nations and its specialized agencies, so that studies undertaken may be both realistic and useful to the negotiating officials of the various countries concerned.

The Group recommends to the Continuing Committee that it canvass members of the Pugwash Movement and inform governments wishing to establish or to develop such institutes of scientists able to assist.

The Group recommends that means of increasing the technical and scientific knowledge required for successful disarmament negotiations, be an item on the agenda of the next Pugwash Conference, and that scientists from non-aligned nations be asked in advance to consider the matter.

6. The developing countries have a special interest in the economic aspects of disarmament. At the Ninth Pugwash Conference it was recommended that each country analyse in detail the consequences of disarmament to its own economy.

The Group is not aware of any widespread response to this recommendation, and therefore wishes to stress the importance of such studies, and requests the distribution of the results of any national studies.

7. These specific courses which non-aligned nations might pursue could separately and in the aggregate, in certain circumstances, tip the balance in favour of disarmament or reduced tensions; however, a major contribution non-aligned nations can make is in being non-aligned, extending areas outside the scope of alliances, and creating not another economic or political group, but an international relationship resting upon mutual respect for sovereign integrity and upon regional and functional co-operation.

8. The nuclear nations have each affirmed the principle that there should be no interference in the affairs of other nations, and each is aware of the reduction of tensions which to a certain extent results from progressively extending areas of non-alignment. The Group believes that major powers would be pursuing their own interests, and the interests of world peace, if they did nothing which prevented the desire of national independence being expressed in policies of non-alignment.

Report of Working Group 5

THE PARTIAL TEST-BAN, THE PROBLEM OF DETECTION, AND THE NEXT STEPS

A. Introduction

The Group has considered various steps which could be taken in the immediate future to utilize and maintain the favourable conditions resulting from the Moscow Treaty on a Limited Nuclear Test Ban. It was unanimously agreed that this treaty was a welcome and significant step towards the slowing-down of the arms race, limitation of the spread of nuclear weapons, and reduction of world tension; everything should be done to strengthen the pact and secure universal adherence to it. However important the Moscow agreement is, it is not a major disarmament step, and many further agreements, including extension of the ban to underground tests, remain to be negotiated. The group agreed, however, that negotiations in an area affecting national military strength and posture inevitably take time. During this time, the impetus to negotiations given by the conclusion of the limited test ban agreement, and the favourable climate of international relations created by this agreement, may easily become dissipated. The Group considered it, therefore, as highly desirable that all possible measures should be taken, without delay, to maintain the atmosphere created by the Moscow agreement; even steps with no great concrete effect should be carefully considered since they may have considerable effect in improving the political climate.

The measures to be taken, in the immediate future, could be either unilateral or they could be agreed upon by both sides. Agreements in areas of no direct military significance could be reached relatively quickly, and help to maintain the favourable atmosphere in international relations.

While this report summarizes our examination of such limited steps it would be unwise to conclude that such modest measures can do more than prolong somewhat the brief period in which more substantial measures can be taken, measures which actually address themselves to the central problems of disarmament and the establishment of a stable peace.

B. The Nuclear Test Ban Treaty

The attitude of the Government of France and the People's Republic of China, refusing to sign the Treaty banning nuclear tests, is

in sharp contrast with the tendency towards an improvement in international relations manifested at the present time. We believe all scientists and their institutions should avail themselves of all the opportunities (especially press, radio and television) to influence public opinion, so that the Governments of France and the People's Republic of China might reconsider their attitude.

We believe that further agreements in the field of disarmament may lead to a détente in Europe, and that under these conditions it may become easier for France to reconsider her decision and join the other nations in adhering to the Nuclear Test Ban Treaty. The resulting worldwide decrease in tension may also have favourable impact on the decision of the People's Republic of China.

Any further atomic explosions in the atmosphere, water or in outer space should be severely condemned as an act directed against the interests of all mankind. The danger resulting from such an atomic explosion is not limited to an increase in the quantity of radioactive fallout. Such an explosion could lead to a breakdown of the Treaty agreement which we have now attained and may mean the beginning of a new series of atomic tests.

C. A Joint Study in Seismology

The Group was unanimous in believing that the Test Ban Treaty should be extended as soon as possible to ban all underground nuclear explosions.

To help the negotiations to this end, we believe that work on the detection and identification of underground nuclear explosions and earthquakes should be continued and intensified and that international collaboration in that field should be increased.

We recommend that a co-ordinated programme of seismological study should be undertaken from the U.S., U.K., and U.S.S.R., in the first instance, directed towards improving the detection and identification of underground explosions and earthquakes by long-range seismological stations and possibly by unmanned seismological stations. Arrangements should be made for interchange of records of explosions and earthquakes, and the nations involved should consider the possibility of joint operation of a seismological station incorporating the most advanced techniques and situated in a politically suitable and seismologically quiet area. It would be highly desirable if other nations would also join in this co-operative project.

D. A Ban on Orbiting Nuclear Weapons

Among steps which require a minimum of negotiation, and which may help to slow down the arms race, the Group recommended a declaration by the heads of state of the United States, the Soviet Union and other nations that they will not place nuclear weapons in orbiting satellites. Such weapons would greatly increase the atmosphere of fear in the world, even though they have no great military value. A declaration of this type would be in the spirit of the Test Ban Treaty, and would be a demonstration to people of all countries that the nuclear powers are determined to take effective steps to slow down the arms race.

E. Scientific Co-operation

Among developments which could significantly improve the climate of international relations, and thus facilitate progress towards disarmament, the Group laid particular weight on growing international co-operation in pure and applied science, and the freeing of the exchange of scientists from the present burden of restrictive regulations.

The Group welcomes the statements in the speech of President Kennedy to the United Nations, on September 20, which represented a renewed demonstration of increasing importance attached by political leadership to constructive international co-operation in science.

The Group noted with satisfaction that many of the currently discussed plans for international scientific co-operation dealt with matters first suggested or emphasized in the Seventh Pugwash Conference at Stowe, Vermont, in September, 1961. This includes the already agreed upon, as well as the newly proposed, forms of co-operation in space, plans for a world medical and biological research centre, broadening of the U. S. - U. S. S. R. exchange of scientists, co-ordination of efforts to penetrate the earth's crust as well as some other programmes. The Group hopes that other proposals included in the report of the Stowe Conference, will also gain the attention of several governments. It believes that the Pugwash movement should follow its successful initiative in this field in designing its future programme of conferencesand study groups.

The forthcoming Conference in Udaipur, India, in particular, could provide an appropriate setting for the discussion of possible forms of East-West co-operation in certain aspects of technical, medical and scientific assistance to the development of new nations.

F. Control of the Distribution of Fissile Materials

Since the first step has now been taken to limit the development of nuclear weapons, the role played by the production and distribution of fissile isotopes from which these weapons are made deserves serious examination.

The problem of possible diversion of fissile isotopes from power reactors to weapons use is rapidly assuming a new magnitude. Production of fissile material in nuclear power technology now surpasses that for weapons use. Thus the essential material base for nuclear bomb production is arising at many points throughout the world. The safeguards devised by the International Atomic Energy Agency (IAEA) would provide an objective check on the possible diversion of fissile material for weapons use. However, the use of this procedure has been by-passed or not applied in the setting up of almost all reactors. This is due to the preference of the countries involved for bilateral arrangements; and with these have come great variations in safeguard procedures.

With the rapid growth of nuclear power reactors, little time is left to establish a pattern of responsible use that would provide protection to all countries against the diversion of plutonium to nuclear weapons. We therefore recommend that the Governments concerned undertake to replace the bilateral agreements now existing with safeguards administered by IAEA and that future reactors and their associated plutonium separation plants be subjected to similar procedures.

This turn of events would bring to the IAEA the role originally envisaged for it and would greatly strengthen this essential agency.

G. A Security Guarantee Against the Use of Nuclear Weapons

The partial Nuclear Test Ban Treaty and its hoped-for extension to include underground tests may lead us into a period in which many nations will have renounced the manufacture and possession of nuclear weapons. This will be a highly desirable development as the nuclear powers attempt to achieve substantial disarmament. In this period, therefore, states should be given an incentive to renounce nuclear weapons of their own by being assured of protection against nuclear threats and nuclear aggression by others.

We have discussed means of providing such security. We have agreed upon some general features which this security guarantee must

possess. It must enjoy the support of the major nuclear powers and they must act in concert but it should be accomplished through the United Nations. It must be convincing both to the protected states and to the would-be users of nuclear weapons. It must be desired by the protected states as well as the world community in general.

Although we agree on these points, we realize that the detailed arrangement necessary to achieve their realization is a subject of considerable complexity and we have not attempted to produce a detailed proposal.

II. PROCEEDINGS OF THE PLENARY SESSIONS OF THE ELEVENTH PUGWASH CONFERENCE HELD AT THE UMJETNICKA GALERIJA, DUBROVNIK

PROCEEDINGS OF THE FIRST SESSION

Held on Friday, 20th September, 1963 at 9.0 a.m.

Chairman: Acad. Ivan Supek.

A. Formal Opening

1. The Chairman started the proceedings with the following address of welcome:

Dear Friends,

I am particularly gratified and honoured to have this opportunity to welcome, on behalf of the Yugoslav Pugwash Group, the Eleventh Pugwash Conference at Dubrovnik. Our scientists, and public opinion as a whole, greatly appreciate the efforts exerted so far by Pugwash Conferences and their beneficial effect upon the rapprochement of the positions of the East and the West with regard to peace and disarmament. You have come to a country which was terribly devastated during the last war and where the whole people are united in the sincere wish for world disarmament. This ancient city of Dubrovnik, our host, which remained an oasis of culture in the midst of destructive invasions, reminds uf of the value of peace, reminds us of what good diplomacy is sometimes worth at the cross-roads of malevolent forces.

The Yugoslav Pugwash Group is particularly honoured by the fact that the Eleventh Conference, attended by so many eminent scientists, is taking place in this country. We all know what role science has played in the creation of this world, so fragmented and alienated, with unlimited potential for prosperity as well as for utter destruction, and this places a grave responsibility upon the shoulders of men of science. Even if the application of scientific achievements has, under the guidance of military-political mentors, brought this planet to the brink of the inferno, the policy of co-existence has been greatly promoted by the tremendous increase in labour productivity: and what is just as important, the universal spirit of science has mellowed the shrill cries of ideological spectres. When the cold war had reached its climax, when diplomatic negotiations were striking against an impenetrable barrier, you, the first participants in Pugwash Conferences, found a common language. It is to the rich legacy of universal, international culture that we have to pay tribute in the course of our meetings here. Every one of us is loyal to his fatherland, but all these loyalties merge on the higher level of humanism, where it is possible to find solutions for conflicting positions, where harmony is imperative. Therefore, all doubts as to the successful outcome of this Conference are dispelled in the intense light of human creativeness.

We are faced with the most acute problems of world disarmament: as first major steps, the reduction of the striking potential of both nuclear collossi, the prevention of the danger of the further spread of nuclear weapons, the establishment of zones of reduced armaments (atom-free zones) and the final banning of nuclear weapons tests. If this first programme of denuclearization were carried into effect, the world would be a much more radiant place and the hopes of the whole of mankind regarding final agreement and lasting peace would be tremendously increased. Of course, our words here have not the force of megatons and we cannot compel anyone to do anything: but, in the presence of the existing balance of power, when global death threatens from both sides, what else can save us but the voice of reason? At a moment when confidence in the present roads or, rather, aimlessness of the policy from a position of strength has been undermined, the scientific thought remains the only reliable guide. While earlier Pugwash Conferences concentrated their attention on the West-East dialogue, which was the most important, it is our desire that scientists from non-aligned countries should play a greater role at the present Dubrovnik gathering. In the first place, the mediatory role of these countries between rigid blocs has been extremely beneficial: the strengthening of their influence in the United Nations may lead to the development of universal disarmament and co-operation: and, finally, as most of these countries lag behind the scientific-technical revolution of our time, and are often burdened by the feudal and colonial legacy, a rapid progress of science and the integration of their educated generation in the world scientific community provide a guarantee for their social progress and peaceful role in the world.

Dear friends,

In this ancient city, whose walls have listened for centuries to the wails of enslaved subjects without rights, the stony silence was pierced by enlightened human speech. This fortified island saw the birth of our national drama; it is here that the wonderful hymn to freedom was composed; it is from here that Boskovic's genius had brought away the presentiment of the dominant power. And this ancient Arcadia could not find a more noble memorial and renaissance than this Pugwash Conference, devoted to peace. At these crossroads of centuries and worlds, I wish you an agreeable stay and success in your work.

2. The Vice-President of Yugoslavia, Mr. Aleksandar Rankovic, then addressed the Conference:

Ladies and Gentlemen, dear friends,

I am using this opportunity to welcome you most warmly on the occasion of the Pugwash Conference and to wish success to your efforts, as scientists and as citizens of the world which is becoming more and more indivisible, to contribute your utmost to the insurance of peace and further development of friendly and equal international co-operation, which undoubtedly represents an essential condition for the progress of mankind.

Yugoslavia, which you have this time chosen for your Conference, was for centuries a battle-field where the peoples of Yugoslavia fought for their jeopardized independence and freedom. In the course of the last 50 years alone Yugoslavia underwent four devastating wars, loosing, in the Second World War, 1,700,000 people, i.e. more than 10% of its population, and suffering, at the same time, most heavy destruction. Our peoples are, therefore, deeply attached to their hard-won freedom, their right to build their own life and a better future in peace. This is why they have laid into the foundations of their policy, peace and peaceful co-operation and introduced them into their highest Law - the Constitution of the Socialist Federal Republic of Yugoslavia. They have stressed thereby that peaceful co-existence and active co-operation among states and peoples, regardless of differences in their social organizations, are an essential condition for peace and social progress in the world, and that Yugoslavia has based her international relations on the principles of non-interference into the internal affairs of other countries and the settlement of international disputes by peaceful means.

Dubrovnik, the city where your meeting is taking place, adhered to similar principles in its glorious past, maintaining strong links with the whole cultural world of the time. A son of this city, the famous scientist Rudjor Boskovic, added his share to the development of modern science and to the good of mankind, working in almost all the parts of Europe, although it was divided at that time, as well.

The great and unprecedented development of science has assigned all the scientists of the world a greater task and a greater responsibility. It has given much more importance to their say when war and peace are in question, making their endeavours and demands for the removal of war danger and the assurance of a lasting peace more significant and more binding. I am, therefore, convinced that your efforts deployed here at Dubrovnik will make yet another contribution to the great cause of peace.

I wish great success to your work.

3. Messages of greetings were received from the following:

(a) From the President of the United States, Mr. John F. Kennedy:

Once again I extend my warm greetings to the Conference on Science and World Affairs. You have concerned yourselves with the problems of disarmament and arms control. In the world of the intercontinental missile and thermonuclear warhead, these problems demand the attention and discussion of the best minds in all countries.

Significant advances have been made since your last meeting. We now have a rapid and effective means of communication between my country and the Soviet Union and, more important, we have signed a nuclear test ban treaty which will bring about a cessation of nuclear weapon testing in the atmosphere, under water, and in outer space. Although these initial steps are limited, their achievement encourages us to look forward to more substantial progress. In your Conference you will have an opportunity to speak frankly with each other and to explore various avenues for further disarmament measures and other means of reducing international tensions. These problems are not simple, but personally I have the fullest confidence that we will succeed in finding new solutions. People all over the world want to live in peace, and devising a system to secure this goal is a major concern of my Government. Many of our best minds are engaged with this problem, working on all levels, technical, political, and economic. Your unofficial deliberations will be examined carefully by them as well as by myself.

The broader and better informed is public discussion of these issues, and the more every government shows its concern with and response to such public discussion, the greater the prospects for further and bold steps in disarmament that will allow us significantly to reduce the dangers and burdens of the arms race.

Signed: John F. Kennedy

(b) From the Chairman of the Council of Ministers of the Soviet Union, Mr. Nikita Kruschchev:

On behalf of the Soviet Government and on my own behalf, may I wish great successes to the 11th international Pugwash Conference of scientists. Your Conference is devoted to the problems of disarmament and international security which

are of great concern to all mankind. It is important that scientists are tackling these problems more and more actively, scientists who bear a great responsibility in our nuclear age to the world public for the safeguarding and consolidation of peace. The Pugwash Movement rallies prominent scientists of different countries, of different political views and philosophical beliefs around the programme of general and complete disarmament under strict international control. In our time, when war has ceased to be fatally inevitable, the prevention of a world thermonuclear catastrophe will depend on the joint efforts of the people of goodwill. The place of each genuine scientist is in the forefront of the peace-loving forces of all countries, for it is only in the conditions of the peaceful coexistence of nations that the true progress of human society, the development of economy, science and culture are possible today. The Moscow partial nuclear test-ban treaty, signed by most of the states, opens up the road to further agreed measures in the field of disarmament promoting the easing of world tension. It is the duty of each honest person to try and make sure that all states follow this road which is in keeping with the interest and aspirations of the peoples. There can be no doubt that the voice of scientists, participants of the Pugwash Conference who advocate disarmament and international security will be heeded and find broad response all over the world. May this voice resound with all power, calling for disarmament, peace and friendship of peoples.

Signed: N. Khrushchev

(c) From the Prime Minister of the United Kingdom, Mr. Harold MacMillan:

I am glad the Pugwash Conference has been meeting again at this time. The nuclear test ban treaty which you have long discussed in the past has been a notable step towards relieving tension. But it is only a first step and now we need others. The ideas of the scientists can help the politicians as they have done before. And in their contacts between East and West the scientists can help each other.

I am sure your discussions will prove as fruitful as in the past.

Signed: Harold MacMillan

(d) From the President of the Czechoslovak Socialist Republic, Mr. Antonin Novotny:

Permit me to greet cordially your Conference on behalf of the Government of the Czechoslovak Socialist Republic and myself. You have met not long after the signing of the treaty by three powers on the partial ban of nuclear weapons tests. We deem this treaty to be an important, even though only the first step, towards the universal relaxation of the international tension. At the same time we stress its immediate importance since the partial ban of nuclear tests in the atmosphere, in outer space and under water limits in itself the contamination of our planet by radioactive fallout. In this sense the signing of the Moscow treaty is a great success of peaceful forces of the entire world. We are well aware that your Movement, associating outstanding world scientists, belongs to those important peaceful forces in the world that are honest in their struggle for the ban of nuclear tests and for the abolition of thermo-nuclear war. It is with utmost interest that we learned about the issues of your past Conferences and about your remarkable recommendations. Now the time has come to hold further peaceful deliberations and to take measures which would strengthen and promote what had been achieved by the efforts of many years. Your 11th Conference will discuss problems of disarmament, consequences of the dissemination of nuclear weapons, the denuclearized zones, role of small countries in their endeavour for disarmament etc. These are important problems on the solution of which we in Czechoslovakia rely very much. We believe that an effective step towards the relaxation of the international tension would be the conclusion of a non-aggression pact between the countries of NATO and those of the Warsaw Treaty. Such a pact would create an atmosphere of confidence and peace necessary for further deliberations on the way towards the general and complete disarmament which is one of the main objectives of your Movement.

I wish you from all my heart that your deliberations, which you are approaching with an ever growing consciousness of responsibility of scientists to the human society, may take a good course and be ended successfully.

Signed: Antonin Novotny

(e) The Chairman of the Council of State of the German Democratic Republic, Mr. Walter Ulbricht:

On the occasion of the 11th Pugwash Conference, allow me to extend to you my best wishes for the successful work of your meeting. The Council of State and the Government of the German Democratic Republic follow with interest the efforts of the scientists who come together in the Pugwash Movement, the efforts towards disarmament and an understanding among peoples. We consider these to be a valuable contribution to the securing of world peace. Your present conference is of special moment, since it takes place in a period in which there is much hope for the reduction of international tension and is discussing such urgent problems as the prevention of the further spread of nuclear weapons, the creation of atom-free zones and general disarmament. The conclusion of the Moscow treaty on a partial test-ban gives new impetus to all peace loving people to undertake further efforts to let this first step be followed by yet more far reaching steps. I am certain that your Conference of eminent scientists will make a fruitful contribution towards this end.

Signed: Walter Ulbricht

(f) From the Academy of Science of the U. S. S. R.

The Academy of Science of the U. S. S. R. sends the participants of the 11th Pugwash Conference of scientists friendly and warm greetings.

Pugwash Conferences of scientists have acquired a high reputation and are of great significance for the elimination of the threat of war and for the stabilization of security in the whole world. Scientists - participants in Pugwash Conferences have made their contribution to the cause of peace.

At the present time no task is more important nor noble than the struggle for peace, for friendship among the peoples, the struggle for general and complete disarmament.

The Academy of Science of the U. S. S. R. wishes you, representatives of scientists from many countries of the world,

participating in the 11th Pugwash Conference, great success in your work, and desires the Conference in Dubrovnik to be yet another important step on the path to the consolidation of peace and security of peoples of all countries.

(g) From the President of the Czechoslovak Academy of Sciences, Acad. Frantisek Sorm:

Dear participants of the 11th Pugwash Conference,
dear colleagues,

On behalf of the Presidium of the Czechoslovak Academy of Sciences and myself, I extend heartfelt greetings to you all. You have assembled in Dubrovnik from many countries to discuss the fundamental problems of our times, those of war and peace. Your Conference takes place during an important period when the hopes of mankind have been encouraged by the recent victory of peace-loving forces throughout the world, the signing of the treaty on the partial ban on nuclear tests. The Pugwash Movement has played a prominent part in these efforts. We in Czechoslovakia feel that we owe a debt of gratitude to the participants in the Pugwash Movement for their persistent struggle towards general and complete disarmament under stringent control which we think is the only way towards the elimination of the danger of war. As a practical proof of our support for the Pugwash aims we offered the hospitality of our country to one of your future conferences and will do all we can to create the conditions necessary for its smooth running. We hope that out of your present deliberations new suggestions will arise which will contribute to the solution of the burning problems of our epoch. May your Conference achieve its noble aims.

Signed: Acad. Frantisek Sorm

4. Mr. Avdo Humo, Member of the Federal Executive Council, President of the Federal Council for Co-ordination of Scientific Research, Chairman of the Yugoslav Nuclear Energy Commission, gave the following address:

Mr. Chairman, Ladies and Gentlemen, Comrades,

I am glad I have the honour and the pleasure to welcome, on behalf of the Federal Executive Council, the participants of the 11th Pugwash Conference, prominent scientists in the fields which

are at present of special importance for the progress of mankind, staunch and experienced champions of world peace. At the present time more than ever world peace is the condition for the preservation of the achievements of civilization and the safeguard of the existence of human kind. While welcoming you warmly on your arrival in Yugoslavia, a country which has undergone many war devastations in the course of its history and was among those who have in the last war suffered the greatest losses, requiring immense efforts and great endurance to rebuild immediately after the war, I should like, at the very beginning of your session, to wish you success in your work, in the interest of peace, international co-operation and further progress in the field of science.

From its very first days the Pugwash Movement declared that the power released from the atom should be applied exclusively for peaceful purposes; from the very first meetings held at the initiative of Einstein and Russell, through numerous Conferences organized in various countries, just owing to such a position stubbornly defended in the name of peace and progress of mankind, the Pugwash Movement was transformed into a powerful movement and became part of the movements of peoples all over the world fighting for world peace. Thanks to the participation of most prominent scientists from all parts of the world the Pugwash Movement influenced world public opinion and became an important factor in the struggle for disarmament, peace and progress of mankind.

In view of the present international situation I think I may emphasize that the Pugwash Conference this year is taking place in a more favourable atmosphere and at an exceptionally important moment. We are all witnessing an improvement in the international situation, the relaxation of international tension and the removal of immediate war danger which, only eleven months ago, at the time of the Cuban crisis, threatened mankind by an outbreak of a thermonuclear war, and a general catastrophe. The recently concluded Moscow agreement on the ban of nuclear tests in the air, outer space and under water, represents one of the most important steps: it not only removes the danger arising from the harmful consequences of radiation and armament race, but also proves the existence of possibilities for the settlement of even most complicated international problems by peaceful means, by discovering a common ground for reaching an agreement between big powers and military blocs, and - that should be specially stressed - it means an important progress towards general disarmament and the lessening of war danger.

In spite of obstruction and obstacles arising from those favouring war and war politics such developments express the disposition and interest of all peoples in the world and, among others, represent a significant victory of progressive and peace-loving forces and movements. It is a well known fact that just the scientists rallied round the Pugwash Movement and its Conferences, have played a leading role; they have not only documented most convincingly by verified scientific data and indicated the harmful and dangerous consequences of radiation and the horrors of thermonuclear war, they have also staunchly and stubbornly championed equal international co-operation and actively collaborated on scientific and technical problems in the preparation and realization of the agreement achieved.

As already stressed, everything points to a gradual breaking of the ice of the cold war and to better and more peaceful perspectives in international co-operation. It would, however, be too optimistic and unrealistic to consider the results attained as sufficient. Far from it, the positive results and success bind all the peoples of the world, all the conscious peace-loving forces, all the convinced supporters of peace and progress, to proceed, with a greater optimism and even more energy, aware that the results attained in the struggle for peace are due to their efforts and endeavour, in their search for most appropriate solutions. Mankind is still faced with many important tasks and huge outstanding problems which, judging by the agenda of your meeting, will be discussed by this Conference.

It is of first rate importance that the results achieved and the course taken should be defended from all types of war mongering and reactionary forces, and disheartened and often openly ill-intentioned sceptics. It is just as essential to obtain the acceptance and respect of the Moscow agreement by all the states, especially those which are in possession of the atomic bomb or which might in the near future produce one. It seems just as important to achieve the extension of the nuclear test ban to all type of tests, including those carried under the ground, the prevention and prohibition of a further extension of nuclear weapons, denounciation of production of nuclear weapons and the destruction of nuclear arsenals and, in connection with it, the achievement of general disarmament.

A further important and realistic contribution towards the lessening of war danger and the reduction of the threat of nuclear weapons is undoubtedly represented by the endeavours directed towards the formation of an atom-free zone as a possible and acceptable path towards a complete and general denuclearization of the world under the present conditions. By the formation of such zones in key world areas such a sanitary belt would be created, which would, without entirely eliminating nuclear war dangers and threats thereof, at any rate contribute to its reduction and limitation.

Among other important problems, to which the attention of the peace-loving forces in the world is at present devoted, we should certainly mention the tendencies towards a relaxation of tension between military blocs, the attainment of an agreement on the insurance against sudden attack, the freezing and reduction of military budgets etc., accompanied by positive efforts in the development of most extensive international cultural and economic co-operation, the settlement of outstanding international problems and the liquidation of hotbeds of international conflicts and war dangers.

Immense tasks are facing people interested in the maintenance of peace. In view of such a situation and such tasks the recently concluded agreement on the ban of n uclear tests in the air, in space and under water, represents but the first stage and the first significant victory in the struggle for peace. It proves the correctnes of peace-loving policy; it is the best answer to all those expressing their doubt in the possibility and justness of such a policy. It also represents an encouragement to all the peace-loving forces and supporters of peace to persist on this path, to intensify their activity aimed at the settlement of a series of international problems, the insurance of world peace for which scientists, more than ever in the world's past, have good reasons to be deeply concerned. It is, therefore, certain that the work of the 11th Pugwash Conference will proceed in that direction.

We are living at the time of a rich development in the field of science and technology and witnessing their influence spreading on the entire human life. Great discoveries are becoming more and more frequent- they are almost an everyday occurrence. The application of the new knowledge to the development of economy and

society, to a speedy rise in the standard of living in all parts of the world, to a more rapid and more all-embracing coming together and rapprochement among the peoples and nations, produces unsuspected results and offers unthought-of possibilities. The perspectives opening by man's penetration into the cosmos, the use of atomic energy, the development of electronics and biology, the application of new raw materials and substances, in an atmosphere of rich international co-operation in the field of sciences, are more majestic than the most daring imagination could have thought of. The progress in science and technology alone is of such proportions that man is offered much more energy, much wider possibilities and better conditions for an easier, more comfortable and longer life. Man is at present acquainted with numerous phenomena in nature he used to fear a short while ago. He has mastered them and subjected them to himself. Such huge results in the field of science, together with the influence they increasingly exercise on society and man, will undoubtedly contribute to the formation of a new world, a world of huge possibilities in which science will be assigned one of the first roles, the relations among states and people will be equal, more humane and freer. Faced with such a close vision man, whether scientist, militant man, or public worker, should already at the present time try to adapt his activity and his outlook to the world of the future.

Unfortunately, such a development has created possibilities not only of progress and a better life, but also of destruction and of evil. Instead of enjoying the achievements of science and technology and getting ready to make the most of their attainments, mankind has for years stood on the brink of a nuclear catastrophe, in dread of an all-destructive world war. Mankind is haunted by the preparations for war, huge human and material resources are being invested for it, terror of a sudden outbreak of hostilities still persists preventing a speedy development of science and technology and the application of their results for the good of mankind.

If all the research capacities existing in the world at present were pooled together and directed towards the peaceful utilization of technical and biological achievements and of explorations of new areas requiring greater power, higher means and a better organization, were carried out as a common enterprise, new bright prospects of a speedier course towards the unity in a world of a better, more humane, more cultural and freer future, would be opened.

In view of such an alternative one can obviously see but one way, that of a struggle for peace, peaceful co-existence and equal co-operation among nations. Only through such a struggle can mankind avoid a catastrophe. Only thus can science free itself from various pressures and resist being pushed on a path of war and aggression on which science - being essentially and deeply humane and inherently attached to human progress and happiness - cannot advance.

In connection with the advance of science and the existing economic relations in the world yet another fact should be underlined. The present scientific and technical development went on much more rapidly in more developed areas. This by itself represents a grave problem of the present age. In which way should the results achieved in the field of science serve the underdeveloped areas as well? Undoubtedly it would be much easier to remove the unevenness if huge technological possibilities released by the discontinuance of the mad arms race were used for that purpose.

Yugoslav science and all the efforts directed towards the advance and growth of science in the Socialist Federal Republic of Yugoslavia were, from the very outset, aimed at its application and utilization for the improvement of socio-economic development of the country, and the creation of better conditions for human life. Science was never an aim in itself, nor did it foster war, hegemonistic, or other aggressive tendencies. We treated the development of science as a component part of world scientific activity, considering its concrete aims as a mere means for the creation of a better and happier life for man. We looked upon its achievements not merely as our results, but as an asset for everybody and all the peoples wishing to use it. Viewing science and the benefits deriving from it from that point of view, we are convinced that it can be a powerful means for the rapprochement and mutual understanding among the peoples on a basis of equal co-operation, in the building up of better conditions, a speedier removal of deep-going unevenness in the advancement of many countries in the world.

I should like to conclude my address to the 11th Pugwash Conference by wishing those participating in it a pleasant sojourn in Dubrovnik. Throughout its long history and under hard conditions Dubrovnik was more than once able to protect its existence only by its culture and its economic mission within a kind of peaceful international co-operation and co-existence of the time, just as much as by its beautiful high ramparts encircling the city which you have, I presume, learned to love.

5. Acad. Marko Kostrencic, Chairman of the Council of the Yugoslav Academy of Sciences, addressed the Conference as follows:

Mr. Chairman, Ladies and Gentlemen, Comrades,

I am glad to have the honour and pleasure to welcome the 11th Pugwash Conference and our distinguished and dear guests from all the lands and regions of the world in this ancient city of Dubrovnik, on behalf of the Council of our three Academies, the Serbian in Beograd, the Yugoslav at Zagreb and the Slovenian at Ljubljana.

We are gathering at a time when we may look upon the future with highest optimism and the best hopes, as well as with the gravest pessimism and dread, faced with the fatal and inevitable dilemma: absolute war or absolute peace. The nuclear power with nuclear weapons has merged mankind into one indivisible whole faced with the same inevitable lot: either to live together in prosperity, or to perish together in misery. Every conflict with nuclear weapons must lead to a recession into savagery and to the extirpation of human kind; every conflict between groups of mankind must, by the logic of power, lead to a nuclear war.

All the progressive peoples of the world and the huge majority of the inhabitants of our planet do not want mankind to commit suicide at the time when perspectives of an unprecedented better and more beautiful life are opening, when it is on the threshold of the conquest of the cosmos. This is why they demand absolute peace, peace on land, sea and in the air, peace in the valleys and mountains, in villages and towns, in fields and factories, peace for children, wives and husbands, peace to the white, the black, the brown, the yellow and the red.

The Pugwash Movement is actively engaged in the attainment of these peaceful aims at the time of a great danger threatening mankind, a danger, which, inspite of some apparent relaxation has not been removed. In its efforts the Movement relies upon the great authority of its members. It must carry out this universal and indivisible campaign for peace most decisively and without delay, for seconds rapidly run out on the clock of the world.

In this noble and hard struggle the Pugwash Movement has all the Yugoslav peoples and all the Yugoslav men without one exception on its side. Yugoslav peoples were suppressed and enslaved in their past, but they have never either suppressed or enslaved other nations. Peace and freedom for all and everybody are written in golden letters in their history for which they have shed a lot of blood.

We, Yugoslavs, love life sincerely, directly and simply and we are deeply convinced that the general progress of mankind will create better living conditions for ourselves, our children and the generations to come.

I wish the 11th Pugwash Conference great success!

6. Professor C. F. Powell replied on behalf of the Pugwash Continuing Committee, as follows:

Ladies and Gentlemen,

On behalf of the Continuing Committee of the Pugwash Conferences on Science and World Affairs and the members of this present Conference, I have the honour to reply to the kind words of welcome you have addressed to us this morning.

We are to discuss a number of topics under the general title of "Current Problems of Disarmament and World Security", and we believe that the present time is very favourable for making a useful contribution. An important step forward in international relations has recently been taken in the form of a Test-ban on all except underground explosions of nuclear weapons which has been adhered to by many states. This will have the effect of limiting the further contamination of the atmosphere with radioactive debris and could lead to an elimination if the ban were made complete and were universally supported. Reference has already been made this morning to the recent successful negotiations and the important consequences which may be expected to flow from them, not the least of which may be the improved relations which follows from the demonstration that negotiated agreement can indeed be reached between the great powers on important issues. We are greatly encouraged by this step, especially since many of our friends who are in a position to know assure us that our past Conferences have made a valuable contribution to the success of the negotiations. But this is only a first step towards the goal of disarmament and we are faced with many intricate problems where frank and friendly exchanges can be of great value in the search for mutually satisfactory solutions.

We are greatly encouraged in out task by your warm reception and delightful hospitality. About three hundred years ago the English psysicist Thomas Hooke, well known for his famous theorem in elasticity, had occasion to express his appreciation of a benefactor who had endowed a Chair in the mechanic arts. He remarked that the endowment had "taken the science of mechanics out of the dark shops of the mechanicals; and had shown London, the chief city of commerce of the world the proper way in which commerce is to be improved."

You have drawn us out of our dark libraries and laboratories and have opened us up to the benign influence of the sun and the sea. We all hope that it will prove that you have shown us one of the proper ways in which international relations may be even further improved in the direction of a secure and stable world.

B. First Plenary Session

1. Acad. V. A. Kirillin gave a summary of his paper "The Road to General and Complete Disarmament" (p. 63).

2. Prof. Franklin A. Long gave a summary of his paper "The Immediate Steps toward General and Complete Disarmament" (p. 70).

3. General Discussion.

The following took part in the discussion on the above papers: J. W. Burton, W. V. Kerr, V. M. Khvostov, V. A. Kirillin, O. Kofoed-Hansen, P. Noel-Baker, C. F. Powell and E. Rabinowitch.

The points raised in the discussion were:

(a) The essence of the Sohn plan for zonal inspection was that the zones should be of equal military value. This, together with random selection of a zone for inspection, should not lead to imbalance. Further discussion is called for on methods of control of zonal inspection and how to keep control commensurate with disarmament.

(b) The step by step approach towards a treaty may not be the best way of reaching general and complete disarmament. There is the danger that no further steps will be taken if, after the first step, there is not sufficient guarantee of security.

(c) "Non-aggression" has been made a dirty phrase by Hitler. All the same it would be useful for the Great Powers to reaffirm their pledges to the U. N. Charter.

(d) It is impossible to conceal, and to produce in secret, the means of delivery, even in small amounts. The means of delivery are the key to the first big step. Verification is not a difficult problem until a low level of armament has been reached.

(e) The inequality between developing and developed nations is one of the main factors contributing to international crises. The best means of eliminating this source of danger is general mass education.

(f) The constructive approach and positive proposals made in both main papers should form a good basis for discussion in the Working Groups.

The meeting adjourned at 12. 30 p. m.

V. A. Kirillin

THE ROAD TO GENERAL AND COMPLETE DISARMAMENT

Thirteen months have passed since the last Pugwash Conference. Thirteen months is not a long time, but they were so eventful and so instructive that before examining the subject matter of my report - the problem of general and complete disarmament - it would be appropriate to comment briefly on what has happened during that time.

In his report on general and complete disarmament, made at the 9th Conference in Cambridge last year, our esteemed colleague Alexander Vasilyievich Topchiev, who met an untimely death, stated with his usual realism and candour that, regrettable as it may be, the general situation in the world, far from improving, had in a sense deteriorated; instead of progress in disarmament a frenzied arms race was taking place.

This statement was made in August, 1962, and two months later, in October, the world found itself in the midst of the most dangerous crisis experienced by mankind since World War II. I am referring, as you understand, to the Caribbean crisis.

There is no need to recall the details of those events. Each one of us is fully aware of the fact that last October the world was on the brink of a thermo-nuclear world war.

It was only the wisdom and restraint of the statesmen of the major powers, and primarily of the head of the Soviet government N. S. Khrushchev, that prevented the plunge into the abyss which many people already considered inevitable.

It is with great satisfaction that I should like to refer to the indefatigable energy displayed in those days by Lord Bertrand Russell, Chairman of the Pugwash Continuing Committee, who urged the heads of the great powers and the U. N. Secretary General to prevent war and to settle peacefully the political conflict.

The Caribbean crisis was resolved. But it is only natural that each individual should ask himself the question as to how similar conflicts could be averted in the future. If a similar, and perhaps even a graver political crisis arises once again, will the forces of peace and prudence cope with it and keep our planet from plunging into the abyss of war?

To prevent grave world crises, fraught with the danger of thermo-nuclear war, it is necessary to improve the international atmosphere in advance and consolidate the factors conducive to peace while eliminating factors leading to military conflicts.

Paraphrasing the ancient bellicose proverb of the Romans, we must say: "Si vis pacem, para pacem" - If you want peace, prepare peace.

World war can be prevented and it should be prevented. Therein lies the duty of each honest person on our planet. And this is likewise, as we understand, the duty of the Pugwash Movement of scientists.

Today, 12 months after our last Conference, we should note with satisfaction the signing of the Moscow Treaty banning nuclear tests in three spheres, as an important factor contributing to this improvement. Originally signed by the three thermo-nuclear powers, the Moscow Treaty was then endorsed by the majority of states. Those who refused to sign it and subjected it to groundless attacks found themselves in well-deserved moral and political isolation.

We are hopeful that in due course an agreement will be reached on the complete cessation of nuclear tests. The Moscow Treaty is an important milestone on this road.

It should be noted that the Moscow Treaty is an essential contribution to the improvement of the political atmosphere. The conclusion of the Treaty created favourable conditions for further steps to improve the international situation.

The scientists, together with all the progressive public opinion, are confronted with the task of making sure that all nations without exception adhere to this Treaty.

It seems to be appropriate to underscore the worldwide significance of the Treaty and make it part of universally recognized international law. We believe that not only U. N. members but also all the other countries should sign the Moscow Treaty inasmuch as it meets the interests of all mankind. The states should also undertake to prevent nuclear tests from being made in their territory by other countries.

The cessation of nuclear tests does not in itself constitute disarmament but it is one of the most important steps towards disarmament. It would be very good if an East-West agreement could be reached on some other steps in that area.

What are those steps?

First of all, I should like to refer to the signing of a non-aggression pact between the NATO and Warsaw treaty countries

It is perfectly clear that the signing of such a non-aggression pact would be of great importance for the maintenance of peace. As is known, the parties to the Warsaw Treaty have always expressed their readiness to abolish immediately their defensive alliance which emerged solely due to the establishment of the North Atlantic bloc, provided the NATO bloc is dissolved.

The establishment of nuclear- and missile-free zones would be an important step aimed at the relaxation of world tension. This would lead to the dismantling of nuclear-missile bases on foreign soil whose existence constitutes a grave menace to the cause of peace.

Measures to prevent a surprise attack are likewise extremely important. Last July the Soviet government proposed the establishment, in some areas in the U. S. S. R. and elsewhere, of ground control posts on air-fields, at railway junctions, on highways and in large ports. This measure should contribute to the prevention of a surprise attack and make it impossible for the aggressor to concentrate large forces in a clandestine manner.

Speaking of all these measures aimed at peace and disarmament it is necessary not to lose sight of our ultimate goal - general and complete disarmament.

War cannot and should not serve as an instrument of resolving international disputes, the more so since in present day conditions the means of mass annihilation are rapidly developing. It should be ruled out of the life of human society once and for all. General and complete disarmament under stringent international control is a dependable and realistic path leading to this goal.

What is the best way to accomplish this?

The Soviet report at the 9th Pugwash Conference drew a comparison between the Soviet and American plans of general and complete disarmament. There is no need to get back to this question.

According to the Soviet draft, all disarmament measures, from the beginning to the end, should be accompanied by meaningful international

control measures, perfectly adequate for checking the implementation of the treaty. We are referring to control over disarmament rather than control over armaments. The scope of control should correspond to the scope of disarmament.

There is no need to come back once more to the question why the idea of control over armaments rather than disarmament is both dangerous and unacceptable. All of us are well aware of the need to reckon with facts and know that no illusions will withstand a clash with reality. It is dangerous to adopt a control scheme that could be used as a screen for intelligence activities. The only sensible method of exercising control is control over disarmament, carried out in step with the disarmament process and becoming comprehensive in the conditions of general and complete disarmament. Such a control scheme does not give advantage to either of the sides- it is effective, practicable and dependable.

We hold the view that it is necessary to use and develop all means of international control applying in each specific phase of disarmament the method which would be most effective in this instance and at the same time economically available. The proposals which could jeopardize the security of the parties involved in disarmament are unacceptable. At the 9th Pugwash Conference some of our colleagues from Western countries voiced the opinion that international control could not be 100 percent effective. Therefore, they said, there can remain some "uncertainty" as to approximately 20 percent of the delivery vehicles being destroyed. In order to compensate for this "uncertainty", and protect states against the possible concealment of a certain amount of nuclear delivery vehicles by some country, these scientists proposed that at the beginning of the disarmament process a minimum amount of delivery vehicles should be retained.

In this connection it should be emphasized that following the 9th and 10th Pugwash Conferences the Soviet Union submitted an important compromise proposal: in the course of the destruction of the nuclear delivery vehicles a strictly limited and agreed number of ICBMs, anti-aircraft and anti-missile missiles should be retained by the U. S. S. R. and the U. S. until the end of the second stage.

Should any state succeed at the beginning of disarmament in concealing from controllers a certain number of missiles and bombers, the fact that the other side has a certain amount of missile-nuclear weapons, combined with other measures to safeguard international tension, would prevent the potential aggressor from using the weapons thus concealed for attack.

It is both regrettable and incomprehensible why the U.S.A. and other Western powers did not support the Soviet proposal on the missile-nuclear "umbrella" even though many Western Scientists regard this path as being correct.

Inasmuch as both at the previous conferences and after it the scientists continued to discuss the method of sample zonal control, it is necessary to comment on this question.

This method runs counter to one of the basic agreed principles of disarmament negotiations. This principle was formulated as follows:

"All steps for general and complete disarmament should be balanced so as not to give military advantages to any state or group of states at any stage of the implementation of the treaty and to ensure equal security for all". In other words, as has already been mentioned, the scope of control should conform to the scope of disarmament.

Inasmuch as the delivery vehicles are not evenly distributed, it may so happen that one of the sides learns, by using the sample method, not 30 percent but 50 percent or more information about the location of the weapons of the other side. On the other hand, it may so happen that the representatives of the other side will be able to inspect a zone in which there would be no armaments at all.

This runs counter to the above-mentioned principles and even to ordinary common sense. We cannot gamble with the fate of mankind.

The proposals of the Soviet Union on general and complete disarmament contain clear-cut provisions on control, on the establishment of an international disarmament organization, on its terms of reference, and on the methods of control commensurate with disarmament measures taken at each stage. Now I should like to comment on some important economic and social aspects of disarmament.

Modern nuclear weapons and delivery vehicles are very costly. The complete cessation of its production and stockpiling of nuclear delivery vehicles, the elimination of foreign military bases and a 30 percent cut in conventional armaments at the very first stage will release huge resources, because these weapons and the military personnel operating them annually account for more than a third of the total military appropriations of all countries, that is more than 40 billion out of 120 billion dollars.

The financial resources, manpower reserves, production capacities,

and last but not least, entire research centres, which are military at present, all these can be used for productive purposes to improve the living standards of entire nations.

Disarmament is a matter of vital concern to the developing countries of Asia, Africa and Latin America. At present they lack funds even to meet their elementary requirements. According to U. N. experts hundreds of millions are starving in those countries. And yet they spend more than six billion dollars a year on armaments. Disarmament will make it possible not only to convert these funds for the purposes of economic development but also to obtain tens of billions of dollars in aid from industrially developed states, to create industrial-power complexes and radically improve the living standards of the developing nations.

Disarmament will bring great material benefits to all countries.

In May 1963 in reply to the request of Mr. U Thant, the U. N. Secretary-General, the Academy of Sciences of the U. S. S. R. sent a document devoted to the economic and social consequences of disarmament. In this document we proposed that the funds released as a result of disarmament be used to reduce taxes (about 40 billion dollars annually), for national programmes of economic development and social services (about 40 billion dollars annually), and for aid to the developing countries. In the conditions of general and complete disarmament the countries of Asia, Africa and Latin America will be able to receive about 25 million dollars in aid from industrialized countries and more than 5-6 billion dollars out of their own resources thus released.

It is likewise proposed that upon complete disarmament about 20 billion dollars* a year should be allocated to essential international research programmes.

To implement these projects it would be possible to use in particular those research centres and industrial enterprises that are currently engaged in meeting the requests of the military.

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* All above figures are based on rough estimates. Precise figures will depend on specific government decisions and international agreements.

Various studies may be conducted both in international centres as well as by co-ordinating the work of national institutes with wide-scale development of the exchange of personnel and information and other forms of co-operation.

In conclusion I should like to express some wishes which, I hope, will be supported by those present.

It would be very good if the participants of our Conference voiced their approval of the Moscow Treaty banning nuclear tests in three spheres and urge the scientists of the world to use their influence in order to increase to the maximum the number of signatories so that all nations without exception would sign it.

We could also express our hope that our colleagues in various countries would go on record in favour of a speedy conclusion of a non-aggression pact between NATO and Warsaw Treaty countries as well as the establishment of atom-free zones and other important disarmament measures.

We believe that negotiations on general and complete disarmament have now received a fresh impetus and that this should be used to step up efforts to solve this vital problem. Our Conference could send such an appeal to governments.

We should urge all our colleagues, scientists, to share actively in the elaboration of the scientific problems of disarmament. This could considerably increase the number of active supporters of disarmament.

Thus, we shall make an important contribution to the cause of general and complete disarmament - the road to be followed by all mankind.

F. A. Long

IMMEDIATE STEPS TOWARD GENERAL AND COMPLETE DISARMAMENT

It has been two years since the U. S. and the Soviet Union affirmed in a Joint Statement of Agreed Principles that their common goal was general and complete disarmament. The reason for the goal is clear: only in a world where armed forces exist solely to maintain internal and international order will the threat of nuclear war be removed. In the two years since this goal was set, progress toward it has been slight at best. The reasons for this are numerous; I want to focus this paper on those that seem to me most important and, at the same time, most readily amenable to solution.

The negotiation of a treaty for general and complete disarmament is a complex undertaking. It requires agreement between a large number of parties with varied and occasionally conflicting interests on the levels of military force they will retain during every stage of the passage from the present state of affairs to one in which national armies no longer exist. An even more difficult obstacle is that of prior agreement on the form of the international peace-keeping machinery that will be in full operation at the end of the disarmament process. The political environment when disarmament is complete will be so different from that existing today that it seems well nigh impossible to anticipate, other than in terms of the most general principles, the form of political institutions which will be most useful in that radically transformed world.

Then, given that the goal of the major nuclear powers is to achieve general and complete disarmament, how do we get from here to there? The path through direct negotiation on the total disarmament problem, in the absence of other changes in the political environment, seems to be a decidedly difficult one. As the past year and a half have shown, political developments taking place outside the disarmament conference have a direct and immediate impact upon the behaviour of the participants at the conference and upon progress toward the conference goals. Furthermore, the problems with which the conference is dealing are so complex and are so intertwined with other aspects of foreign relations of the parties involved that it is perhaps not surprising that progress has been slow. This does not mean that we should in any way relax our efforts in direct negotiations. The question is only, should we increase our parallel efforts to attain the same goal but employing a different path?

The problem of inspection illustrates some of the difficulties involved in the direct path. The suspicion and distrust that abound today have led to concern upon agreed provisions for assuring that all parties are complying with any disarmament agreement from the beginning of the disarmament process. The desire for inspection throughout the disarmament process is founded not only on the needs for inspection during the early part of the disarmament process but, even more, on the obvious need for assurance during the later stages of the process when national arms will not be sufficient to protect a country against clandestinely obtained weapons. In other words, the attempt to negotiate a full treaty for general and complete disarmament in a world where no disarmament has taken place and where suspicion and uncertainty abound, tends strongly to lead to more stringent inspection requirements than might have been imposed in a different political climate. In order to provide for national security, it is necessary to negotiate with great caution even though one may anticipate that political conditions during the latter part of the disarmament process might permit much less rigorous inspection procedures.

The approach of designing the complete disarmament programme now, before there has been any disarmament, fails also to emphasize another feature of the disarmament process, namely, the confidence-building effect of the successful execution of , and compliance with, initial disarmament measures. The cumulative effect of disarmament steps in improving attitudes and reducing suspicion is probably one of the most important features of the disarmament process; in fact, it is believed by many people to be the most significant feature of the stages of any disarmament process. Armaments levels today are high and even major reductions might not significantly reduce the casualties if a war should occur. However, the mutual confidence that an on-going and successful disarmament programme would engender could so improve the political climate that war would be made very much less likely, and hence further disarmament down to the very low levels would become much easier. Thus it appears that the process of designing inspection procedures before the disarmament process begins may lead at the later stages of disarmament to much more complex inspection practices than would be warranted by the actual political climate at the time of their implementation.

Suppose, however, one kept in mind the ultimate goal of complete disarmament but developed the successive disarmament steps separately. Then the verification requirements for each step could be evaluated independently of the problems of verification of succeeding steps. If the total disarmament programme could be negotiated in a step-by-step fashion, with the negotiations proceeding concurrently with the implementation of the preceding stage of the programme, it might be possible at each stage to lighten the inspection burden. This, in turn could greatly expedite the negotiation itself.

Another obstacle to agreement on general and complete disarmament has been the divergence in views on the type of international peace-keeping machinery which should exist at the end of disarmament. The United States has insisted that national armies can be dismantled only when there are in existence appropriate international institutions to keep the peace and to protect nations from possible violators of the disarmament agreement. According to this view, the disarmament process should be accompanied by the build-up of world-wide institutions which would guide the processes of peaceful change and insure that no nation commits agression against another. I agree with this position. It does not seem to me that the vigorous national feelings which abound in the world today can be relieved of the restraint of some form of military power, whether that power be in the hands of nations or appropriate international institutions. It is often forgotten that general and complete disarmament must necessarily involve not only all major powers but all the small powers of the world, and seeing the many conflicts and potential conflicts between the smaller nations on every continent, it becomes clear that armed force is going to be a relevant instrument of control for a long time to come, whether we like it or not.

The Soviet Union has taken a quite different position on the need for peace-keeping institutions in a disarmed world. It has asserted that the very act of disarmament will bring peace and that it is sufficient to maintain national contingents which will be available to the United Nations but subject to the vote of the permanent members of the Security Council. It does not seem to me that this would adequately deal with the use of force by individual countries to pursue their national objectives.

On the other hand, it is true that these ultimate problems do not become serious until we are far down the disarmament path; in particular, until armament levels become very low and the smallest countries become involved. Until then national armies will probably remain sufficient to protect the interests of each nation and to deter potential agressors. Thus it seems to me that one can take very significant steps down the disarmament path without tripping over the little-understood and sharply divisive issue of peace-keeping machinery.

A third problem which adds to the difficulties of negotiating a treaty for general and complete disarmament is the commonly felt need to involve representatives of large numbers of nations in the discussions. Disarmament negotiations between as few as three nations can be difficult, as witness the problem of the test ban treaty. Negotiations at Geneva on general and complete disarmament already involve 17 nations, and there are occasional vigorous comments that other nations, not now represented

at Geneva, should be involved. The implication of these remarks is that if one can devise substantial disarmament arrangements which may be finally negotiated and entered into by only a restricted group of nations, then the negotiation for them may be considerably eased.

Each of these considerations suggests that the way to get total disarmament may not be, as we are doing at present, to sit down at a negotiating table and attempt to negotiate the whole disarmament package from start to finish. Rather, it would appear that, paradoxically, the fastest way to get general and complete disarmament is to keep the ultimate goal firmly in mind but concentrate making a beginning in the disarmament process. Even though this beginning itself will doubtless have many pitfalls, yet success would involve such great benefits that the achievement of such an agreement would represent a major milestone in human history. If I may use an example which is familiar in many branches of science, what we have here is a barrier phenomenon in which the first disarmament step is the greatest barrier. If we can get through that barrier, it is my feeling that we will find movement down the road toward general and complete disarmament very much easier.

What would such initial disarmament steps look like? They must be significant enough to have a major effect on the arms race and thus to produce the transformation in political thinking that I have alluded to. They must also be significant enough to warrant a decision to accept the political implications of any such agreement. Finally, they must be limited to an amount of disarmament that would not require the establishment of major new international institutions and that could be satisfactorily inspected with inspection procedures that are acceptable to the relevant countries in the present political environment.

Is it possible to achieve all these in a workable programme? One feature of the military environment today is the increasing invulnerability of the major deterrent weapons of the nuclear powers. According to recent statements by government leaders of the United States and the Soviet Union, each is developing missile launching submarines and hardened intercontinental missiles which greatly reduce the likelihood that one side or the other could successfully carry out a surprise attack. With the emergence of these weapon systems, the ability of one side to retaliate effectively after an attack does not depend sharply on the level of forces of the other side. This suggests that the danger from possible hidden stockpiles, in violation of a disarmament agreement, may be much reduced compared with the situation of a number of years ago. If so, it should be possible to change the inspection requirements correspondingly. It may thus be possible to reduce very substantially the level of the strategic forces of the United States and the Soviet Union and also to halt the further production of these weapons without requiring complicated inspection provisions for the search for suspected clandestine stockpiles or production.

The Soviet Union has recently modified its position on the reduction of nuclear delivery vehicles, and has agreed that each side might keep a limited number of ICBM's during the early stages of the disarmament process. This offers hope that there might be a compromise first-stage disarmament programme, such as I am discussing, which both the United States and the Soviet Union would find acceptable.

An important part of any such agreement would probably be a limitation on the production of major armaments. Both the U. S. and Soviet disarmament plans call for production limitations in the first stage. Even major arms reductions would not by themselves remove the danger of nuclear war or eliminate the great loss of life if such a war should occur. But an appropriate limitation on production could halt the growth of weapons stockpiles, could slow down or prevent the production of new and even more destructive weapons, and would demonstrate to the rest of the world that the nuclear powers were genuinely interested in halting the arms race. This would very likely have a marked effect on countries which may even now be considering developing their own nuclear weapons and delivery systems.

The United States and the Soviet Union have each included in their disarmament programmes provisions for observation of the destruction of armaments and for inspection of declared armament production facilities. In addition to these forms of inspection, there are two other tasks of the inspectorate which have been the chief sources of disagreement between the U. S. and the Soviet Union. One has been the task of inspecting for undeclared armaments. The Soviet Union has recently agreed to permit inspection at the site of launching pads which it would retain at the conclusion of an initial disarmament agreement, but has refused to permit inspectors to search for undeclared armaments. However, in the context of a limited agreement, in which each side would retain a significant deterrent, this type of inspection may not be of as much concern as it would be in the context of a programme of general and complete disarmament. Toward the end of the disarmament process there must be some verification of the level of forces which each party retains. However, it is reasonable to hope that significant initial reductions of some of the most important types of weapons can be taken without inspection of remainders.

A second and important role for inspection during the early part of a disarmament programme is that of providing assurance that undeclared armaments production facilities are not still operating or are not opened in new locations. While there does appear to be considerable stability in the present military environment, continued production of armaments has the potentiality of ultimately creating serious strategic imbalances.

Perhaps even more important are the political consequences of a limitation on the production of armaments. If each party to the agreement is to feel that it can safely close down its own production facilities, or at least severely limit its production, there must be some means of providing assurance that other parties to the agreement are doing likewise. In the absence of such assurance, there are bound to be charges of non-compliance on both sides, and without some agreed form of answering these charges, the agreement is very likely to break down.

Inspection to provide assurance against clandestine production does not appear too difficult to manage. If the agreement should, for example, prohibit the production of key components of major armaments such as missile fuel tanks, aircraft fuselages, and tank hulls, then inspection for these easily observed items does not appear overly complex. A reasonable inspection procedure might be simply to provide that inspection teams could randomly visit an agreed number of industrial facilities during each year to check that these items are not being produced in factories supposedly producing other goods.

A significant first disarmament step probably cannot be limited to nuclear delivery systems alone. In several areas of the world nuclear weapons form an integral part of the military establishments because of the need to meet imbalances in conventional arms such as tanks and manpower. If there are to be large reductions of strategic and other nuclear delivery systems, then there may have to be counter-balancing reductions in conventional arms so that there is not any temptation to a potential aggressor in any area where strategic nuclear reductions alone might leave an imbalance.

One then comes to a type of agreement in which one seeks to achieve balance by reducing both strategic armaments and major conventional armaments. This seems to be especially appropriate in the European area where it appears that the Soviet Union has a conventional superiority which the U. S. has sought to match by the character of its strategic force. It seems reasonable that the balanced reductions on the two sides would be to the mutual advantage of both parties. Needless to say, such an agreement would have to be agreeable to and negotiated by all the states concerned. But the number concerned in a European agreement does not appear to be so large as to be unmanageable.

A first-stage agreement of this sort would appear to be of the type which could lead naturally to other, later agreements calling for further reductions in arms, with inspection appropriate to the political

and military environment that would exist at the time. In this case an appropriate approach to inspection would appear to be one in which access to facilities and areas would be graduated in accordance with the inspection requirements posed by the agreement at the time of its implementation. Thus, as disarmament progressed, the inspection discussed earlier could be expanded to include inspection at other types of facilities, such as military bases, using techniques other than inspection by ground inspection teams.

An approach such as that discussed here would clearly be a breakthrough toward control of the arms race and the nuclear threat. It would by no means remove the threat of nuclear destruction. Nor would it remove all the dangers of war by accident, miscalculation, or misunderstanding. It would, however, produce an environment in which the search for more stable forms of international order could more easily be carried on and in which the institutions needed to attain general and complete disarmament could be developed and set into motion. It thus could represent a vital first step toward long term arrangements, including far-reaching disarmament and international peace-keeping arrangements that would provide a stable future for mankind.

PROCEEDINGS OF THE SECOND SESSION

Held at 5.30 p.m. on Friday, 20th September, 1963

Chairman - Academician V. A. Kirillin

1. In the absence of Père Dubarle, Professor Francis Perrin read the paper prepared by the French Pugwash Group on "The Consequences of the Spread of Nuclear Weapons" (p. 79).

Professor Perrin concluded by proposing to the Conference that the best thing scientists could do to stop the spread of nuclear weapons would be to make a clear analysis of the reasons usually put forward to press on small or medium sized nations a nuclear weapons programme. Such an analysis would show up the fallacy of the argument of national security and defence, and of the claim that such a programme is far better than any peaceful development to promote the technical progress of the nation.

2. Professor L. Infeld read his paper "An Atom Free Zone in Central Europe" (p. 85).

3. Professor H. A. Tolhoek gave his paper "Some Thoughts on a Denuclearized Zone in Europe" (p. 89).

4. General Discussion. In the discussion on the above papers the following took part: L. A. Artsimovitch, P. Doty, B. T. Feld, W. Kerr, O. Kofoed-Hansen, F. A. Long, J. Moch, G. Nadjakov, P. Noel-Baker, V. P. Pavlichenko, I. I. Rabi, E. Rabinowitch, N. A. Talensky, A. P. Vinogradov and B. M. Vul.

The following points were made:

(a) The spread of nuclear weapons can occur by means of transfer of such weapons from one country to another, as, for example, in the projected collective ownership of weapons, or in the setting up of nuclear reactors in which plutonium is produced. It was pointed out that some countries always insisted on safeguards being attached against the possibility of diverting fissile materials from such reactors. There has recently been an agreement by the International Atomic Energy Agency about such safeguards both for research and power reactors.

(b) The problem of the spread of nuclear weapons is inter-related with that of aggression, prestige and political pressures. One must create a psychological atmosphere to work against these.

(c) The spread of nuclear weapons cannot be stopped until power politics has stopped. What is really required is a new international thinking based on collective rather than national security.

(d) A treaty on general and complete disarmament is not the only way to stop the spread of nuclear weapons. A very real reduction of nuclear weapons to a minimum deterrent force by the two Great Powers, which would reduce the risk of accidental war, could show that neither power believed any longer in the military possibility of using nuclear weapons. The achievement of this very low level in the first stage of a disarmament treaty would discourage France and China, as well as other nations, from developing an independent nuclear force.

(e) The production of nuclear weapons, far from giving economic and scientific advantages, may in fact prove disastrous to the economy of a nation.

(f) It was suggested that, although France will spend fantastic sums during the next ten years on nuclear weapons, her nuclear weapons potential will still be insignificant compared with that of the U. S. S. R. or the U. S. A. Against this, it was stated that the Great Powers have chiefly the power to overkill, which does not really add to military strength.

(g) The partial nuclear test ban would be important as a measure against the spread of nuclear weapons if it would stop such countries as France and China from testing megaton bombs.

(h) The test ban treaty is splendid but will fall to pieces unless it is soon followed by a disarmament treaty.

(i) It was suggested that it is possible to develop nuclear weapons without testing them, since all tests carried out up to now have been successful. Against this it was pointed out that governments and military authorities would not accept the calculations of scientists without actual tests.

(j) The danger from biological and chemical weapons, which need no testing, must not be overlooked.

(k) The importance of establishing atom-free zones in the Balkans, Africa and in Latin America was stressed by several speakers, although it was pointed out that these countries, as well as many countries in Europe to the North and South of Germany, are in fact atom-free.

The session adjourned at 8. 30 p. m.

R. P. D. Dubarle *

THE CONSEQUENCES OF THE SPREAD OF NUCLEAR WEAPONS

A. Introduction

1. The present situation is dominated by East-West antagonism. The non-aligned nations may help to the victory of one or other side but also compel both to admit that no such victory is possible, for it would mean general annihilation. Therefore, a relative status quo seems to be possible. This does not eliminate in this opposition of forces successes on other levels by means of persuasion (economic or social advances etc.).

2. In the present situation, each of the two great powers considers the "neutral space" as a favourable field for its expansion and has acquired in this field a system of alliances. Non-aligned nations may think that they may get some benefit from this antagonism.

Therefore, three factors seem to favour the tendency for a small nation to get nuclear weapons:

(a) self-protection
(b) political independence within one of the alliances
(c) advantages during negotiations.

The situation of several small countries is such that they are able to start atomic weapons production. There is, therefore, an urgent question of the spread of these weapons.

3. Definitions

We shall use the term independent capability, for the production of new nuclear weapons by new nations or a group of them, and derivative capability, for the acquisition of weapons by transfer from an allied country.

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* on behalf of the French Pugwash Group

(a) Independent capability

More than a dozen nations are scientifically and industrially able, if they wish, to build an atomic bomb. Only one of them, China, strives hard to make it. Others, Sweden and Canada for example, have actually refused. Switzerland has proclaimed her right, by the way of two referendums, to have atomic weapons if necessary.

(b) Derivative capability

It is well known that there are stocks of nuclear weapons on foreign territories. It is very likely that the recipient countries do not control them. However, within a short period of time this may no longer be true.

B. Strategic Consequences of Nuclear Weapons Spreading

1. Independent cabability

The delay involved in the realization of reliable nuclear armaments is always long and depends on various factors:

(a) level of national industries
(b) political background
(c) estimation of the level and of the progress in the future of other, more advanced countries
(d) strategic aims to which such armaments are devoted.

Item (d) is very important but very difficult to analyse. If a country wants to deter one of the two great powers it would have to have its own deterent capability at a low cost.

One other consequence of a small nation possessing atomic weapons is that it may give it a noticeable weight in negotiations, although this weight depends on the circumstances. There are examples in the past of strategic plans in a coalition being influenced by one of the members which was not necessarily the strongest.

2. Derivative Capability

At this stage, in all known instances, the housing of atomic weapons in a foreign country involves restrictions on the free use of it. In principle, it may be assumed that the nation which is giving atomic weapons to a small one, is wise enough to keep a tight control of its use.

However, it must be emphasized that this control may tend to decrease progressively.

It is difficult to say which of the two, independent or derivative capabilities would be the main cause of the spread of atomic weapons. But in the first instance, there is a danger that the small nation concerned may take advantage of the situation, blackmailing those other small countries which do not have the same weapon.

Therefore, it seems safer that in a given bloc of nations, a unique responsibility for the use of the atomic bomb remains with only one country.

C. The Political Consequences

In this respect, independent and derivative capability have two completely different meanings. The first can result from a unilateral decision, while the other must be the result of some agreement.

a. Independent capability

Various conditions may influence the decision about manufacturing nuclear weapons. Against, are the opposition of allies of this nation, internal opinion, international pressure, and geographical impossibility to perform the tests.

Favourable conditions are feelings of insecurity, prestige and pride, and the will to have an important argument in the international negotiations. These may be helped if the international pressure is weak or nonorganized and/or if the internal reaction is absent.

It follows from this, that in the present situation relatively few nations are both technically and politically able to make their own atomic armament. It is widely accepted that, after France, China is the next to fulfil the requirements for this purpose.

1. Political advantages of manufacturing atomic weapons.

If having a strong military power does not necessarily imply a nation's independent behaviour, being without such a force may give the feeling that no independent politics may ever be followed. In fact, the possession of atomic weapons is likely to give the feeling of wide national sovereignty.

2. Independent capability and national feeling.

In this respect, making one's own atomic weapon is a symbol of independence, but it is likely that it is no more than a symbol. It is a factor in reconfirming the national individuality, which may in the near future delay the fusion of small neighbour countries into a united one. It is quite possible that in the near future the relations between France and Germany may be affected, and the French atomic weapon may appear as a counterpart to the military revival of Germany.

3. Consequences on peace organization and disarmament negotiations.

In the meantime during East-West negotiations for disarmament, the equilibrium of strength may be disturbed by new atomic powers. However, this interference may take a very long time to be completely effective, although even at the beginning new atomic countries may contribute to easing the negotiations. But because of the spread of atomic weapons, the danger of a severe conflict is substantially increased.

b. Derivative capability

This question is closely related to the integration of the national defence systems in a wider one. It is linked to some desire of the countries involved to gain some political independence, within the bloc to which they belong. This tendency may well be the origin of political instability and crisis.

D. Economic implications of nuclear armaments.

In 1963, the U. S. A. defence budget is 55×10^9, some 10% of the total national revenue.

For France, the expenses presently expected are rather small, 5.5×10^9 in seven years, but in 1970, it is expected to reach 1.9×10^9 a year and would correspond to 1 to 2% of the total national revenue. However, these figures, are likely to be a considerable underestimate, and it is logical to assume that the total military budget in 1970 will reach 10 to 15% of the national budget, 5 to 6% of which will be devoted to nuclear weapons. It must be emphasized that conventional weapons are very expensive, and it is quite true that nuclear weapons are no more expensive than conventional ones. The economic aspect is extremely complicated to analyse, since in relation to the manufacture of these nuclear armaments several industries may gain some technical advantages. Among many questions,

one may ask what technological improvement may be achieved which may not otherwise be obtained. Is it possible to formulate an economic policy which may yield the same improvements? At the moment no clear answer may be made. On the other hand, it may be said that from the standpoint of fundamental science very little is to be expected from an increasing armament industry. On the contrary, the manufacturing requirements involved in the building of a nuclear bomb compete, for people and means, with other research activities.

The last question which may be discussed is whether or not, conversion of armaments projects to the other fields of national economy would improve it and to what extent. It may be estimated that if 10% of the budget is originally devoted to armament, such a conversion would not allow more than 3 to 4% to be available for this goal.

L. Infeld

AN ATOM-FREE ZONE IN CENTRAL EUROPE

The subject of my talk is closely connected with disarmament although it is less technical and more in the diplomatic field. In this field progress has been achieved by the partial test ban. We all hope that the Moscow Treaty will become a turning point for international relations. Indeed these were the very thoughts the general secretary of the U. N., U Thant expressed in his Moscow speech after the signing of the agreement on, at least, partial suspension of test explosions. He enumerated there some further steps that must be taken to insure a lasting peace, and among them U Thant mentioned atom-free zones.

The idea of atom-free zones has had a remarkable career since its first formulation by the Polish Minister of foreign affairs Adam Rapacki on the second of October 1957 at a session of the United Nations. His statement reads in part:

> "... should the two German states express their consent to impose a ban on the production of atomic weapons in their territories the Polish People's Republic is prepared simultaneously to impose a similar ban on her territory".

This statement was made when John Foster Dulles was still the U. S. Secretary of State and his prevailing policy was one from a position of strength. Great changes have since occurred. Diplomacy from a position of strength is, I hope, dead and buried. We have at least the beginning of an agreement on some vital issues between the United States and the Soviet Union and I feel that the Pugwash Movement has achieved something of even greater importance. This is that statesmen now realize that nuclear war would mean the end of life on our planet. This simple truth about the horror of a nuclear war is finally penetrating the brains of most of the politicians on both sides, though, I am afraid still not all politicians.

Thus, almost all States would like to be situated in an atom-free zone. There is now talk about atom-free zones in the Near and Far East, in the Pacific, in the Balkans, in Latin America, in the Mediterranean, in Northern Europe, and the whole of Africa. In the end we may have our planet covered with atom-free zones, ensuring peace on our earth.

However, this is the distant future. Let us now think about the most important things facing us today. I believe that not only for Europe, but for our entire planet the biggest danger lies in Central Europe. It is the same danger that hung over our world in the last century. In 1870, in 1914, in 1939, the three last great wars were started by the same country in Central Europe. It is high time to learn from experience and prevent tension from growing in this area.

I would like to enumerate the chief reasons, which, in my opinion, are the cause for this tension.

I would put in the first place the consequences of the NATO policy of rearming West Germany. It is again the strongest military power in Europe except for the Soviet Union. Instead of having a calming influence on the German militarists the policy of the Western Powers has been influenced by them. Germany, as its chancellor Adenauer expressed it in his audience with the Pope, considers itself the defender of Christianity.

In the second place I would mention West Germany's policy of ignoring the existence of the German Democratic Republic and behaving as though West Berlin were a part of West Germany. It is almost 20 years since Germany lost the war that it started. It would seem that it is late enough to face realities and prepare a lasting peace with both Germanys.

As the third reason for existing tension in Central Europe I would like to mention West Germany's refusal to recognize its eastern frontier. Let me here mention my personal experience on this particular aspect. As many of you undoubtedly remember, in 1958 there was an international meeting in Geneva, sponsored by the U. N. and devoted to peaceful uses of atomic energy. There was also an exhibition connected with this meeting. In the part of the exhibition where West German graphs and apparatus were shown I saw a large map of Germany today, with a great part of Poland and a small part of the Soviet Union included in its borders, as they were before 1939. This exhibition of aggressiveness seemed to me especially strange at a conference devoted to peace and scientific collaboration between all the nations. As the head of the Polish delegation I protested officially to the chairman, Professor Perrin, who caused this map to be removed. There is no doubt in the minds of Poles that the idea of changing Polish frontiers is kept alive by government propaganda in West Germany.

Perhaps one may argue that the Poles themselves are not entirely blameless in causing some of this tension. That they cannot forget their six millions killed, their towns devastated, that they were treated for six years as slaves and the monuments of their culture brutally destroyed. Yes, there is some truth in the statement that we have not forgotten the years 1939-1945. Indeed, we would be inhuman if we did.

Yet now comes the time in which this tension could be eased. It is here that the Rapacki plan comes in. It would not solve the problem completely but it would be the first and most important step towards easing the tension between West Germany and its Eastern neighbours. If both Germanys, Poland and Czechoslovakia formed an atom-free zone, an atomic war could not start in this region. The revenge-seekers in West Germany would lose their weapons. According to the Rapacki plan the next step would be the reduction of conventional weapons.

West Germany has been trying relentlessly to obtain atomic weapons on their territory at the command of the Bundeswehr. It would be a great calamity if this were to happen. At present, while the Bundeswehr has no atomic weapons, the creation of an atom-free zone only means to freeze the situation as it is. It would not upset the existing balance of power but it would justly prevent a change in it. The only argument against the Rapacki plan that has some shadow of justification is that West Germany is industrially stronger than the rest of the countries proposed in this plan. But this argument is at least partially countered by the somewhat greater population and much greater area of the socialist countries. However, such an argument has never been used. Indeed it could be used only for including in this atom-free zone some other country or countries.

But what arguments have been used against this plan? Let us quote some excerpts from a speech delivered in the Bundestag in 1958 by von Brentano:

> "Neither can the proposals presented by the Polish Minister of Foreign Affairs, Rapacki, release us from our duty to take a decision. These proposals aim at the introduction of a ban on the production and stockpiling of nuclear weapons in Poland, Czechoslovakia, the German Federal Republic and the Soviet occupation zone. In the opinion of the Federal Government, this sort of isolated move would not diminish world tension and would not increase the chances of genuine, broadly designed and controlled disarmament. Quite to the contrary".

The argument continues in the same vein. We see here firstly from the reference to the German Democratic Republic as a Soviet occupied zone the inability to face facts. Secondly, there is the statement that an atom-free zone would increase tension. What kind of twisted logic is this? If one important peaceful step would create more tension, one could argue equally well that disarmament will lead to war.

But on the issue of this atom-free zone there are also quite different voices. Let us listen to Bertrand Russell who, answering a Radio Poll from Warsaw in 1961, quoted a passage from his book "Has Man a Future?":

> "From the point of view of world peace, this is a wholly admirable suggestion, and it is much to be wished that the Western Powers would take it up. It is vehemently opposed by Adenauer, who wants a strong military Germany. Nobody in the West seems to have noticed that the Rapacki Plan involves the disarmament of several Communist Powers, which would be an adequate counter-poise to the disarmament of Western Germany. The reliance on Western Germany by the Western Powers has dangerous aspects which are carefully ignored. German troops are still commanded by generals, many of whom are ex-Nazis. German revival under Hitler might well be a precedent. It is surprising that what we all felt in 1940 can be so quickly forgotten."

Statements in favour of the Rapacki plan include an increasing number from the neutralist and capitalist world. I would like to mention only Nehru from India and Harold Wilson, the leader of the Labour Party in Great Britain.

I have talked only about the Rapacki plan because this plan is of great interest to Poland which wishes to secure peace on its Western frontiers. If an accident occurs there it may inflame the whole world. It is this danger which must be avoided by all means. And it is the atom-free zone in Central Europe which we hope will avoid it.

H. A. Tolhoek

SOME THOUGHTS ON A DENUCLEARIZED ZONE IN EUROPE

1. Introduction

In this paper I want to give some personal views concerning the problem of a denuclearized zone in Europe. As this paper was prepared before the results of the various study groups, which were set up at the meeting of European Pugwash Groups in Geneva (March 1963) were known, many points should be taken as somewhat tentative suggestions.

Further, I shall refer to the paper "General Principles for a Zone of Disarmament in Europe" written in collaboration with Prof. K. D. Lapter[1)], as a general introduction to the subject. I repeat here the basic starting points, which were enumerated in that paper:

A. A full-scale nuclear war would be a world-wide catastrophe of unprecedented magnitude.

B. General disarmament with adequate control is ultimately the only way to avert the danger of the nuclear arms race.

C. Limited steps towards disarmament can be useful for attaining the final goal of general disarmament.

D. The proposals for a zone of disarmament should not present a military advantage to either side.

E. Existing frontiers of present states should be stabilized.

It is not self-evident that a detailed proposal for a denuclearized zone in Europe satisfying these basic points can be worked out. However, an extensive series of discussions in the Study Group set up by the Netherlands Pugwash Group on the "Extent of a denuclearized zone in Europe" (see p.201) has led me to the conviction that proposals for a denuclearized zone in Europe exist, which should be acceptable to both East and West, and which are worked out by rational thinking, based on those starting points common to all people of good will.

Discussions on various proposals for denuclearized zones (or zones of disengagement) in Europe have been carried on since 1957 (Eden's proposals date even from 1955). Hence the following major problem is posed:

If a reasonable proposal for a step towards disarmament is shown to exist, why then can politicians not reach an agreement on a treaty embodying the proposal?

In this paper we want to give some thought to this problem, which should be understood, as said before, as tentative.

The situation concerning a denuclearized zone seems analogous to the negotiations on the "nuclear test-ban agreement" which have been carried on since 1958 without reaching a final agreement. *

2. Relation of the problem of denuclearized zones to the problem of general disarmament a model for a possible road to disarmament.

It is evident that a state of disarmament and secure peace would have been reached long ago, if there were no major obstacles. These obstacles consist of the "distrust between peoples", the "inertia in the thinking of man", and the "slowness of existing institutions".

We think the major barriers to disarmament can indeed be indicated in this way; however, much further analysis of these problems is required in order to recognize the real forces in this field. These problems belong, on the one hand, to the fields of sociology and social psychology, but they deal with the impact of science and technology on society. It seems that mathematical models may be useful for a more complete understanding in this field, and therefore the participation of natural scientists will be useful.

I should like to put forward some suggestions how one may try to describe the distrust in international relations etc. The most simplified picture of the existing situation concerning the arms race consists of a simple feed-back system (Fig. 1).

Of course, the actual system, even if it might have basically this character, would be far more complicated. Many local situations could be represented by feed-back systems, but in the present state of international relations all systems will be coupled to a larger or smaller degree (Fig. 2).

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* This paper was written before the Moscow Treaty (Ed.).

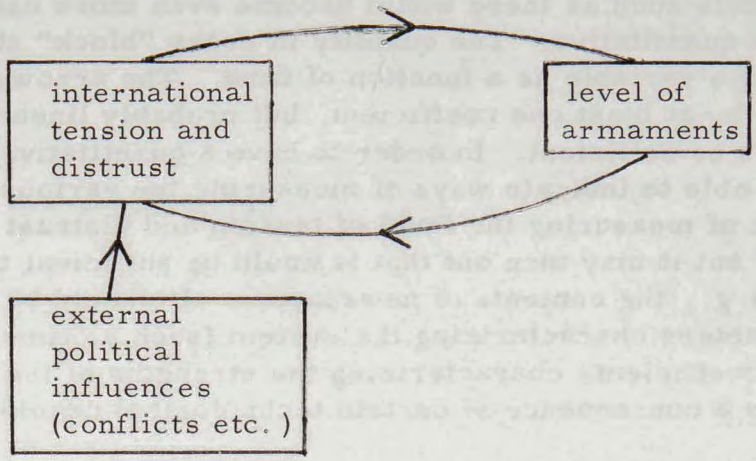

Fig. 1 Simple block-diagram of a feed-back system for the armaments race. Cause and effect are represented by the arrows. Level of armaments and mutual distrust are both cause and effect. However, one may also have "external political conflicts", fed in from the outside into the system. The system may act then as a feed-back amplifier.

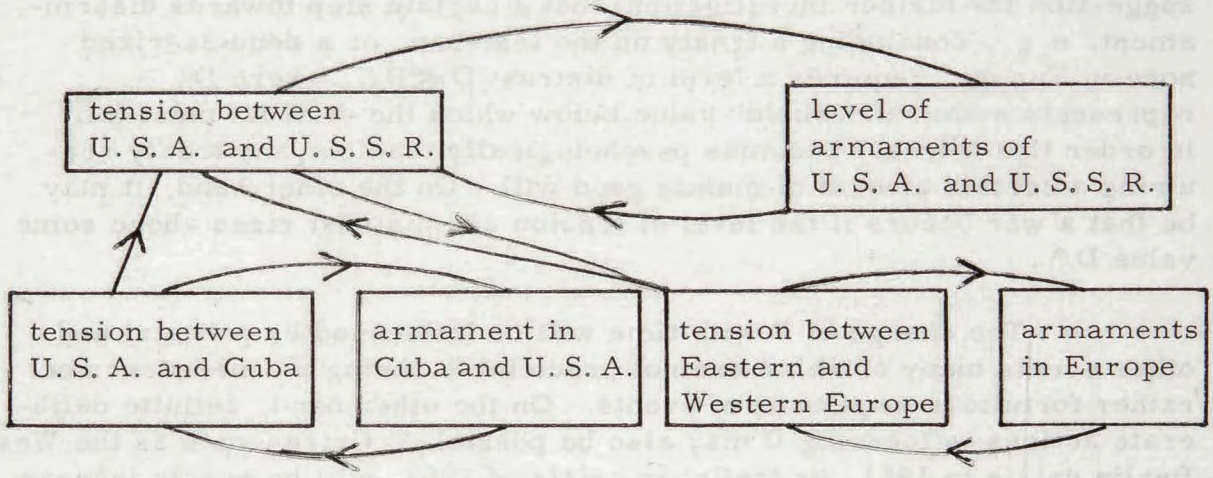

Fig. 2. Block-diagram of a somewhat more detailed model for international relations and armaments. Several feed-back systems are coupled. Naturally, some arrows may represent only weak influences.

Models such as these would become even more useful if they could be made quantitative. The quantity in every "block" should be represented by a variable as a function of time. The arrows should be characterized by at least one coefficient, but probably linear relationships will not always be sufficient. In order to have a quantitative discussion one should be able to indicate ways of measuring the various quantities. One may think of measuring the level of tension and distrust by means of opinion polls, but it may turn out that it would be sufficient to make analyses of, e. g. , the contents of newspapers. It should be realized that the parameters characterizing the system (such as time constants, delay times, coefficients characterizing the strengths of the feedback) may change as a consequence of certain technological developments.

Feed-back systems may be stable or not, depending on the values of the parameters characterizing the system. It seems that at present the system of the international situation is not really unstable (at least does not show a fast exponential run away) although positive feed-back probably causes appreciable feed-back amplification. But, it should be stressed that a relatively small change of the parameters of the system, due to a technological change, might cause the system to become unstable.

Let us now represent the level of distrust by the variable D(t), as a function of the time t. Now it can be imagined (this is just a suggestion for further investigation) that a certain step towards disarmament, e. g. , concluding a treaty on the test-ban, or a denuclearized zone in Europe, requires a level of distrust $D < D_o$, where D_o represents some "threshold" value below which the distrust must fall in order that a treaty becomes psychologically feasible, any treaty requiring a certain amount of mutual good will. On the other hand, it may be that a war occurs if the level of tension and distrust rises above some value D^*.

The change of D with time will be influenced by political and other events many of which are not predictable, being a consequence of rather fortuitous sequences of events. On the other hand, definite deliberate actions influencing D may also be possible. Crises such as the West-Berlin crisis in 1961, or theCuban crisis of 1962, will be events increasing D. An appeal by a recognized authority may be an impulse, even if small, decreasing D (e. g. the publication of the encyclical "Pacem in Terris" by the Pope, April 1963). The conclusion of a treaty on a test-ban would certainly be an event decreasing D, which might then in turn enable the conclusion of a treaty having a lower threshold value of D (requiring somewhat more mutual confidence). It may thus be that the change of D with time could be represented as in Fig. 3.

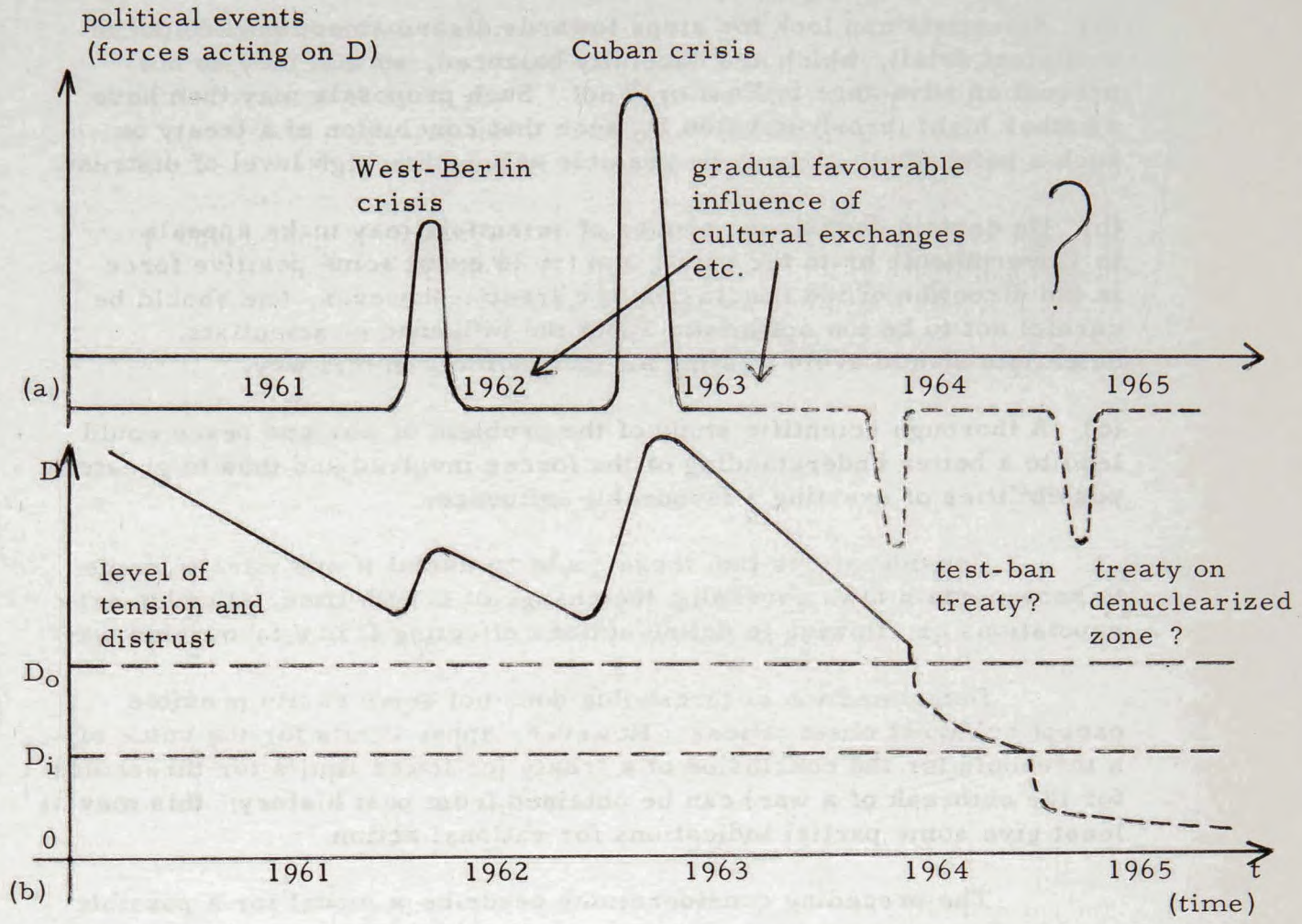

Fig. 3. Tentative picture of the change of the distrust level D with time t. The value of D is unfavourably influenced by "political crises" but favourably by substantial agreements. D tends to decrease in periods of absence of acute conflicts. This may be a consequence of a favourable influence of artistic, scientific and other contacts between East and West. The test-ban agreement requires a threshold $D < D_o$; the agreement on a denuclearized zone $D < D_i$.

Of course all this is highly tentative. But it may be worth while to work out things in this spirit in more detail and to try to establish the required measuring procedures.

One may now ask how scientists could play a useful role in this picture. I think they could have a useful influence in the following ways:

(a) Scientists can look for steps towards disarmament worked out in sufficient detail, which are carefully balanced, so that they do not present an advantage to East or West. Such proposals may then have a (rather high) threshold value D_o such that conclusion of a treaty on such a point would already be possible at a rather high level of distrust.

(b) On certain occasions, groups of scientists may make appeals to Governments or to the public and try to exert some positive force in the direction of the conclusion of a treaty; however, one should be careful not to be too optimistic about the influence of scientists. Scientists should avoid wasting all their efforts in this way.

(c) A thorough scientific study of the problem of war and peace could lead to a better understanding of the forces involved and thus to greater possibilities of exerting a favourable influence.

Considerations like these could be useful if one were to come to know certain laws governing the change of D with time, allowing extrapolations or allowing to define actions effecting D in a favourable way.

Determination of thresholds does not seem easily possible except by direct observations. However, upper limits for the value of a threshold for the conclusion of a treaty (or lower limits for thresholds for the outbreak of a war) can be obtained from past history; this may at least give some partial indications for rational action.

The preceding considerations describe a model for a possible road to disarmament by means of gradual steps, taking into account the interaction of the conclusion of treaties, the distrust in the opinion of the public and politicians, and the influence of political conflicts. Reasonable initial steps towards disarmament are according to my opinion:

(a) a test-ban agreement,

(b) treaties on denuclearized zones in

1. Africa
2. South-America
3. The Scandinavian countries
4. Central Europe

Perhaps the "distrust thresholds" become lower in this order (in other words the later steps may require more mutual trust than the first ones). Anyhow one should try to perform the steps with the most favourable thresholds first.

In our attempt to make some things more precise, we have admittedly used a very crude model. We have, for example, considered just one distrust variable D (t), while one should of course introduce a separate distrust variable for every feed-back cycle in the model of Fig. 2.

I think it would be of major importance if one could start to develop a kind of "dynamics" of the social psychological situation, trying to establish laws for the change with time of attitudes of different social groups, and the correlation of such attitudes with certain actions. One should not be content with simply registering here and there results of opinion polls etc.

In the next section we shall deal with other aspects of the situation not considered up to now. (Cf. G. Burkhardt[2] and M. Howard[3] for discussions of some problems relevant to this section as well as to the next).

3. Obstacles to obtaining a denuclearized zone in Central Europe

I should now like to consider other aspects of the obstacles, mentioned in general terms at the beginning of Section 2. Somewhat more precisely it may be said that "social thinking" has an enormous "lag" in comparison with the "technical-scientific development". This seems to be a fundamental fact, which shows itself in many aspects.

It seems to be caused by a "social inertia", a "persistence of existing institutions", which shows itself in many different ways:

1. persistence of nationalistic feelings, when feelings of loyalty towards greater communities are becoming a necessity;

2. persistence of the military organizations (either the army itself or armaments industry), which may have a tendency to justify their existence by pointing to a necessity of the arms race even when disarmament seems preferable on the basis of reasonable thinking.

These examples could be multiplied easily.

It should be stressed in this context that much thinking on social issues and in politics is not really rational and scientific, but is just a (partially or entirely) rationalized form of interests or emotions. It may be that economic interests of smaller or larger groups are the driving force;

it may also be that traditional cultural patterns of peoples provide the basis for seemingly rational thinking or even philosophies; these must be regarded with utmost scepticism from a scientific point of view.

The psychological behaviour of people in the cold war has many neurotic symptoms. E. Fromm[4] (p. 27) describes the "doublethink", holding contradictory beliefs at the same time as a prevalent attitude in this context.

The points A. . . . E mentioned in Section 1 are, according to the opinions expressed in the paper by Lapter and myself, the issues of the highest priority, prevailing over other issues, which may still be very important, in international relations as a consequence of the technical development of nuclear weapons.

Let us now consider the priority list of West-German foreign policy. (We quote from H. Schmidt[5] - p. 189)

1. Re-establishing the sovereignty of the state and freedom of action for the foreign policy.

2. Securing the German Federal Republic against the danger of a communist invasion as well as against the danger of a communist revolution furthered by outside forces.

3. Re-establishing the unity of Germany.

4. Political and economic integration of Western-Europe.

5. Securing World Peace by general disarmament under adequate inspection.

As a comment Schmidt notices that in practice point 4 has had priority over point 3 in West-German foreign policy.

As a first comment I should like to point out that the lowest priority in this list is for General Disarmament. In this respect the West-German foreign policy is certainly no exception: the same could be said for example of the foreign policy of my own government (the Netherlands).

The low priority for general disarmament is, in my opinion, an alarmingly striking example of the terrible lag in social thinking (of the politicians involved here) compared with the technical-scientific development of nuclear weapons.

The whole social psychological situation with respect to West-Germany is exceedingly crucial in regard to the possible realization of a denuclearized zone in Central Europe (Cf. also E. Fromm[4] Ch. 6 p. 165 for an analysis of the German problem).

In this respect, the following attitudes are of primary importance:

1. The fears of those Eastern European peoples, who suffered from the atrocities of the Nazi-German occupation in the Second World War, which left a traumatic experience for these peoples; they are apt to fear a revival of German aggressive tendencies at the slightest indication.

2. The German defeat and occupation was a period of hardship for many Germans, especially those who had to move from their former dwelling-places. Many Germans are more inclined to reproach foreign countries for these hardships than the enormous historic errors of Hitler; this seems to be caused to a certain extent by the traditionally strong nationalistic feelings in Germany.

These historic events provide an explanation for a kind of "doublethink" which is rather striking in West-German policy: the following clearly contradictory aims are said to be pursued: (Cf. points 3 and 4 of the priority list).

1. Integration into the Western World and rearmament.

2. Reunification of Germany without a war. However, some West-German circles are not very explicit in stating how great a risk of war they would be willing to accept in order to reach German reunification. It may not be superfluous to point out to certain circles in West-Germany, who ask for nuclear weapons for the "Bundeswehr", or who cannot be said to be modest in claiming areas lost to Germany (Sudetenland etc.), that the effect of their statements on their Western Alliance may be quite the opposite to their aim. Although governments of the allies of West-Germany will mostly not openly contradict West-German foreign policy, many private individuals in Western Europe think (or even say) that the continuation of the division of Germany may be the best solution, particularly when they notice certain German attempts to re-establish a strong army with nuclear weapons in combination with strong claims on lost areas; the division of Germany at least means a certain limitation of German influence.

The clear contradiction of the "doublethink" of stating simultaneously 1. and 2. is sometimes expressed by saying that the statements on German reunification are "Sunday-sermons" expressing noble wishes, but which will not be followed by action. Anyhow, this "doublethink" causes a considerable "immobilism" in West-German foreign policy and keeps action towards General Disarmament on an alarmingly low place on the priority list.

On the other hand, Eastern-European countries often show great fear that some West-German aggression could develop. In order to show that such fears are unjustified it would not be sufficient to show that these fears are unjustified at present. It would also be necessary to show that such fears will remain unjustified in the future (for history has shown several revivals of German aggressiveness in the past). It is asking rather too much of social science to provide such a prognosis with a high degree of reliability.

These few indications of the psychological tensions and distrust existing between the peoples of Central Europe demonstrate the substantial obstacles to be overcome when reaching a treaty on a denuclearized zone in Central Europe as well as the desirability for obtaining such a treaty.

It would probably be very useful to have extensive opinion polls both in West-Germany and in Eastern Europe for investigating:

a. possible aggressiveness of different circles (general public, politicians, military men, etc.) in West-Germany.

b. the fears of such aggressiveness in Eastern-Europe.

c. other symptoms of mutual tensions between these countries and the image which the peoples form of each other.

Such opinion polls could provide an objective basis for finding whether the pictures which the peoples have of each other are perhaps distorted, and whether existing fears are justified.

When repeated at certain time-intervals, it may be possible to make certain extrapolations to the future for finding a suitable time for a treaty on a denuclearized zone or further steps towards disarmament. If clearly unjustified fears were observed, it might be possible to find ways to overcome them, thus reducing mutual distrust, perhaps to a level which would facilitate further steps towards disarmament.

4. Concluding remarks

I have attempted to indicate how to tackle some problems which go beyond the finding of "rational well-balanced steps towards disarmament". It is my conviction that scientists in the Pugwash Movement are obliged to try to analyse also the "irrational" behaviour of man in a thorough and scientific and, if possible, quantitative way. It is true that this poses difficult problems for a movement consisting mainly of natural scientists. However, the negotiations on the test-ban treaty provide a sad record of difficulties on a political level. One should try to attempt to obtain a deeper understanding of social mechanisms in order to achieve substantial steps in the direction of a stable world without war. Of course, this is not an appeal for delaying disarmament by time-consuming investigations, but a suggestion how one could try to overcome the frustrations of the disarmament negotiations of the past years.

References:

1. H. A. Tolhoek and K. D. Lapter, "General Principles for a Zone of Disarmament in Europe", Pugwash Newsletter, July 1963. Vol. 1. p. 10
2. G. Burkhardt, Proc. 8th. Pugwash Conference, Sept. 1961. p. 45
3. M. Howard, Proc. 8th Pugwash Conference, Sept. 1961. p. 71
4. E. Fromm, "May Man Prevail?", New York, 1961
5. H. Schmidt "Verteidigung oder Vergeltung?" Sweenwald Verlag, Stuttgart 1961.

PROCEEDINGS OF THE THIRD SESSION

Held at 9 a.m. on Monday, 23rd September, 1963

Chairman: Professor B. T. Glass

1. Professor I. Supek presented the paper by himself and Dr. V. Knapp "The role of non-aligned countries in disarmament and world security" (p. 103)

2. Sir John Cockcroft gave his paper "The nuclear test ban" (p. 111).

3. General Discussion

The following took part: L. A. Artsimovitch, J. W. Burton, F. Fisher, V. M. Khvostov, O. M. Kofoed-Hansen, F. A. Long, L. Mates, J. Moch, N. F. Mott, P. J. Noel-Baker, E. Rabinowitch, A. Rich, M. Shulman and L. Szilard.

The following points were made:

(i) On non-alignment:

a) There should be set up in the non-aligned countries Institutes for the study of disarmament and international affairs.

b) There is not enough understanding of the difference between non-alignment and neutrality.

c) Non-alignment is not an accident but a way of finding an alternative system to power politics; it is a component of the continuous social flow and change of humanity.

d) The peace-keeping machinery of the United Nations should be strengthened, and the non-aligned nations should not become a bloc.

(ii) On the test ban:

a) Although the U.S. project Vella, which has a budget of $\$10^8$, would be continued, the U.S. would welcome co-operation in this project with other countries.

b) The study of the peaceful uses of underground explosions should be carried out under international control, and an international commission should be set up for this purpose.

c) The international seismological research project, as suggested by Cockcroft, would be of great value - not only for the technical benefits it would bring but also because of its political and psychological effects.

d) It was suggested that the number of three on-site inspections per year could be agreed to with the proviso that any nation demanding an inspection above that number would have to deposit a sum of about 10^8 which it would forfeit if the demand for the inspection turned out to be unjustified.

4. Proposal from Working Group 5

The following preliminary proposal was put forward by Working Group 5 for future consideration.

> In view of the danger of the spread of nuclear weapons, the three major powers should guarantee that the use of nuclear weapons by any new nation would not be allowed. This guarantee would be reinforced by taking appropriate retaliatory action, including the use of nuclear weapons if necessary, against **any** such nation. This is an attempt not to penalize those nations which voluntarily opt not to have nuclear weapons. It is, therefore, really a statement of deterrence.

The session adjourned at 12.^{35} p. m.

Ivan Supek and Vladimir Knapp

THE ROLE OF NON-ALIGNED COUNTRIES IN DISARMAMENT AND WORLD SECURITY

The deep changes that have occurred in the world during the past 20 years have given rise to great hopes and to even greater fears. Scientific advance and its applications, be they peaceful or otherwise, are transforming the old agglomeration of states into a single world.

However, the new unity we are entering is two sided, expressing the potentiality of using scientific progress for good and for evil.

On the one hand, the development and wide use of a variety of new means of transport and communication is turning into reality the old and cherished vision of universal humanism, by blending the best achievements of many cultures of past and present into a new world culture. On the other hand, under the dark shadows of global thermonuclear delivery systems, under the threat of total destruction by terrible new weapons, the world is united in fear and in a desire to survive.

If the great empires of the past were thought of as units, this is far more true of modern civilization, irrespective of national boundaries.

Yet, though increasingly united through the advancement of science and technology, politically the world is deeply divided.

It is an unfortunate and notorious truth that our political development lags sadly behind the development of science and technology. To many it might appear that this new unity has come prematurely and that the rate of scientific advance is beyond our political and social adaptability.

The continuation of outdated national, ideological and racial disputes is endangering the very existence of the world with its highly developed technology. If we want to survive in the new world, and survive we must, we must understand and act upon the understanding that in the world of today true national interests are best served by serving the interests of the world community, which is becoming a reality whether we like it or not. The course of history cannot be stopped, and we must look

to the future and leave behind the dead-weights of 19th-century notions of power politics and zones of influence before they pull us to the bottom of an abyss from which there is no return. We have the right and obligation to look into the future with optimism. Politically, far reaching changes are taking place slowly but continuously; sometimes we are too near to observe them. We realize today that peace is indivisible and we are beginning to realize that the same applies to prosperity. All burning problems of today are world problems. A man of today is gradually developing into the world citizen. Whilst for many centuries universal humanism was cultivated and practiced in science and in the arts, today it is becoming necessary to extend this to economics, trade and all other activities in which the interests of the world community meet and intermingle. However, though we may see where we are going, we live in a period of transition, and while the new ideas are penetrating into a more general awareness and acceptance, the inertia of the old ways and notions is still very strong and much of the old contradictions still exist. These conflicts, numerous and varied, must be resolved without causing a nuclear war in the process. It would be wishful thinking to assume that a nuclear war, whether deliberate through misunderstanding or by accident, could be avoided if nuclear weapons were possessed by an increasing number of countries, large and small. Consequently, the most important problem of our time is to remove this danger by general disarmament and by building a new system of security appropriate to the new conditions.

After the Soviet-American Geneva Agreement (1962) on the necessity and possibility of a general and complete disarmament it is hardly necessary to go on adding further arguments in its favour. We must concentrate instead on recognizing and analysing the obstacles which stand in the way to disarmament, and on giving proposals conducive to their removal.

As we know only too well, many years of negotiations have produced only meagre results. Yet, never in the history of the world has an agreement been such a necessity, a condition "sine qua non" of further existence. We must, therefore, mobilize and explore all the possibilities of speeding up this slow and arduous journey towards the goal of a safe world. In this battle against time, every contribution taking us only a little nearer is very welcome, thus the widest possible participation in the fight for peace and security is desirable and needed.

In this respect one of the promising developments in the last years has been the growing strength and influence of non-aligned countries in the United Nations and in the Geneva disarmament talks. Gradually

these countries are moving into a position from which they should be able to undertake a decisive initiative. A new position favourable for such an action lies firstly in their independence of the big powers, which qualifies them for mediation and for actions acceptable to both sides, and secondly in the new balance of power in the General Assembly. The non-aligned countries are becoming an increasingly important factor in the United Nations, capable of transforming it into an efficient instrument of general disarmament, and guaranteeing its true universality.

The importance of non-alignment has grown naturally with the acceptance of peaceful co-existence as the only possible way of securing world peace. An important step forward was taken through the Soviet-American agreement on the principles for disarmament negotiations of September 1962, and by the inclusion of non-aligned countries in the disarmament talks. The importance of non-alignment becomes clear by even a brief survey of the past disarmament negotiations which shows that the fundamental difficulties are not technical, of control, of staging details, inspection and quotas, but of mutual distrust and fear, together with some other dark undercurrents which feed on the division of the world. Disarmament can clearly be only a voluntary act of two opposing sides. Thus, the non-aligned countries must take all measures that can reduce mistrust and fear, and help to create an atmosphere of good will necessary for progress in disarmament.

This understanding was the guidance to non-aligned countries in the Committee of 18 in their efforts to bring to an end the arms race and to help to start a realistic discussion on the complex problem of disarmament. The effort was made to bridge the gap between the big powers, especially on the subject of nuclear tests (Memorandum of 8 April 1962). Consequently, their role was not to be found primarily in proposing plans and formulae for the solution of problems, but rather in reducing and bridging the division of the world, in finding common denominators in negotiations, in a realistic approach to the disarmament problem and in exerting a pressure on great powers in this direction. Such an approach of non-aligned countries, had a very important effect of contributing to the efficiency of negotiations and to the removal of propagandistic attitudes in discussions of particular disarmament aspects, thereby clearly showing the need and usefulness of their presence in the negotiating bodies.

Starting from the basic principles of the foreign policy of non-aligned countries, from their progressive influence, particularly in disarmament talks, from the understanding that a guarantee of independence and security, especially for newly emerging nations, cannot lie in nuclear arms, but in the strong organization of United Nations, and that the problem

of disarmament cannot be solved as long as the arms race between the big powers continues, the action of non-aligned countries and generally of all forces interested in peace and security should be concentrated on:

a) Constructive and impartial pressure on the big powers, to accept effectively, and not only as a proclamation, the method of negotiations as the only method to solve the disarmament problem and other open international disputes. In doing this the non-aligned countries should link and concentrate their efforts on urging solutions of such questions in which the positions of the big powers are nearest. After the signing of the partial test ban treaty, the non-aligned countries should use the favourable moment to press for the solution of the extremely important problem of the spread of nuclear weapons, which is now entering its critical phase and is requiring most urgent consideration.

b) Continuous efforts to improve the international atmosphere by removing misunderstandings and misconceptions. It is important that the non-aligned countries should not try to keep isolated from the big powers, but rather form links with both of them to help to bridge their division.

We know that not too infrequently the external moves of great powers are in fact distant reflections of some internal tensions, and that occasionally what appears as an aggressive foreign policy move is dictated by internal considerations. Incomprehensible to the other side, such moves have unnecessarily given cause to tensions and to disappointments in the conduct of disarmament talks. The halfway position of non-aligned countries gives them a better chance of seeing the background and of acting accordingly in the important role of moderator and mediator.

c) Strengthening of the United Nations and its agencies. In the growth of international organization, the United Nations have a central place and function. Although the United Nations may be passing through periods of inefficiencies and imperfections, it would be both utopistic and contrary to the historic development to think of a replacement. In spite of the antagonistic attitudes of the big powers, universal principles have been accepted in the General Assembly and in the Security Council. No other body of such width, if one could be now formed at all, could work better in our divided world. The problem lies not in the veto or some other formal objection; these are only the symptoms of the trouble lying in the mistrust and fear that would paralyse any similar organization, no matter what its charter may be. The efficiency of the United Nations will grow in proportion to the removal of these basic ills. Further bright prospects lie in the new strength of the non-aligned countries in the United Nations,

giving them both a new vigour and a true universality. Further efforts must be made to develop the United Nations specialized agencies into true organs of international co-operation. Strengthening of international co-operation in economics, transport, health, science and art is helping to break the regional and bloc division and to form a wider world community. The United Nations are and remain our most important hope and are the core from which the future world community must develop. In this new development non-aligned countries have a duty and a right to play an important part.

d) Strengthening of non-aligned countries and of their influence in United Nations. The role and the influence of the non-aligned countries have grown steadily with their number and strength, and with their emancipation from the big powers patronage. Although today their role in the United Nations is an increasingly important one, their potentiality is far greater. To turn this potentiality into reality, into a force for peace, whose influence in the United Nations and on world affairs will be decisive, the revolutionary advance of science and technology, now taking place in the leading powers and moving the world towards unity, must be extended to small and non-aligned countries now starting on their road of economic and political development. Development of science and scientific research is the most important basis of their whole progress. Through their social progress and by building and strengthening the scientific intelligentsia, the non-aligned countries will be able to exert a more effective influence in the creation of the new world of peace. The remains of old autocratic and semifeudal systems, combined with the colonial heritage, prevent some of the underdeveloped and non-aligned countries from taking a more active share in the world progress. The scientists and intelligentsia of these countries, often few in number, are faced with a great task. International co-operation of scientists (Pugwash working groups might consider the forms of this co-operation) can make their task easier and thus make a very desirable contribution to a process of great importance not only for non-aligned countries, but for the world as a whole.

Although the problem of general and complete disarmament is an extremely complex one, there are many ways in which countries other than the big powers, especially the non-aligned countries, can contribute towards its solution. A positive influence towards the solving of many open issues and towards the agreement on the initial steps in disarmament would have a beneficial effect on the political atmosphere and thus create more favourable conditions for subsequent bigger steps. Such limited steps towards which the initiative of non-aligned countries could be directed might be:

a) The establishment of non-nuclear zones and zones of reduced armament both in the regions of direct confrontation of the two blocs and outside it. Such measures would be welcome not only because of the reduction of tension but also because the geographical limitations and reduction of nuclear areas would represent a step towards the solution of the very important problem of the spread of nuclear weapons. Closely connected with the above problem is that of atomic energy in small countries. We believe that a serious study of this problem should be undertaken by Pugwash working groups.

We should look into the ways of reconciling the growing need for atomic energy with the need for security and control over the spread of nuclear arms.

b) Support of proposals of non-aggression treaties, of limitations on the existing military pacts which accentuate and perpetuate the cold war atmosphere, of freezing and gradual reductions of military budgets, are some further lines in the action that can lead us towards the final goal. Non-aligned countries should go on emphasizing that by virtue of their position between the big powers they can naturally provide the basic requirement of impartiality in the arrangements for control and inspection in the initial stage of disarmament, when the greatest difficulty is the distrust between the powers.

It should be made clear that the purpose of the activity of the non-aligned countries, of their active presence in disarmament talks and of their increased awareness of the necessity to take a direct action and to contribute new ideas for the solution of problems standing in the way of disarmament, is not solely to exert pressure on the big powers, or to attempt to force the big powers from the field to which they naturally belong and will play a decisive part in the future as in the past- nor is it in trying to produce the appearances of an agreement without removing the basic causes of world tensions.

The purpose of this activity is to be found in the formation of a wider platform for negotiations, thereby creating a climate for a more constructive approach to disarmament problems and abandonment of narrow positions of bloc interests.

A general and effective acceptance of the principle that in the present state of world affairs, in the presence of weapons capable of global destruction, bloc interests must not be placed in front of the imperative necessity of securing peace, should be the aim of the permanent

action of the non-aligned countries. Such actions also grow from the realization of the complex interdependence and interaction between the disarmament problem and other international problems, which leads to the conclusion that a permament reduction of tension and the creation of conditions in which the political and economic problems of the world, including those affecting the vital interest of recently inter-dependent and under-developed countries can be successfully tackled, is possible only if substantial progress is made on the subject of disarm-ament. Therefore, the most immediate interests of these countries and peoples, command the necessity for a united action in order that the problem of disarmament be approached not from the position of narrow interests of power blocs, but from the much wider interests of the whole humanity.

In the present revolutionary period of history in which science and technology are creating a new unified world, leaving our political development trailing behind, the problem for all of us is to prevent war and secure time for transition from the outdated political division into the new political and social forms adequate to the modern united world.

By making scientific knowledge a general possession, by engaging themselves in turning scientific progress into a general polit-ical and social progress, scientists can shorten the dangerous transition period. The task is a formidable one, but also the most humane ever set to the community of scientists. For scientists this is a great challenge and opportunity to show that science is inseparable from humanity and humanism.

May this Conference provide the proof that scientists are determined to fulfil their duty.

J. D. Cockcroft

THE NUCLEAR TEST BAN

The treaty negotiated in Moscow by the U. S., U. S. S. R. and U. K., providing - by the signatories - for a ban on nuclear tests in the atmosphere, outer space and under water and on any underground explosions which would result in escape of radioactive debris beyond national territories, is a very welcome first step towards removing the dangers of nuclear war which at present hang over the world.

The treaty is important for many reasons. It should reduce international tension and prepare the way for further steps. It should largely stop the development of more and more powerful nuclear super weapons already frightful enough, and discourage the search for more exotic types of nuclear weapons and prevent the exploitation of the anti-missile missile as a reason for further nuclear testing. There have been voices from the lunatic fringe of science opposing the test ban and urging the military to renewed efforts in weapons development, but we must rejoice that the political sense of our leaders has over-ridden these. The achievement of the test ban has a further important effect of reducing and ultimately eliminating the contamination of the atmosphere by radioactive debris thereby removing the undoubted fear felt by tens of millions of people of harmful biological effects.

The adherence of about 100 nations to the treaty shows the world wide approval of the treaty and should help to prevent the spread of nuclear weapons and in that way promote world stability. There may be a few countries who will not sign the treaty but we must hope that in the course of time they will agree to adhere.

A further important advantage will be the release of scientific and technical and economic resources to more important tasks in our economies.

The draft treaty reaffirms the major aim of achieving an agreement on general and complete disarmament and agrees in particular to continue negotiations for the discontinuance of all test explosions. However, since underground explosions cannot contribute speedily or greatly to disturbing the present balance of weapons technology, and since their exploitation will be difficult for new entrants to the nuclear weapons field, the banning of all test explosions may not be the most

urgent next step. Nevertheless, the suspicion that some countries may be achieving a military advantage by such testing might in the future lead to the exercise of the right under Article IV of withdrawing from the treaty thereby undoing the progress so far made.

Scientists should, therefore, continue their research work in aid of reaching an agreement in due course to ban all undergroung explosions. It is, therefore, worthwhile to record the progress which has been made in the last five years towards this objective.

The possibility of detection of distant underground explosions of powers ranging from 1 to 50 kilotons at distances from 2500 km outwards has been greatly improved over the systems proposed at the 1958 Geneva talks by the following methods:

1. the possibility of choosing a quiet seismograph site is greatly increased by choosing a site without any political restrictions and this gives a factor of improvement of signal to noise by 10

2. the use of a large crossed array of 100 seismograph units gives a factor of improvement over the Geneva 10-element array of 3

   Taking account of some advantages gained by correlation techniques the total improvement in signal to noise is of the order of 30-50

With these conditions the signal-to-noise ratio of P-waves does not change greatly from 4000 km to 10, 000 km. It is possible, therefore, to detect earthquakes of magnitude 4 and upwards at distances of up to 10, 000 km, and the U. S. records state (Hearings before J. C. A. E. Congress of the U. S., March 1963, p. 27) that at 10, 000 km 90% of earthquakes giving signals equivalent to 2 KT explosions in tuff can be detected.

The accuracy of location of the events has been stated to be about 10 km or better when the events are recorded by a large number of stations and the area within which an event would lie is defined to 200-300 sq. km, so this would define the search area required in the case of an on site inspection. The difficult problem is to distinguish explosions from earthquakes. It is well known that explosions produce essentially only compressional P-waves, whereas most earthquakes produce both compressional and shear waves, the shear waves usually being some orders

of magnitude larger in amplitude. Because of the conversion of shear waves to compressional waves at geological boundaries within the crust and at the surface, and because of the extension in time and space of earthquakes, the P-wave train entering the mantle following a crustal earthquake is likely to be more extended in time than the corresponding P-wave trains from an explosion. Thirlaway has reported (New Scientist, 9th May 1963) on new techniques developed by the U. K. using a crossed array of seismometers, the linear dimensions of the array being comparable with the longest signal wave length of interest.

If the signals from the components of the two arrays are denoted by A_n and B_n the correlation technique consists of forming the two sums:

$$S_A(t) = \Sigma A_n \phi_n$$

$$S_B(t) = \Sigma A_n \phi_n$$

and then forming

$$F(t) = \int_{o}^{t+3} S_A(t) S_B(t) dt$$

A_n and B_n are amplitudes, and ϕ_n phase factors.

This procedure gives a cleaned up signal.

The tail of this signal extending out for a minute or so is usually much stronger for shallow earthquakes than explosions.

The technique has not however been refined to the stage when earthquakes can always be distinguished from explosions since there have been a few earthquakes which have given signals very similar to explosion signals.

Other criteria which are important for distinguishing earthquakes from explosions are:

1. The depth of focus. Events located at depths greater than 60 km could be classed as earthquakes since it would be unlikely that drilling had taken place to this depth.

2. events located in populated areas could probably be ruled out as explosions.

3. Events in known non-seismic areas would be more likely to be explosions.

U. S. scientists have agreed with their Russian colleagues that on the average there are likely to be 125-250, an average of 170, shallow continental earthquakes larger than magnitude 4 within the Soviet Union each year. These do not include earthquakes deeper than 60 km. The corresponding number in the United States is roughly similar.

Of these 170, U. S. scientists consider that about 75 could not be identified as earthquakes. Russian scientists believe that the number of uncertain events would be smaller. However, 30 of the 75 would probably be excluded by geographical reasons, e. g. being near the boundaries of other countries and 15 would be in remote areas where testing was unlikely. This would leave on U. S. estimates a residual of about 30 "suspicious events" and a lower number of U. S. S. R. estimates. The argument then is that the other side "should have the right to an on site inspection in x% of the residual uncertain cases and x should be high enough to deter testing".

The difference between East and West was whether the number of on site inspections should be 3 or 7. At an informal Pugwash meeting held in London in March 1963 it was agreed that because of the uncertainty of the data both numbers were scientifically reasonable and that the actual number of inspections would have to be decided politically. Further research will no doubt narrow the gap and reduce numbers.

The discrimination possibilities could be improved to some extent by additional data derived from unmanned seismic stations - the so called "black boxes" - proposed by Professor Tamm at the 1962 Pugwash Conference.

The unmanned seismic stations appear to have grown in size since their concept at the 1962 Pugwash. U. S. scientists' evidence to Congress suggests that they would need to have the following possibilities:

1. Unattended operation for 3 months - requiring suitable self-contained power supplies.

2. Timing accuracy of 1/10th per second per month.

3. Three component seismographs built for short period and long period waves.

4. Long duration recording magnetic tape units.

These stations would need to be placed in underground vaults to reduce noise with pillars anchored to hard rock to support the instruments. The unmanned seismic stations would be of most use for identification purposes if they were located in regions of high seismic activity. U. S. scientists have suggested that they could increase identification capability by 15 to 20%.

Further technical possibilities for improving detection capabilities are the placing of seismographs in 3000 metre deep bore holes. This could improve signal-to-noise by factors of 5 to 6 in some areas. Other possibilities include the use of seismographs on the ocean bed. They would be specifically useful on the boundaries of seismic areas. Britain has also a research programme aimed at seeking further criteria for distinguishing earthquakes from explosions.

There are, therefore, definite possibilities of further improvements in detection and identification techniques though we may be approaching the limit of what can be achieved. It would be very advantageous if there were a complete interchange of information on such research and a comparison of identification and calibration techniques. Ideally there should be a tripartite joint research programme with joint operation of one or more arrays in politically insensitive areas, e. g. Alaska and Kamchatka. This would greatly help in successfully preparing the way for the further negotiations envisaged in the treaty which would aim at eliminating all test explosions.

PROCEEDINGS OF THE FOURTH SESSION

Held at 9 a. m. on Wednesday, 25th September, 1963

Chairman: Professor M. G. K. Menon

The session was devoted to receiving the Reports from the five Working Groups.

1. Rules of Procedure

The Secretary-General outlined the rules of procedure concerning the Reports from Working Groups as recommended by the Continuing Committee. The Reports will first be presented to the Conference for acceptance as documents from each of the Working Groups. There will be a discussion on each Report for consideration of changes, additions or deletions. At the next session in the afternoon the Conference will discuss the amended reports from the point of view of their being approved and endorsed by the Conference as a whole.

2. Reports from Working Groups

These were read by the conveners of the Groups as follows:

Working Group 1 - B. H. Flowers
Working Group 2 - I. Malek
Working Group 3 - H. A. Tolhoek
Working Group 4 - J. W. Burton
Working Group 5 - A. Rich

3. General Discussion

The following took part in the discussion on the reports:
L. A. Artsimovitch, A. A. Blagonravov, H. Brown, R. P. D. Dubarle, B. T. Feld, R. Fisher, P. Hess, D. Kanazir, V. M. Khvostov, K. D. Lapter, F. A. Long, H. Marcovich, J. Moch, P. J. Noel-Baker, V. P. Pavlichenko, C. F. Powell, B. T. Price, E. Rabinowitch, J. Rotblat, I. Supek, N. A. Talensky.

4. Points Raised in the Discussion

A number of minor changes in the wording of the reports were accepted by the conveners of the Groups for inclusion in the final texts. Other points raised in the discussion included the following:

Working Group 1: The role of anti-missile missiles was disputed; some speakers maintained that they were purely defensive in character, while

others stressed their danger and the waste of resources in a race to develop and perfect them. It was felt that this topic should be considered in more detail at a future conference.

It was suggested that the International Disarmament Organization, once set up, should be a permanent body and stay beyond disarmament to prevent re-armament.

Working Group 2: It was stressed that in order to prevent the further spread of nuclear weapons immediate steps must be taken to ensure the security of states which forego production of their own nuclear weapons.

It was felt that Appendix 2, which argued that the development of nuclear weapons is not an effective way to increase a country's scientific and industrial strength, should be re-drafted so that it may be suitable for publication.

Working Group 3: Reservations were made about reference in the Report to the routes of access to West Berlin. Several speakers felt that this involves a separate and independent political problem which should be discussed at another conference.

The extent of the denuclearized zone given in the Report as 50-100 kilometres on either side of the border line, was stated to be not sufficient and should be increased to 500-800 kilometres. It was pointed out, however, that the area given in the report applied only to the preliminary stage.

Working Group 4: There was criticism of the use of the phrase "sovereign integrity" in the Report and that there was no reference in it to mutual respect for the United Nations Charter.

The Report was also criticized for not including the specific suggestions on the role of non-aligned nations made by I. Supek in his paper given at the third Plenary Session (p. 103).

Working Group 5: The proposal to set up a joint seismological research programme was welcomed but apprehension was expressed about a monopoly in science if the project were run only by the U. S. A., the U. S. S. R. and the U. K. It was pointed out, however, that these three countries will only start the project and that others would come in later.

There was some discussion whether the specific reference to France and the People's Republic of China in relation to the test ban treaty would have a favourable or an unfavourable effect. It was felt that on the whole it would be better to leave it as it is.

The session adjourned at 12. 40 p. m.

PROCEEDINGS OF THE FIFTH SESSION

Held at 5.15 p.m. on Wednesday, 25th September, 1963

Chairman: Professor C. F. Powell

A. REPORTS FROM WORKING GROUPS

1. Statement from Continuing Committee

The Chairman reported that at the meeting of the Continuing Committee held in the afternoon it was agreed that some of the findings of the Working Groups are of sufficient importance to be made available to the general public. Since no statement from the whole Conference had been contemplated, the Continuing Committee would like to issue a Press Statement from the Committee itself, based on the Reports from the Working Groups. Although the exact wording of the press statement would be the responsibility of the Continuing Committee, the Committee would like to have the approval of the Conference not only to the principle of issuing such a press statement but also for the inclusion of specific items from the Reports.

In accordance with this the Chairman outlined the following procedure for the session:

(a) Presentation of final texts of the Reports from Working Groups, including the changes made as a result of the discussion at the morning session.

(b) Acceptance by the Conference of the final texts of the Working Group Reports.

(c) Approval by the Conference of the Reports and of the sections to be included in the Press Statement from the Continuing Committee.

2. General Discussion

The following took part in the discussion on the proposals by the Continuing Committee and on the acceptance and approval of the Reports from the Working Groups: H. Ahfeldt, L. A. Artsimovitch, A. A. Blagonravov, H. Brown, J. W. Burton, B. T. Feld, R. Fisher, B. H. Flowers, D. A. Glaser, P. Hess, L. Infeld, D. Kanazir, V. M. Khvostov, V. A. Kirillin, K. D. Lapter, F. A. Long, I. Malek, H. Marcovich, L. Mates, M. G. K. Menon, P. J. Noel-Baker, V. P. Pavlichenko, E. Rabinowitch, A. Rich, J. Rotblat, H. Rumpf, M. Shulman, I. Supek, N. A. Talensky, H. A. Tolhoek, A. P. Vinogradov and B. M. Vul.

3. Acceptance of the Reports from Working Groups

i) Working Group 1. After a minor editorial change had been approved by the Group, the Conference accepted the Report nem con. (The final text of the Report is given on p. 19).

ii) Working Group 2. The amended version of Appendix 2 drafted by Professor Glaser met with full approval. A few minor changes in the text of the Report were approved by the Group and the whole Report was accepted by the Conference nem con (p. 24).

iii) Working Group 3. There was considerable discussion on the inclusion of the phrases referring to free access to West Berlin. Some speakers felt strongly that these should be deleted, while others argued in favour of their retention, particularly since the text had been agreed by the Working Group after a detailed discussion. Motions by V. P. Pavlichenko and P. Hess, aiming at deleting these phrases, were put to the Conference but were not carried. Since at this stage the Conference was only considering the acceptance of the Report from the Working Group and not its approval, it was felt that it was not necessary to record the reservations in the Report itself but it was agreed that they should be recorded in the minutes. The report (p. 31) was then put to the Conference for acceptance. This was carried with a few participants abstaining. Professor V. M. Khvostov asked that his reservation be included in the Proceedings as follows:

> "I deem it necessary to make a reservation in respect of an issue touched upon in the Report of Working Group 3, namely, the issue of access to West Berlin which has been considered in the Report.
>
> In my opinion this problem cannot be solved outside the context of a solution of the problem of the status of West Berlin in its entirety. The whole status of West Berlin should be normalized on the basis of a general peaceful settlement, i. e. by peace treaty,
>
> V. M. Khvostov"

iv) Working Group 4. After a discussion on the likely dates when the Report will be sent to governments of non-aligned nations, it was agreed to delete the last paragraph and the amended report was accepted nem con (p. 36).

v) Working Group 5. No objections or further amendments were proposed and the Report was accepted by the Conference nem con (p. 38).

4. Approval of Reports

After a further discussion on those parts of the Working Group Reports which could be approved by the whole Conference, and which could be included in the Press Statement to be prepared by the Continuing Committee, approval was given nem con, to the following:

Working Group 1: The whole Report. The Continuing Committee was asked to take into account reservations expressed by some participants in relation to the first paragraph of Section B.

Working Group 2: The whole Report, except for the Sections headed: (a) Europe, (b) Eastern Asia, (c) The Middle East.

Working Group 3: The resolutions in Section F.

Working Group 4: The whole Report.

Working Group 5: The whole Report except Section G.

5. Press Statement

Some participants felt that all the material of the Working Groups' Reports should be made available for publication in the press release from the Continuing Committee.

A motion was put that "the Continuing Committee be allowed in its discretion to disclose the contents of the Working Group Reports where the ideas merit disclosure, but identifying in each case the status of the material, i. e. whether it has been accepted or approved by the Conference".

This motion was opposed by some participants, including members of the Continuing Committee. It was pointed out that the acceptance of such a motion might detract from the freedom at Pugwash Conferences to discuss "crazy" ideas without fear of their appearing in the press. The Continuing Committee has an obligation in relation to members of the Conference who have come with this in mind and it would not be proper for the Committee to publish any findings of the Conference without specific approval by the whole Conference.

The motion was put to the floor but there was substantial objection to it (9 participants) and the Chairman declared the motion lost. It was agreed to leave to the Continuing Committee the drafting of the press statement, using the material which had been approved by the Conference during this Session.

B. CLOSE OF CONFERENCE

1. Funds for Central Office

The Chairman made an appeal to participants for contributions towards the budget of the Central Office. The lack of funds has prevented the Central Office from carrying out many activities which would have been of benefit to the Pugwash Movement. The Continuing Committee has received a report from a Sub-Committee set up to investigate this problem, and in the light of this wishes to make the following recommendations:

(a) The contributions from the U. S. A. and U. S. S. R. National Groups should be increased to the equivalent of $8,000 per annum each.

(b) All participants in the Dubrovnik Conference, as well as other participants of Pugwash Conferences, are asked to make a personal annual contribution of $25 (those who have paid their own expenses in attending a Conference should have been deemed to have made such a contribution).

(c) An appeal should be made to the National Groups to make annual contributions of $500-1,000, unless they are already contributing more.

(d) "Friends of Pugwash" Organizations should be set up in various countries with membership fees of $15 or more; two-thirds of the income of these organizations should be passed on the Central Office.

(e) There should be a subscription fee for the Newsletter and the Proceedings of the Conferences.

(f) A popular book on Pugwash scientists be published which would include contributions from scientists from a number of countries.

(g) Each National Group should designate a person who would be responsible for approaching firms, rich individuals and foundations for contributions.

2. Tribute to Academician A. V. Topchiev

The Chairman paid tribute to Academician A. V. Topchiev who died on December 27th, 1962. The Chairman spoke about Topchiev's untiring efforts to further the cause of Pugwash, and remarked that Academician Topchiev would have been pleased to see the progress made at this Conference.

The Conference stood in silence in honour of the memory of the late Academician Topchiev.

3. Vote of Thanks to the Yugoslav Pugwash Committee

The Chairman expressed warm thanks on behalf of the Conference to the members of the Yugoslav Pugwash Committee - and in particular to its Chairman, Academician I. Supek - for their generous hospitality and excellent arrangements for the Conference which have undoubtedly contributed to its success.

In his final remarks the Chairman spoke of the immense success of the Conference which has contributed to international relations and which gives us much confidence to go on to further work and still better conferences. He then declared the Eleventh Pugwash Conference on Science and World Affairs closed.

The Session adjourned at 8 p. m.

III. BACKGROUND PAPERS

L. A. Artsimovitch
N. N. Bogolubov
D. A. Glaser
M. Meselson
I. I. Rabi
A. Rich
A. P. Vinogradov
B. M. Vul

A BAN ON ORBITING NUCLEAR WEAPONS

The Nuclear Test Ban Treaty is regarded by all as an important step towards disarmament and the goal of securing us from the threat of nuclear war. The positive effect of the Treaty may be lost if it is not soon followed by further action to slow the tempo of the arms race.

As an important step towards this goal, therefore, we recommend that the heads of government of the United States, the Soviet Union and other states that may choose to join, issue a declaration to the effect that they will refrain from ever placing nuclear weapons orbiting in space.

Such weapons in orbit would constitute a frightful threat to humanity even though they had little or no military value. A declaration such as we suggest would require no prolonged negotiations. It would serve to strengthen a growing belief that the nations of the world are at last proceeding steadily in the direction of nuclear disarmament.

R. Bognar and F. B. Straub *

STAGING OF A DISENGAGEMENT PROGRAMME IN EUROPE

A. Introduction

A first step in a disengagement programme for Central Europe has been proposed by Mr. A. Rapacki, Polish Foreign Minister. The analysis of the reaction to this plan shows that NATO states object to it on the grounds that a denuclearization of a strip of Central Europe may increase instability. We believe that the Rapacki plan is a very good approach to the stabilization of Central Europe. However, the objections should be studied and a solution might be found, although we are in a difficult position of not having heard an alternative proposal from those who oppose the Rapacki plan.

The Pugwash Conference in Cambridge (1962) agreed: "... that denuclearization of Central Europe can and should be carried out in the framework of a more general settlement which would assure that its effect would not upset the now existing balance between the strength of the two main military groups."

The staging plans should start from these points. The Cambridge statement is somewhat ambiguous with regard to the "framework of a more general settlement". Nevertheless, we believe that such a framework is given by the atmosphere of negotiations on general disarmament, and if denuclearization is connected with political stabilization. Moreover, we have the impression that the American and NATO strategy has in the meantime changed its emphasis on medium range missiles. The development of long range missiles creates a new situation in which the denuclearization of a strip of Central Europe does not lead to imbalance.

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* On behalf of the Hungarian Pugwash Group.

B. Underlying Assumptions

The staging programme is based on a number of assumptions, which were discussed and mostly accepted by former Pugwash Conferences. These include:

1. The two German states will continue to exist until the end of the denuclearization and diminution of military forces.

2. The present frontiers, including the eastern frontier of Germany agreed upon in Potsdam, should be recognized by all interested parties.

3. It is not intended to connect the denuclearization plan with the withdrawal of the occupation forces.

4. It has to be recognized that the ideological and social systems prevalent at present will exist after the implementation of the measures of demilitarization.

5. An increase within the zone of international contacts in the scientific and generally cultural fields is necessary.

6. Economic measures should be connected with all phases of the disengagement process with the aim of increasingly restoring normal relations between the countries of the zone.

C. Power interests in Central Europe

We believe that the staging programme should take account of the causes of tension. Dr. Burton expressed the view at the Cambridge Conference that power being the goal of policy, the appearance of nuclear weapons did not change the prospects of war. We believe that in our century of weapon saturation and the possibility of "overkill", the possibility of an allout nuclear war will convince people that power politics is an outdated policy of the last century and pre-Hiroshima age.

History tells us that in Central Europe the power politics of the past Western powers have incited the smaller countries to take part in their struggles, fanning their chauvinistic tendencies and promising them the bounty of their neighbours' territory. For these small countries indeed, the core of the matter was power over neighbouring strips of land, the form of the wars was nationalistic, and the formal causes were the 'restoring' of former frontiers.

We in Central Europe realize by now that any argument about historical frontiers is a meaningless phrase, because any frontier may be drawn according to the 'historic' date chosen, 1939 or 1914, or the second half of the 14th century when the Hungarian empire was at its peak, as our history books tell us.

Our thinking has been changed by the lesson of history. Whereas in the last century, at the time of expanding capitalistic growth in Europe, the power of a state was roughly proportional to the territory which it controlled, the technical and scientific advances of this century have changed the situation. If we take the example of Hungary, a country rather poor in natural resources (oil, energy, ores), we realize that the standard of living is not proportional to the resources we control but rather to the technical and cultural level of the country. We realize that our standard of living is not dependent on whether a strip of land belongs to our country or to our neighbour. It has to be mentioned, to be fair, that the socialist system, its ideological and educational influence did very much to repress the militant nationalism, the past curse of Central Europe. We realize that the best political solution is to foster the national culture, to raise the standard of living within existing frontiers and not to wage war to regain territories.

These factors tend to eliminate the struggle for power taking the form of war against each other, if not incited from outside. There are two such possible influences: one is the influence of German revanchism, and the other is the conflicting interest of the superpowers. Our friends in the Western countries are sometimes irritated by our incessant talk of our fear of Western German power politics. To our mind it is farcical to say that German and Soviet influences can be equated. We believe that our country is politically independent for the first time in centuries. This is borne out by history and by present day cultural economic advances. The period in which our country was a satellite of Germany was characterized by a very slow rise in economic and cultural standards (indeed it led to increased disparity between the developing country and ours), whereas the period of post war years and especially of the last 7 years has resulted in a steep rise in cultural and technical level and living standard, in spite of the difficulties inherent in the change of social structure. Whereas the stand of the German Federal Republic encourages those Hungarians who are discontent with our present regime, because they look again at the German military which might give them "back" territories of our neighbours, the Soviet political influence is for stabilization and for burying forever such ambitions as nonsensical.

Therefore, the power interest of Germany is a factor in the situation, it is an expression of an outdated and dangerous policy. It should be kept under control in the interest of both West and East. That there is a power conflict between East and West, does not prove the point raised by Dr. Burton. The statements made by Mr. Khrushchev and Mr. Kennedy after the Cuban crisis show that the super-powers realize the lesson of "overkill". Removing the possibility in Central Europe of local power-lust still lingering to start a nuclear war, will help to stabilize the situation even at this top level of power conflict.

D. Proposed Staging of Denuclearization and the Decrease of Military Concentration in Central Europe

Summary: 1. Preliminary measures. (These should take about a year).

2. Signing of an agreement on freezing the nuclear and military situation within the zone. The agreement takes immediate effect.

3. After another year, signing an agreement on the removal of nuclear weapons etc. and decreasing conventional arms and manpower in the zone.

4. Carrying out this latter agreement within a year under strict international control.

1. It is a particularly delicate question of the staging to find the most propitious sequence of preliminary measures, which ought to be carried out during the first phase of negotiations. The aim of these measures is twofold, to increase mutual trust and to make possible the execution of the later measures.

The following order of preliminary measures is suggested:

1. a. Cessation of war propaganda and propaganda against the nations involved. A formal agreement on this point is hardly expected. Opposition is based on the freedom of the press. Since in times of war the press agrees and considers it necessary that this freedom should be curtailed, we do not see why a much lighter measure should not be taken for peace. The only thing asked of the press is not to give help to insane suggestions. However, it is not mainly the direct propaganda which is dangerous, the subtle one may be even more so. We reflect sometimes on the profound effect of "subliminal" propaganda, when our country is referred to as a "satellite", or the West as the "free world" even by the well meaning who seek understanding, whereas no Western man would

speak of Portugal or Luxembourg as a satellite, but would include Spain and South Africa into the "free world".

We believe that a formal agreement on prohibition of war propaganda would help, but a gentlemens agreement is more necessary.

1. b. The recognition of the sovereignty of all states included in the zone and the recognition of the existing frontiers, including the Oder-Neisse frontier between Germany and the East. This could be done before the freezing of the nuclear armament and the freezing of the military strength takes place; this could be the time zero from which all further time scales will be counted. The agreement should be guaranteed by other nations of the NATO and the Warsaw Pact. Such a guarantee could eventually lead to a desired non-aggression pact between the two opposing forces.

1. c. The cultural exchanges should be increased in their manifold aspects, especially increasing scientific contacts within the zone.

1. d. It seems advisable already at the beginning to increase the trade between the countries in the zone. An increasing exchange of goods should be planned for the period of the disengagement procedure so that eventual adverse economic effects could be eliminated.

1. e. Talks should begin already in the preliminary stage between the two German states, apart from their trade agreement to normalize their relations.

1. f. When the basic agreement has been settled, other European countries should be offered the possibility of joining.

2. a. At the conclusion of the second agreement, providing for denuclearization, all bases, means of delivery, stockpiles, production plants for atomic, micro-biological and chemical warfare should be declared.

2. b. It is suggested that during stage 1 no control measures are necessary, but the control commission should be set up at the conclusion of the second agreement and start to sample the declared bases and their removal.

2. c. The elimination of nuclear, and other weapons of mass-destruction and their means of delivery, should be carried out during the

specified interval of the year following the second agreement. It is felt that because of the lessening interest in medium range missiles, the ratio of conventional arms and armament is not bound up with the weapons of mass destruction.

2. d. After the elimination period of nuclear weapons, by the end of the same year, conventional arms and manpower should be reduced by a factor of three. On the other hand, the reduction of manpower should be made so as to be proportional to the population of the area included. The states would still keep their adherence to the NATO and Warsaw Pact organizations.

2. e. During the period of decreasing conventional armament, the inspection should become complete for the whole territory. This inspection should include control of conventional armament production set at an appropriate level by the agreement reached.

2. f. Beginning from the third year, the states affected should yield an agreed percentage of their increased trade profits to a fund for helping less-developed nations.

Gerd Burkhardt

THE GERMAN PROBLEM AND ITS RELEVANCE TO REGIONAL AND LIMITED DISARMAMENT AGREEMENTS IN CENTRAL EUROPE

At the meeting of European Pugwash members in Geneva from 2 to 4 March 1963, Professor Steenbeck and I were requested to develop the views we expressed at the meeting in such a way as to make it clear where we agreed and where we disagreed. In this paper, as well as in the paper by Professor Steenbeck (p. 265) those paragraphs where there is disagreement of opinion are indented and marked with a vertical line. The remaining paragraphs are identical in both papers.

1. Introduction

Central Europe as a geographical concept consists of Austria, the Benelux Countries, Czechoslovakia, Hungary, Poland, Switzerland and the divided Germany. A military potential of a density never in history, and nowhere else, previously experienced, is at present concentrated in this area. It is, therefore, understandable why plans are constantly being developed with the aim of either disbanding or reducing the huge massing of armed forces within this confined space, where the two blocs of power meet.

The reasons for misgivings at such measures are, among others, the following: the very existence of these extreme risks inherent in any forcible change in existing conditions is a safeguard against the actual happening of such incidents.

On the other hand, the exaggerated concentration of military power in this area tends to make a reduction of political tension and a real solution more difficult. A real solution cannot be achieved by purely military measures. Regional restriction of armament and disarmament agreements also are inadequate, unless the causes for political instability are eliminated by political agreements at the same time. And the central political problem in this area at present is the German situation.

It is neither possible nor intended to submit proposals for the solution of the German problem in this paper. Its purpose is merely the representation of the political preliminary conditions which must be fulfilled, if a regional agreement for the creation of a "relaxed zone of reduced armament" in Central Europe is to become feasible.

2. Historical Comments on the Partition of Germany

A total demilitarization of Germany was carried out in 1945. The victorious Powers developed a programme for the re-education of the German population, aimed at eliminating all tendencies towards militarims and at educating the people in accordance with the basic laws of democratic life. New political parties were founded or old ones revived. The programme of all these parties can be called "progressive-socialist" or orientated relatively "leftish". There was collaboration beyond the borders of the occupation-zones and "All-German" talks were held. The German people found themselves at the turning point of German history and gathered courage for new hope after their despair.

The decision, taken unanimously at the Conference of the victorious Powers in Potsdam, to which France was not invited, stated that the German people could not yet be allowed "to determine its own government. The fate of the German nation was to be guided for an unlimited period by the victorious Powers. There was, however, unanimity, that Germany should be governed as a whole and not in sections- there was also unanimity that the German people should participate in their administration, even though they should have no part in their government. With this purpose in mind it was decreed that State Secretariats for Economic Affairs, Trade and Transport be set up, which were to be staffed by German officials". *

The main opposition to a unification tendency emanated from France, whereas the Soviet Union was the State most in favour of unification. The Soviet Union had the most logical programme with regard to the future of Germany. It aimed at preventing the whole of Germany ever again becoming a military threat to the Soviet Union. Furthermore, the whole of Germany was to be held responsible for the consequences of the war and for reparations, restitution and compensation. Thus economic and political conditions on the model of the Soviet Union were created in the Soviet occupation zone. The German Communist Party and the German Socialist Party were merged into the People's Party of Germany in the Soviet Zone.

Increasingly, the aim of the Western Powers came to be the containment of the advance of the Communist sphere of influence, or its roll back. Thus, in the Western occupation zones a unified economic sphere was created (Bizone 1948, Trizone 1948). This economic sphere was given

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* Paul Settie: "Zwischen Bonn und Moskau" (Between Bonn and Moscow), page 8, published by Scheffler, Frankfurt/Main, 1956.

its own currency by the Currency Reform (1948). This destroyed the pretence of the economic unity of Germany, which had so far been maintained; it also made it impossible for the Soviet Union to realize her claims for reparations in the area of the Western Zones. The blockade of Berlin, which followed in the same year, made it clear to all the world that the anti-Hitler-coalition had disintegrated. As no agreement on the future shape of Germany could be reached among the occupation Powers, and as on the other hand the occupation status could not be maintained indefinitely, the Federal Republic was founded in the three Western Occupation Zones (Proclamation of the Basic Constitutional Law on the 23rd May 1949). This was followed a few months later, on the 7th October 1949, by the proclamation of the German Democratic Republic in the Soviet Occupation Zone. Thus the partition of Germany had been carried out.

An important difference in these almost simultaneous foundations must be noted: the government of the Federal Republic (FR) emerged from a parliament freely elected by the whole population of the western zones (Deutscher Bundestag). The government of the DDR was installed by the "Volkskammer" (People's Chamber), the formation of which could not be influenced by the people. A standard list of candidates was laid before the voters to be accepted as a whole, and allowed practically just acclamation.

It is a fact that the present government of the DDR does not enjoy the support of the majority of the population. This is the reason why the Federal Government claims to speak also for that part of the German population which is deprived of a free decision according to the principles of parliamentary democracy. The Federal Government holds the FR to be the only legitimate successor of the former German Reich. In opposition to this the government of the DDR maintains the view of the existence of two German states.

Two basic theses as a summary:

1. The German post-war situation is essentially the consequence of the German policy during the National Socialist Era, and of the war which was caused by Germany, for the consequences of which we are responsible and answerable.

2. The present "German problem", which is a source of tension in Central Europe and a danger to world security, is not merely a German problem. It is the result of the disintegration of the anti-Hitler-Coalition

and the world tension between the two antagonistic blocs created in consequence. A satisfactory solution can, therefore, not possibly be achieved by the Germans alone. However, the increasing gravity of the worldwide conflicts and the fact that these find their most dangerous expression in Germany itself, has not come about without the assistance of the Germans. For this reason the solution of this problem cannot be put on the victorious Powers alone, it is a vital task for the Germans themselves.

3. The Re-Unification of Germany

It is quite illusory to hope for a re-unification of the divided Germany under a common government in the foreseeable future.

During the early fifties the Soviet Government submitted proposals for a re-unification with free elections in the whole of Germany, which naturally implied the neutralization of the reunited Germany. These proposals were never seriously discussed either by the Federal Republic or by the Western Powers; among the reasons given it was stated that this solution would, with continuing tension between the powerful blocs, represent a risk and would bring about the danger of isolation. This policy of the Federal Government was expressly approved in elections by a majority of the population of West Germany.

> In the meantime the Soviet Union seems to have changed her attitude to this question. Apparently she has lost every interest in a reunification. She declares that all efforts to reach it have finally failed due to the development of the policy of the West and, especially, the rearmament of the FR. The complete closing of the frontier of the DDR by building the wall through Berlin with the approval of the Soviet Union has shown this decision to be final.

A re-unification in such a manner that the whole of Germany is drawn entirely into one of the two camps, either the Western or the Eastern, is unthinkable without application of force by one side; it would lead to a war and most probably to a world war.

A re-unification of the whole of Germany by neutralization would mean that the Federal Republic would secede from NATO and the German Democratic Republic from the Warsaw Treaty. The West declares this to be unacceptable, as in the meantime the Federal Republic has become the strongest NATO partner on the Continent. Therefore, her secession would of necessity lead to a decisive weakening of NATO and to a considerable shift in the balance of world power. Tertium non datur.

Re-unification, however, is the declared aim of the policy of the FR, although she has, by her actual politics, moved further and further away from this target. In other respects her policy was logical and successful and several times expressively found the approval of the majority of the population in the FR. It is difficult to say what turn history would have taken, if, in 1955, the FR had decided for a policy of neutrality and re-unification. It is questionable whether she really had the freedom to decide. In my own view it is probable that integration into the western defence alliance of the NATO was the only way to prevent her from being incorporated at last in the socialist camp. The policy of the Federal Government is, however, inconsistent insofar as it keeps up the illusion of the people of bringing Germany nearer to the goal of re-unification and does not oppose the illusion, which is being cherished by some circles and deliberately supported by associations that there is hope of regaining the formerly German districts beyond the Oder-Niesse line. This inconsistency is bound to evoke mistrust with out eastern neighbours - and not just with them - concerning the sincerity of the merely defensive aim of German rearmament. It might encourage the suspicion, that such hopes should be realized if not by force, then by the threat of force. These fears are an essential element of the present tensions in Central Europe.

Should the FR, therefore, in the interest of easing tensions, finally renounce the claim for re-unification? I think, no government of divided Germany has the legitimate right to express such a renunciation. "Self-determination" is one of the fundamental human rights, which in the long run the German people, too, cannot be deprived of. But international rights are just being respected in an atmosphere of peace. One cannot apply the methods of cold war and at the same time expect the other side to keep strictly to the rules of human rights if this would mean an important disadvantage in the cold war. (At the moment free elections in the DDR would undoubtedly mean such an unacceptable drawback). Especially for us Germans it is awkward to challenge consideration of international rights after our people have despised them for years in the recent past, or when thinking of e. g. the official plans of the Nazi government concerning the future of the Soviet Union after final victory.

Thesis:
In the interest of world peace Germany must delay her understand-

able desire for re-unification until such time as a world-wide relaxation of the East-West conflict occurs. It is, therefore, in the Germans' own interest to seek seriously for means to bring about this relaxation and to collaborate in this direction.

4. Political Measures for Relaxation as a Preliminary Condition for the Creation of a Zone with Limited Armament.

Acquiescence in the continuation of the partition for a considerable time must be based on a change of attitude of the two parts of Germany towards each other. The population of the Federal Republic must accept the existence of a second German state, even if she rejects the form of government of this state, and must find a way of living with each other - or rather, for the time being, next to each other.

It would be unrealistic to begin this experiment of co-existence at the higher level of government. In the beginning the existing technical contacts - and there are not just few of them - should be widened and intensified. In particular, contacts in the field of science, which existed to a considerable extent till the wall in Berlin was built, have to be renewed and increased. Individuals have to play an important part in this.

In order to make these steps effective an answer is needed from the other side: the government of the DDR should not insist upon an official recognition by the government of the FR. Meanwhile too much prestige has been invested in this issue - a legislation would in addition imply giving up the claim for the self-determination of people. Practical actions of co-operation are more important than official declarations. A further urgent demand is to limit the hateful propaganda on both sides. This, too, can only be successful if it is done reciprocally. The picture of the FR in the newspapers and publications of the DDR seems to me to be more distorted than that of the DDR in serious newspapers in the West.

The basis for all intensification of contacts is undoubtedly the loosening of the strict travelling restrictions by the DDR. It is clear that this is not possible by a sudden relaxation of all controls withoug effecting a breach of the dyke. The number of permits issued should slowly be increased. The response of the

FR to such a relief in communication across the border should be given by issuing visas limited in time for all visitors from the DDR, thus putting them on a par with visitors from a foreign country. This transitional arrangement, I am sure, might lead in the course of time to a complete abolition of all travel restrictions without the population moving in one direction only and thus endangering the equilibrium. Just the feeling of being finally cut off from relatives and friends in the West contributes essentially to dissatisfying people and inducing them to try the escape. Free communication would soon let the one-sided migration stop. This would be one of the most efficient measures for political relaxation and decrease of mistrust on both sides.

All this would mean a stabilization of the present system of the government in the DDR. It would, therefore, be vividly opposed by all those West Germans, who hope for a collapse of the East German regime. They do not realize that the West by no means - except a forceful intervention leading to war - can enforce such a collapse, and that all measures aiming at it worsen the conditions of life of the DDR population and at the same time endanger the stability of the whole political situation in Europe. A greater flexibility of West-German policy can only be successful, if there is a corresponding flexibility on the other side. The latter may rise from a younger generation having overcome the inheritence of Stalin which will grow up in political leadership and will be a better partner for a new government in the FR.

5. Berlin

In the potential field of tensions between East and West particularly powerful field strengths appear in this place. The now existing position of West Berlin is maintained solely by the resolute engagement of the United States.

Its viability is based on its close political and economical link-up with the FR. But here the Soviet Union possesses the longer level - arm. She can use it at any time to put the West under pressure. It is already for this reason that the West has to take an interest in a sensible solution of this problem. The erection of the wall in Berlin has clearly shown the necessity of an agreement between the U. S. A. and the Soviet Union on Berlin.

It might not be acceptable to the Eastern Bloc if West Berlin became officially part of the FR. The status of neutrality, as e. g. Danzig had before World War II, appears to be very unstable.

> No state would in the end be fully responsible for the upkeep of this status. Perhaps there is a combination between both these extremes guaranteeing free means of communication by an international control authority. The life of the city has to be ensured by transfering important international institutions to Berlin which are not meant to be the "Show-window of the West", but a bridge between East and West. For such a provisional arrangement regarding the Berlin question two things must not be touched: the presence of American forces in West Berlin as a symbol for the lasting engagement of the U. S. A. to the independence of the city and the close link-up with the FR. The East would have to respect the practical fact that the city belongs to the FR in the same way as vice versa the West has to respect the existence of the DDR.

Any settlement of the questions broached in this section will have to be provisional for the time being. A final solution cannot be achieved isolated from the development of the German problem. This, however, can only be solved by a decrease in general tensions between East and West. Co-operation in bringing about such a decrease is also a German duty.

J. W. Burton

NONALIGNMENT - AN ALTERNATIVE SYSTEM?

1. Introduction

'Nonalignment' is the term now most commonly used to describe the foreign policies of nations which are not in an alliance with either the Western or the Communist bloc. This term is the one now adopted despite the fact that political leaders of nonaligned nations do not feel that it conveys satisfactorily a description of their policies. 'Nonalignment' has no positive value or connotation; yet it is precisely this positive value which they most wish to express. In Belgrade, Cairo, and at most other centres of nonalignment, other and even less satisfactory terms are frequently used; 'non-bloc', 'uncommitted', 'actively neutral', are some of these. Long phrases and even speeches are frequently made as the only means of overcoming the frustrations experienced as a result of the absence of any term which is as yet sufficiently meaningful. 'Neutral' is never used, for the nonaligned nations do not experience the indifference or isolationism associated with neutrality, and it has been a common mistake to expect that they should.

The term has so far served a useful purpose in categorizing the countries which are uncommitted in the Cold War; but for our purposes it must also serve to convey fully the attitudes, policies and expectations in the minds of the nonaligned nations. The leaders of the aligned nations, East and West, seem to have an image of nonalignement from which they deduce that it is a shifting policy of unrealistic expediency, of blackmail, and of irresponsibility, likely not to be permanent, and to be even a danger to stability and to world peace. On the other hand, the exponents of nonalignment seem to be claiming that their policies have some lasting and positive significance, that they are an example of international behaviour which all countries should follow in the interests of peaceful relations, an inspired response to the problems of the nuclear age, and a solution to the central problems of international relations which currently appear intractable.

2. The Nature of Nonalignment

Neither of these images may be realistic. That nonalignment is a policy of national interest there is not any doubt; all foreign policies are policies of national interest, and the wonder is that so many Western scholars have wasted time demonstrating the self-interest aspect of nonalignment. But the fact that nonalignment has this motivation does not demonstrate that it is a policy merely of expediency with no standing as a developing institution. The institution of laissez-faire, of multilateral balance of power, of party parliamentary democracy, and all institutions known to civilization have been developed out of expediency and interest; it is time which has honoured them, and the rationalizations of theorists which have given them an explanation within the context of history, and finally a respectability which sometimes outlives their period of usefulness. Even though nonalignment were a self-seeking policy of national self-interest, and a current threat to international stability as conceived by the two opposing power blocs, this still would not absolve political scientists from the need to study it as a system; one which has developed in, and may be a relevant response to, the nuclear age; one which may be found to have a sound theoretical basis; one which could become a lasting institution in international relations. Scholars of aligned nations are obliged to do more than merely describe and assess nonalignment from the points of view of the strategic interests of their countries; they are obliged to examine nonalignment to see whether this empirical and pragmatic response may not be relevant to the new circumstances of the nuclear age, to which their own nations still have to find and to make relevant adjustments.

Nonalignment is a 'realist' approach to international relations. It accepts 'good and bad states' and 'good and bad men' - however one may now wish to describe these old concepts - as part of the data. It is concerned with the structure of international society, and in particular the avoidance of alliances and the avoidance of acts by one or a combination of states, or by an international authority, which would interfere with the independence of sovereign states. Currently this is a reaction against colonialism in one form or another, but more permanently it is an expression of a principle that no nation, however large or small, and no combination of nations, has any right to interfere in the affairs of others. In practice, the application of this principle by the nonaligned nations themselves is complicated by the existence of conditions which carry over from a past age in which interference was acknowledged as the privilege of more powerful nations - conditions such as arbitrarily drawn boundaries, under-development, and trade terms which prejudice non-industrial countries. The principle of freedom of

sovereign states from every form of uninvited attention is, however, central to nonalignment. From this principle flows not only the duty to remain independent and to resist pressures, but also to oppose alliances which are a means of imposing pressures. As an alternative system, nonalignment encourages associative forms of international organization such as regional arrangements which are not directed to secure an advantage over other nations, and functional arrangements which are universal and nondiscriminatory, such as communications agreements.

The causes of alignment are many and varied; they do not always relate to the struggle for power being waged by the leading nations, nor to ideological conflicts associated with that struggle. Alignments arise out of preconceived notions regarding the behaviour of nations, out of subjective expectations of aggression, out of long-standing enmities and traditional fears, out of internal unrest, and out of policies designed to isolate nations; in many cases the major power conflict is but a cloak under which other reasons for alignment are disguised. Nonalignment in the present political circumstances has, therefore, a wider significance than its relation to the Cold War; to be nonaligned is to be free also of the pressures outside the Cold War struggle which lead nations to take advantage of the existence of Cold War alliances. The nonaligned nations do not face, or believe they do not face, threats to their security with which they themselves cannot deal.

However, nonalignment cannot adequately be described and explained in terms only of the absence of overwhelming pressures in the direction of alignments; there are also positive influences favouring it. These vary from country to country, and from time to time, as do those inducing alignments. There are background circumstances such as nationalism, anti-colonialism and economic underdevelopment which influence all African and Asian countries, and therefore aligned and non-aligned nations alike; there are others, such as a philosophy of socialism, which are dominant in nonaligned countries; and there are in addition influences, including certain types of leadership and certain views regarding the nature of conflict, which are almost confined to aligned countries.

3. Nonalignment and the Nuclear Nations.

That there is a certain historic relevance in nonalignment for the new and smaller nations may be an acceptable proposition. It is less easy to demonstrate that nonalignment could be a basis of an alternative

international system, because so far little theoretical thinking has been undertaken in respect of it. It is clear that nonalignment has limited the area of great-power rivalry and conflict, and has in many instances been able to make some contribution to lessening of tensions; but these contributions are marginal. All the day-by-day interventions of the non-aligned nations must be marginal, however important they might be in terms of giving increased breathing space for negotiation. If nonalignment is to make a significant contribution to disarmament or reduction of tensions, then it has to be shown to provide alternatives of policy which the rival thermonuclear powers would be prepared in their own interests to follow.

As the Great Powers have reassessed their interests in the light of their own failure to find a solution to the problems of disarmament, in the light of the growing complexities of the nuclear deterrent, and in the light of the rapid extension of nonalignment, they have tended to see their strategic interests in an altered perspective. Their attention has been drawn towards evolving means by which they can possess nuclear weapons without using them, to the avoidance of situations in which they might become involved, to the stabilization of political relations throughout the world, and to the peaceful settlement of disputes between other countries as they occur.

The nonalignment of extensive regions of the world has helped the nuclear powers to avoid some conflict situations. In these regions the Great Powers cannot establish military bases, obtain privileged rights in trade or resource exploitation, indulge in uncontrolled propaganda, or conduct aggressive activities in other ways. Their economic aid and technical assistance must be given competitively, and to an increasing degree without obligation. As nonaligned or neutralized areas increase, the opportunities for waging the Cold War and for preparing for military activities, will progressively be limited. The establishment of an extensive nonaligned area also removes a danger inherent in the winning of the Cold War by one side: the danger that there will be a desperate nuclear response from the loser. Greatly extended nonalignment would mean that neither side could win or lose, and the nuclear stalemate would, therefore, be provided with a firm political reinforcement.

It is particularly in relation to the efficiency of the nuclear deterrent that the withdrawal of regions from the areas of conflict is important. The struggle between the Soviet bloc and the Western alliance is not one in isolation from the rest of the world; it is not one in which each power seeks merely to occupy or to destroy the territories of the

other. It is a power-struggle primarily between the great nations but taking place in a world environment; it is a struggle directed toward areas of the world outside the territories of the main contestants. Each party seeks to extend its spheres of influences; the areas of conflict include areas of Europe, Africa, Asia, and Latin America. If the deterrent mechanism were required only to ensure that nuclear weapons would not be employed as a result of conflict of interests arising directly in the United States - Soviet territorial relations, it would rarely be alerted; but when it is required to prevent open warfare between nuclear powers in every conflict of interests occurring in Europe, the Middle East, Africa, Asia and Latin America, it overshadows all world politics. The weapons and the risks involved have no sensible relationship to the relatively minor local interests which are in conflict. If the nuclear deterrent were absolutely efficient, no dangers would arise from the wide responsibility thrust upon it. But because the efficiency of the nuclear deterrent is not absolute, because there is a risk of failure, because it is not appropriate to many local conflict situations, every increase in the area of conflict and in the number of conflict-situations to be controlled by it, increases the chances of nuclear warfare. The neutralization of nonaligned nations helps to reduce the responsibilities of the nuclear deterrent to the limits of its efficiency.

While more recent technical developments of the nuclear weapon and its means of delivery have made even more desperate the need for Great Powers to avoid situations in which there could be risk of nuclear warfare, these same developments have provided the Great Powers with means of avoiding conflict situations. Now that both possess long-range missiles, long-range submarines, and other means of delivery of nuclear weapons from their own installations, their system of deterrence does not rely upon foreign bases and alliances. In these circumstances there are good reasons for not complicating their own dangerous deterrent system, and their own dangerous power relationships, by commitments which add nothing to the protection of their vital interests.

On any assessment of interests, the nuclear powers cannot afford the risks of employing the nuclear deterrent system in all conflict situations which might occur between middle powers, or even in all cases in which they have an alliance with one of them. A border dispute, a dispute between powers over the future status of a territory such as Laos or Cuba, or a conflict of interests in a country in the Middle East, would not seem to justify a threat of nuclear warfare.

Increasing support by the Great Powers for the neutralization of countries by nonalignment is understandable in this context. So also would be policies adopted by both powers to contract out of many of

their obligations which they have assumed as a result of alliances with other countries. This applies particularly to the United States which is involved in every corner of the globe, and in many cases merely because some of its allied governments have taken advantage of the Cold War situation to preserve themselves against some internal threat, or against some traditional external threat of aggression.

4. The Problem of Stability

However, no simple plan of withdrawal is possible, for the nuclear deterrent is not an appropriate means of dealing with the typical conflict situation which is of importance to a Great Power, but which by itself would not justify risking nuclear warfare. Conventional weapons and local defences continue to be required to ensure stability. On the other hand the use of conventional forces on a large scale could lead to the use of nuclear weapons, and therefore in the nuclear age even they are not an appropriate means of dealing with typical local conflict situations unless there is some guarantee in advance - which there cannot be - that a relatively minor dispute and small-scale fighting will not build into major warfare.

Before the main nuclear powers can free themselves of the risks of nuclear warfare, arising out of situations in which they are not vitally concerned, the future stability of all countries, especially the middle powers, must be assured. It is probably impossible for either Great Power to withdraw from its responsibilities and obligations until this is so. Assuming that the nonaligned nations of Africa and Asia can evolve regional systems of defence, and can maintain the system of nonalignment, and assuming that the Great Powers are not in danger of direct conflict by reason of their own bilateral relations, attention then becomes focussed in particular upon problems of the middle powers. The middle powers are not within the system of nonalignment, nor are they principal participants within the system of deterrence.

If this reasoning is correct then there are some important implications for disarmament. Up to the present time disarmament negotiations have been directed almost solely towards disarmament of Russia and the United States of America. Techniques have been discussed by which reductions of the weapons of these two countries in particular can be achieved without in the process destroying the nuclear deterrent existing between them. The disarmament of middle powers has not been regarded as of first importance. If it is assumed that the Great Powers will remain armed at least until they are free of conflict-situations outside their own territories, then a different approach is required to disarmament: a first step is the disarmament of middle powers.

It is quite unrealistic and inconsistent, however, to argue that disarmament is impossible for the Great Powers, and a practical proposition in respect of the middle powers, especially those with the traditions of the leading European nations. The assumption must be made in respect of them also, that they will remain armed, and endeavour to have their own deterrent under their own sovereign control. Sufficient is known of the self-defeating policies relating to nuclear deterrence to suggest the high degree of insecurity that nuclear policies will bring to middle powers. Unfortunately, the insecurities can be used to justify increased nuclear capabilities, and independent deterrents; one possible development in Europe is the creation of super-states out of groups of nations, each with a deterrent capability approaching that of the Great Powers, and another is the possession of nuclear weapons by all the main industrial countries. The middle powers would then face the problem, as do the Great Powers, of possessing nuclear weapons without using them, and they would face all the same dilemmas about conventional and nuclear weapons, and the same problems relating to the avoidance of conflict situations.

A system of regional arrangements might provide a solution of some of these problems. In Africa there are many small nations with defence forces adequate only for maintaining internal stability. The prevention of military conflict can be achieved there only by regional arrangements (divorced from the direct influence of great powers), in which these limited forces are organized to ensure that sources of conflict, such as alteration of boundaries, do not lead to warfare. The strength of the regional arrangements must have a military relationship to the type of situation that could occur. So too in Europe; a regional arrangement for Europe under Chapter Eight of the Charter would include all countries in Europe, and not just those associated with one power bloc as is the case with military alliances. Its defence forces would have some sensible relationship to the situations likely to occur. Into this pattern of relationships would fit proposals for nuclear free zones and for demilitarized zones, which have been made in relation to some parts of Europe. Middle East and South East Asian regional arrangements offer similar opportunities for the maintenance of the status quo, save for change negotiated through such arrangements.

Thus it is that a logical development of nuclear strategy leads directly to foreign policies based on the same principle of sovereign independence and non-interference in the affairs of others which is underlined by the nonaligned nations. The interests of all nations are becoming more and more in the direction of independent defence policies, the avoidance of blocs and alliances which could be interpreted by others as

aggressive, and supported by regional and functional arrangements which are wholly associative in character. In short, nonalignment could be a relevant response not only for small nations having no nuclear capability, but more especially for nations whose nuclear capability makes it vital that there should be no envolvements in situations which are not vital to them.

5. Current Nonalignment

It could be argued that current nonalignment will be short-lived. The recent experiences of India give rise to this suggestion. Furthermore, the economic and political backwardness of the new nations which are nonaligned would seem to be sufficient to threaten their continued independence. These are certainly widespread views, and need to be examined. In part they have been examined in a useful book 'Neutralism and Nonalignment', edited by L. W. Martin, and published by Praeger for the Washington Centre of Foreign Policy Research. The popular conclusions drawn from the experience of India, and the popular expectations about the economic and political future of the new nations, do not seem to be supported by more thorough examinations now being made. It is not intended in this paper to deal with these aspects of nonalignment, and mention is made of them only to suggest that it may be a mistake not to take nonalignment seriously as an alternative and developing international system.

The introduction of sub-systems of nuclear deterrence and the further extension of the system of nonalignment, are likely to take place side-by-side. Nonalignment has extended so far by reason of the creation of new states or by reason of internal revolutions within old states; and the possibilities of these developments are not yet exhausted. It has as yet made little progress in breaking into alliances, though some possibilities exist in Latin America, in the Middle East, and perhaps in Eastern Europe. It is a spontaneous development relevant to the circumstances of nuclear power politics; it is one which may be encouraged by familiarity and understanding of it, and this places responsibilities and obligations on the leaders of countries such as Yugoslavia and Egypt in particular, which are closely associated with centres of potentially serious conflict.

Both the circumstances in which it developed, and its nature, give strong support to the view that nonalignment was a response to circumstances, a relevant development, a growth as spontaneous and as inevitable in the circumstances as was the emergence of the system of deterrence once both Great Powers possessed nuclear weapons. As such it can continue to develop alongside the nuclear system, gradually including within its scope more and more countries, and becoming an alternative and peace-orientated system, and a dominant feature of international politics. In this way it can contribute to lessening of tensions, and ultimately to disarmament.

D. Dumitrescu.

ON THE ATOM-FREE ZONE IN THE BALKANS

It is a privilege and a great pleasure for me to take part in the discussions of this Conference dedicated to the problems of disarmament and of strengthening world peace.

The items included on our agenda are of a great interest for the Rumanian people and its scientists.

Naturally, we are particularly interested in the problems of setting up a nuclear-free zone in the Balkans.

Today, I should like to elaborate in some detail on that last issue - that is, the establishment of nuclear-free zones. The idea of nuclear-free zones is of comparatively recent date. It originated and acquired a definite shape in the 'fifties of this century, representing in a certain sense, one might say, a development and an adaptationto the conditions of the second half of the twentieth century of an older institution of international law - namely, that of demilitarized territories. It is an idea which gives expression to the ardent desire of the peoples - in the very specific conditions of the existence of the most destructive weapons known so far - that efficient measures be taken against the greatest danger hovering over humanity: that of a devastating nuclear war.

Answering the compelling necessity of our times, the idea of nuclear-free zones has continuously gained scope, conquering the minds and the hearts of people everywhere. It has been adopted by numerous Governments and it has become an object of major concern in the United Nations as well as in other international bodies. It is on the agenda of our Conference.

Numerous proposals aiming at the creation of nuclear-free zones in various regions of the world - in Europe, in the Pacific area, in Africa, in Latin America - testify to the viability of this idea. Recent developments and proposals whose echo has made itself felt in our discussions too, give fresh and eloquent proof to this effect.

Let me briefly recall some of these very interesting proposals. It is worth mentioning, for instance:

a) the proposal on the denuclearization of the South-Eastern part of Asia and of the North Pacific region;

b) the proposal of the African states regarding the denuclearization of Africa (see Resolution 1652 adopted at the XVI-th session of the U. N. General Assembly), and reindorsed by the heads of African States Conference at Addis-Ababa;

c) the statement signed by the presidents of five Latin-American countries, aiming at turning the Latin-American continent into a nuclear free-zone, as well as the inclusion on the agenda of the XVIII-th session of the General Assembly of the Brazilian proposal on the denuclearization of Latin America;

d) the Soviet proposal of 20 May 1963 on the denuclearization of the Mediterranean region;

e) the proposal made on 28 May by the President of Finland with regard to the creation of a nuclear free-zone in Scandinavia.

Very interesting reports were submitted by K. Lapter, H. A. Tolhoek and the Netherlands Pugwash Group dealing with essential aspects of the problem regarding the creation of a nuclear-free zone in Europe and in Central Europe.

Indeed, the idea is moving on, it is going ahead, and, like every great idea which has originated in reality, it takes hold of the masses and thus acquires strength.

How are we to explain the powerful support the idea of nuclear-free zones is enjoying? What are the reasons for which peoples and governments representing countries, broad geographical regions, entire continents, are taking a stand in favour of nuclear-free zones? The answer to these questions is a simple one. The massive support given to the idea of nuclear-free zones stems from the conviction that the implementation of such measures would represent an important step towards the elimination of nuclear danger. The safest and the most efficient way to achieve the ultimate elimination of that danger and to secure international peace and security is of course the implementation of general and complete disarmament. But it is clear that the establishment of nuclear-free zones in various regions of the globe would represent an important step in the right direction, in the direction of reducing the nuclear danger, of lessening international tension and of promoting confidence and co-operation between states.

In fact and de jure, a nuclear-free zone represents a region from which, or upon which, no blow will be dealt with nuclear weapons,

a region where the nuclear weapon will be banned - that is, its use as well as its production, acquisition, storing, stockpiling and testing. Thus a valuable contribution would be made not only to the strengthening of the security of States situated in that particular region but also to strengthening and ensuring world peace.

Proceeding from the belief that all States, whether big or small, are duty bound to make their entire contribution to the strengthening of peace, the Government of the Rumanian People's Republic addressed to the Governments of the Balkan countries, in 1957 and 1959, proposals designed to turn the Balkans into a zone of peace and co-operation, free of nuclear weapons and rockets. May I be allowed to recall briefly the essence of the Rumanian Government's proposals.

I shall thus recall the motivation that inspired these proposals, and at the same time proved their soundness.

On 10 September 1957, addressing himself to the Governments of the Balkan States, the Chairman of the Council of Ministers of the Rumanian People's Republic proposed the convening of a conference of the heads of government of the Balkan States, which

> "might examine and take adequate decisions on problems concerning the strengthening of peace in the Balkans, non-aggression, the settlement of any litigious issue by peaceful means, development of economic and cultural relations as well as personal contacts between the leaders of the countries of South-East Europe, the exchange of delegations, mutual visits, the broadening of contacts between the representatives of public opinion, and so on".

In order to give this co-operation a more lasting character, the Rumanian Government proposed:

> "The implementation of a collective agreement of the Balkan States with a view to ensuring peace in this region for the prosperity and progress of the Balkan peoples. The Balkan entente must be founded on complete equality of rights between the participating States, on mutual respect for their sovereignty and on non-interference with their internal affairs".

Reaffirming the steady desire of the Rumanian people and its Government to live in peace and friendship with other Balkan peoples, the

Chairman of the Council of Ministers of the Rumanian People's Republic stated on 29 December 1957 before the Grand National Assembly:

> "It is known that in the past the Balkans were named "the powder-keg". Today, when gunpowder has long been outdated, the question arises: what is best? To set up launching pads for atomic weapons pointed against each other, or to create conditions for the development of peaceful co-operation between the countries in this part of Europe in the interest of their economic progress and of improving the life of their peoples? In so far as the Rumanian Government is concerned, it will continue its efforts for the strengthening of peace and understanding in the Balkans and it expresses its conviction that its endeavours will enjoy the support of all Balkan States in the interest of peoples and the cause of peace".

To this effect starting with 1957 the Rumanian Government addressed the Balkan peoples and the governments, with the proposal to denuclearize this area.

The Rumanian Government has insisted and still insists on putting this idea into practice.

On 6 June 1959 the Government of the Rumanian People's Republic issued a statement in which, recalling its proposals of 1957, it stated that:

> "The Rumanian Government believes that the danger of a generalized nuclear war would be significantly diminished and the peace and security of the peoples in the Balkan area would be efficiently safeguarded if common efforts were made by all Balkan States leading to the elimination from this region of foreign military forces equipped with nuclear armaments, rocket-launching pads and guided missiles".

In that statement a proposal was also made to sign a treaty of understanding and collective security according to which:

> ". . . the Balkan States would undertake to settle by peaceful means any litigious issue, to refrain from resorting to aggression or threats of war in their mutual relations, and would undertake not to admit the stockpiling of atomic and nuclear armaments or the stationing of military units equipped with atomic and nuclear arms belonging to States alien to the Balkan region, or the emplacement of rocket-launching pads and of guided missiles on their territory".

The proposals of the Rumanian People's Republic concerning the Balkans met with a huge welcome.

The Soviet Union, a nuclear Power, supported the idea of setting up a nuclear-free zone in the Balkans. In the statement of the Government of the Soviet Union of 25 June 1959 concerning the problem of ensuring peace in the Balkans and the Adriatic Sea area, we read inter alia:

> "The Soviet Government highly appreciates the efforts of the governments of those countries which are standing up firmly and consistently for the strengthening of peace and for the broadest possible co-operation between the Balkan peoples on the basis of the principles of equal rights, mutual respect and non-interference with each other's internal affairs.
>
> In this connection it is necessary to emphasize the declaration of the Rumanian Government of 6 June 1959 in which it is once more proposed to convene a conference of the heads of government of the countries in the Balkan Peninsula for the examination of the present-day issues which concern the countries of the area, including the examination of the proposal to create a zone of peace in the Balkans in which no atomic weapons or rocket weapons should exist".

As everybody knows, the Soviet Government stated that it was ready to guarantee the statute of a nuclear-free zone in the Balkans.

We wish the other nuclear powers also adopted a positive stand regarding this proposal. It is still valid, it still stands before our peoples - as it has been pointed out on several occasions by the Rumanian Government.

The proposal to set up a zone of peace and co-operation in the Balkans, free of nuclear weapons and missiles, represents one link in a chain of measures aimed at establishing a vast denuclearized zone in Europe.

The previous proposals have been recently broadened by a new initiative. I have in mind the initiative of the Government of the Soviet Union regarding the denuclearization of the Mediterranean region. This proposal is part of the continuous and tireless efforts of the Soviet Union aimed at safeguarding international peace and security.

The implementation of this proposal would mean a step forward on the way to diminish and finally do away, with the nuclear danger.

In the conditions of the denuclearization of the Mediterranean region, the peoples of that zone, Europeans and Africans, would not only be ensured against the nuclear danger but would be in a position to devote even more efforts and means to the solution of their social and economic problems. At the same time, this measure would contribute to the lessening of international tension, would support, as a pendant, the idea of denuclearizing Africa, and would enhance the chances of reaching agreement on general and complete disarmament.

May I now, be allowed to deal briefly with some objections raised by certain countries against the idea of establishing nuclear-free zones in Europe and in the Balkans.

In this respect some people say that such a proposal must have the support of the States directly concerned, whose interest would be affected, that such a proposal cannot be applied to an area of direct military confrontation of the Great Powers, that it cannot be applied to regions where there is a complex system of military arrangements such as those prevailing now in Europe, which, pending general and complete disarmament, would maintain the balance of power and contribute to the preservation of peace.

I must confess that this approach seems to me open to objection.

Any agreement between two or more states is not conceivable in the absence of the freely expressed consent of the states concerned. This stems from the very essence of contemporary international law, that law whose norms are meant to govern the relations between sovereign states, between states equal in sovereignty.

Thus an atom-free zone can be set up only as a result of the agreement between the states whose territoreis are included in this zone.

But it is well known that the formula "the agreement of the states directly concerned" can be invoked against any proposal to establish a nuclear-free zone, in order to frustrate it. With regard to any geographical zone which we may want to denuclearize some great powers could proclaim themselves "states directly concerned whose interests are affected".

Thus, the idea of direct military confrontation of great Powers might be very easily invoked, by the Western Powers in order to hamper the agreement reached by the states of a certain region to turn that particular region into a nuclear-free zone.

Let us suppose for instance, that the Balkan States reached an agreement on the denuclearization of the Balkans. Some Western power might well claim that this is an area of direct military confrontation of great powers and thus block the agreement.

Here I should like to make a point. The role of the great Powers in ensuring international peace and security is unanimously acknowledged. But their interests cannot be set up against the right to peace and security of the other States. On the contrary, the great Powers have the right and the duty to act in the direction of ensuring international peace and security for all States, including those outside the category of great Powers. In the case of nuclear-free zones, the great Powers, the nuclear Powers, are called upon to play an important role. It is incumbent upon them, to guarantee the status of nuclear-free zones established by the general consent of the States located in the respective regions. It is in that direction that they are called upon to make a substantive contribution.

With regard to the other objection, mentioned above, namely that a proposal for establishing a nuclear-free zone "cannot be applied to regions where there is a complex system of military arrangements", in my opinion such a criterion tends to destroy the very content of the idea of nuclear-free zones. If the establishment of nuclear-free zones is useful in the regions where there are no nuclear weapons, the establishment of nuclear-free zones appears even more useful in those parts of the globe where nuclear weapons do exist.

The existence of nuclear weapons and of means for their delivery in a number of European countries plead precisely in favour of the adoption of proposals for the establishment of nuclear-free zones in this continent, which history has so sorely tried.

The implementation of these proposals would result in substantially diminishing the danger of nuclear war; it would reduce tension and promote confidence in relations between States. An essential contribution would thus be made to the strengthening of peace, not only in Europe but also all over the world.

The agreement on banning nuclear tests in the atmosphere, in the outer space and under water that has been recently concluded in Moscow, makes it clear that any international issue, however difficult it might be, can be solved by negotiations if the parties concerned, prove to be reasonable and adopt a realistic position regarding the existing situation in the world.

R. Fisher.

SOME NON-INSPECTION ASPECTS OF CONTROL IN THE FIRST STAGE OF DISARMAMENT

A great deal of attention has been given to the possible secret violation of a disarmament agreement and the inspection necessary to assure countries that no such violation is taking place. Perhaps more important is the problem of the non-secret conduct that is thought by someone to be a violation. A number of considerations suggest that it is a mistake to separate the compliance problem from the dispute-settling problem and that a critical aspect of control, at least during the early stages of disarmament if not later, is a means of obtaining authoritative interpretations and applications of the agreed rules.

Three different situations can be identified. One is the case of the secret violation, known and believed by the government officials engaged in it to be contrary to a disarmament treaty. It is possible that motivated by some view of national interest, responsible officials of a country might undertake deliberate, concealed action contrary to a disarmament agreement. And even if such conduct would never in fact occur, there would always be those who would fear that it might be taking place. The problem of reducing the likelihood of such secret violations and of responding to any if they should be uncovered is not dealt with here.

A second situation is that of the open repudiation or termination of all or part of a disarmament agreement. Governments have repudiated treaties in the past and may do so in the future. The problem of lessening the likelihood of such an occurrence and of what to do should it occur is also not the question here being considered.

The third situation, to which this brief paper is directed, is that of governmental conduct which is plausibly justified by the officials of one country as being permitted under the treaty but which is regarded by some people as being contrary to the treaty - at least as they believe it ought to be interpreted. A hypothetical case may illustrate the problem:

A treaty prohibits the manufacture of any new bomber aircraft but permits, as it presumably would, the continued manufacture of cargo planes. An aircraft plant develops a new cargo plane with doors that open at the bottom in order to accomodate large, box-like units into which the cargo is pre-packed. The plane, we will assume, has other features which would make it adaptable or convertible to use as a bomber such as, for example, long range, high speed, and the ability to drop the cargo while in flight in the event of an emergency. A government might

well decide that such a plane was permitted by the treaty and order it as being useful for cargo-carrying purposes. There is a natural tendency to construe rules favourably to ourselves. And no matter how explicitly a treaty spelled out the definition of bomber aircraft there would be borderline cases - if not the one suggested, then another - where honest men could reach different conclusions. What means of control should there be to cause "compliance" in such a case?

Preliminary consideration of this problem suggests the following points:

a) Use of national courts

In working out compliance procedures it would seem wise to make extensive use of the national courts of the various countries to regulate conduct within their territories. These courts already enforce a number of rules of law against their own nationals, including officials of their own government, and there seems little reason why they should not be called upon to assume at least a portion of the task of enforcing arms limitation provisions.

Certainly in small cases and perhaps in important ones the national courts could be expected to interpret fairly a disarmament treaty or other applicable rule. Judges trained in the law tend to appreciate long-range considerations. They would also recognize that an unduly liberal interpretation would weaken the agreement and reduce the restraint required not only from their own country but from other countries as well.

Any problem of enforcing by force the judgement of a court would appear to be far easier if the judgement were one of a national court. One possibility would be to have an international commission or court charged with interpreting the treaty, leaving to national courts the problem of enforcing the decision should any official be reluctant to respect it. Alternatively, the national courts might be used in the first instance. A country might agree to provide that any person believing that conduct was being undertaken which was contrary to a disarmament agreement could begin a proceeding in its courts to seek an order calling for the cessation of such conduct.

There is the possibility that the courts of one nation would reach an interpretation of a treaty contrary to the interpretation placed upon it by the courts of another. This problem already exists in the case of all treaties among those countries which have not accepted compulsory arbitration or the compulsory jurisdiction of the International Court of Justice

or some special tribunal. Failing that, however, national enforcement would not be meaningless, any more than the provision of the United States Constitution that treaties are the supreme law of the land is meaningless.

b) Civil remedies, not criminal

Where the obligation is clear and important, and certainly if a specific judicial decree has removed all legitimate doubt, punishment for contempt should apparently be available, at least as a last resort. It should also, apparently, be available for offenses analogous to embezzlement and bribery. On the other hand, punishment would seem unwise for such conduct as producing a cargo plane that looked too much like a prohibited bomber.

The punishment of government officials, at least of high officials, is likely to be difficult to bring about. The fear of punishment for conduct whose legality is in doubt may deter competent people from accepting public office or may adversely affect governmental decisions. If the consequence of a decision that particular conduct is prohibited is to send to prison an official who thought that he was doing his duty, courts may be reluctant to construe rules as strictly as would be best for the future.

c) Small decisions, not large ones

The basic means of causing respect for the decisions of a court will be the enlightened self-interest of those concerned. For this self-interest properly to affect the government which loses a case, the harm that comes from yielding to a decision ought to be clearly and markedly less than the harm that might come from defying it, involving a risk of upsetting the whole disarmament programme. The narrower the immediate decision the less painful it will be to yield to it, and the more likely it becomes that defiance would have worse consequences.

d) Negative injunctions

The wisest procedure would seem to be one in which the question is raised as to whether certain conduct should be barred in the future. The decision of a court should be in the form of what American lawyers would call a cease-and-desist order. Compliance will be facilitated if the decision identifies what is not to be done, rather than ordering affirmative action. Where evidence and facts are disputed a court can readily say "Whatever you may or may not have done in the past, don't do such-and-such in the future". Many excuses may be advanced as to why affirmative action was not taken. Active defiance is much more difficult to justify.

e) Personal and specific directives

The decision will have a greater chance of being respected if it is directed to one or more designated individuals, rather than to a government as such. The more explicit and specific the decision is, the greater the chance that the named individuals will go along with it.

P. Hess

PROPOSAL FOR A GERMAN CONTRIBUTION TO DISARMAMENT

General and complete disarmament is the main guarantee for lasting peace. This thesis is generally accepted in the East and West, but, as everyone knows, the mere formulation of the task is a very different matter from the actual achievement of results. Obviously, Pugwash scientists should work out as many concrete proposals as possible to show the way to governments.

When thinking of disarmament, German scientists are bound to start out from the undeniable fact, that the two World Wars went out from Germany. Is it not the duty of the Germans to make sure that this will never happen again? Is it not the duty of Germans, moreover, to make an effective contribution to peace by going ahead with disarmament on their own, thus winning the esteem and confidence of other peoples and making the road clear for general disarmament? I think, the answer to both questions can only be in the affirmative.

But there are two states in Germany, whether recognized or not, and hence it is only logical that both must come to an understanding about disarmament. It is quite obvious, however, that this understanding, which must culminate in definite steps towards disarmament, cannot be attained at one go. There are so many obstacles, so much distrust to be done away with, to make a radical and total solution without transitionary steps unfeasible.

If this is accepted, then there is only one obvious way out, as I see it, and that is to reach an agreement on definite stages, on partial steps, be they ever so small at the beginning. I am absolutely certain, that first small steps will make it easier to stride out at a higher rate in the future.

First of all, we should agree on principles (and I may say that that would not even be such a small step). In compliance with the Pugwash spirit, I should suggest the following principles:

1. Neither any one of the two German states, nor the two power groups confronting each other in Europe, should gain any unilateral advantage by whatever disarmament steps are undertaken.

2. There should be adequate control of all disarmament measures. Since control measures are necessary because of existing

distrust, the controlling bodies should have equal numbers of representatives from Eastern and Western countries. The United Nations should be called upon to assist and supervise these controlling bodies.

3. The German people should participate in controlling disarmament in both German states. On both sides, committees should be set up on a maximum representative basis. These committees should assist the international organs of control, and the latter should consult with these German committees in all important matters.

4. All Germans should be called upon to assist in controlling disarmament and to notify the committees of any breach of the arrangements which have been agreed upon.

The enforcement of these principles would gradually bring about an atmosphere of confidence and would help to solve the German question as a whole, although I do not wish to touch on this problem in the present short discussion paper.

In conformity with my proposal to go ahead gradually, step by step, the first obvious step to be taken would be to issue a number of formal declarations on both sides in such a way that they become binding international law. This could be done with the aid of the United Nations. Such declarations should pertain to a renunciation of the use of force against each other and against others, to the ban of atomic weapons on their territories, to their readiness to join a denuclearized zone in Europe, etc. Both German states should at this stage undertake not to produce or to participate in the production of biological and chemical weapons, or to obtain such weapons in any other way.

This might be the first step. It would certainly lessen tensions. I am aware of the argument that, since West Germany is an important part of NATO and a bigger power than East Germany, such declarations, and even more so their implementation, might be contradictory to the above-mentioned first principle. On the other hand, the big powers are presently negotiating a pact of non-aggression between NATO and the Warsaw Pact states, and I believe, that such declarations by the German states would facilitate these negotiations, thus not creating a unilateral advantage for either side.

The second step would be to agree to stop armaments production. Both sides would submit information as to the level of armaments in their respective states and would undertake not to increase armaments from a given time onwards.

The third step would be an agreement on the reduction of armed forces and armaments in both states. This would involve a reduction of military budgets.

The fourth step would involve an agreement on the location of troops in both states, whereby stress should be laid on a withdrawal of troops from the border area, leaving only police forces in a limited number.

While these first four steps are being taken, negotiations on a Peace Treaty between the powers which were at war with Germany on the one hand, and both German states on the other, should be taken up, so that it would be possible to withdraw foreign troops from the whole of Germany. Since at the same time, disarmament steps are being taken in both German states, the objection sometimes raised that the withdrawal of foreign troops might lead to a German civil war is no longer founded.

When this stage has been reached, the road is quite evidently free for far-reaching further steps.

Armed forces could be dissolved completely, leaving only police forces. It should not be difficult to come to an agreement on the strength and location of such police forces.

All productive capacities which are at present serving the armed forces could be dedicated to peaceful objects. There are very favourable conditions for this transition from military to non-military production in both German states, since in neither one is there any unemployment, since in fact labour power and productive capacities are at present overstrained. While in the G. D. R. the system of economic planning could easily overcome any economic difficulties which might arise, present conditions in the F. R. G. would likewise permit the necessary transition without any friction worthy of mention. But I would like to add, that economic conditions might not always be so favourable for disarmament in West Germany, and this may be considered as an additional argument to proceed as soon as possible.

In my opinion, these steps are possible now. Nothing in the way of the political order or the economic system in both states need have anything to do with their implementation. I quite agree that the German people cannot and should not be reconciled to the partitioning of Germany. In which way Germany is to be reunified, is a completely different matter, which I do not propose to discuss here. But it cannot be denied that even in the course of disarming, even before the goal has been

reached, the preconditions for reunification will grow by leaps and bounds; for it is precisely the threat of war which is reinforcing the split.

An important obstacle seems to be that the West German government by no means wishes to recognize the German Democratic Republic as an independent state. Well, in order to implement my plan, there is no need for an official recognition. Scientists, however, are accustomed to recognize facts, and if politics are to be put on a scientific basis, then governments have to accept facts as well.

If there is to be disarmament, and if the Germans are to make their contribution to this end - and there will be no disarmament if they do not - governments will have to proceed scientifically, i. e. start out from the facts, from their analysis, in order to come to results.

D. Kanazir

CONSEQUENCES OF THE SPREAD OF NUCLEAR WEAPONS

One of the problems one faces at this Conference is to make an attempt to estimate the dangers and risks which may result as a consequence of the spread of nuclear weapons. As a medical worker and radiobiologist I would like to point out the biological aspects of this problem. So, I will start by quoting Lord Russell who said: "Our common purpose is the survival of man". As you know well, that is a truth today more than ever before. Man has developed a force in nuclear energy that has moral, social, political, economical, psychological and biological implications on our life. The existence of a nuclear weapon and its spread is, no doubt, the greatest possible danger and risk, and the basic fact in all considerations of the future of mankind. The arms race of nuclear powers, their rivalry, and competition for supremacy lead us to the age of sophisticated military science and cold war megaton strategy. The perfection of means for mass destruction appears to be practically without any restriction. Destruction possibilities have enormously increased within a life cycle of only one generation. And I am afraid that agreement to the moral of mass destruction will also be without any restriction as we have already had examples in the near past. Incredible power has become available to governments of nuclear powers which are or might be in some countries under enormous pressure of military and promilitary cliques. In such an atmosphere one can put the following questions: "Will man become a victim of the nuclear weapon culture?" Or: "Shall we be able to keep the arms under control and cut-off their production?". Unfortunately, it is still very difficult to predict answers to these questions. Einstein said that the nuclear weapon has changed everything except "our modes of thought". May I add to it: "the modes of thought" of some generals, nations' policy makers and even some scientists.

Should we mention that this is the 18th year since production of nuclear weapons began and it has been 8 years since they were launched by rockets for the first time. The world stockpile of nuclear weapons is currently expressed in tons of TNT per man, woman and child. With the purpose of improving the technology of nuclear weapons, equivalents of about 115 megatons of fission and 185 megatons of fusion were released in tests with nuclear weapons up the end of 1961. During 1962 nuclear superpowers tested about 300 megatons of nuclear weapons which is equal to the total of all the preceding years. I mention these figures only to raise the following

questions: What are the biological implications of fallout from such tests? What will happen if we face a world in which 10 or 15 nations will be allowed to possess such weapons? Are there any new risks which can be added to the old ones which affect the evolution of life? There seems to be unambiguous evidence that the present risks are without precedent. This is because the world is already heavily contaminated with radioactive materials and because "the basic fact that radiations produce mutations and that mutations are in general harmful . . . Any radiation dose, no matter how small, can induce some mutations" (The NAS-NRC report 1956; and Genetic Effects of Radiation. - Purdom, George Newnes Ltd., London 1963). As further support let me quote the report of UNSCEAR (Report of the United Nations Scientific Committee on the Effects of Atomic Radiation, N. Y. 1962) according to which there is growing evidence indicating that genetic and somatic effects may result from small doses of radiation and that the effects of successive exposures to radiation may be cumulative. Hence, especially since certain genetic effects may not become manifest until after several generations, this Committee of U. N. urged that all unnecessary radiation exposure be minimized or prevented.

Therefore, one of the most important consequences of the further spread and testing of nuclear weapons is the fact that frequent nuclear tests will cover our planet with a mantle of lethal radioactive debris. Consequences of the spread and further hydrogen-weapon testing would then be felt throughout the life of many generations, causing sickness and death. Various estimates of the genetic effects, as the number of viable children with gross physical and mental defects, embryonic, neonatal, and childhood deaths over future generations resulting from nuclear weapons exploded so far, run from hundreds of thousands into millions.

Under such conditions, should we be pessimists? I think we should not be that totally. There are important events which make room for optimism. Thus, a few months ago an agreement, although partial, on test ban was signed by the nuclear superpowers and by about 80 nations. It is a great pleasure for me to remind us all that the Government of Yugoslavia was the first among the nations which at the 16th U. N. Conference emphasized the need for such an agreement and supported all the political events leading to that goal.

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This agreement, however, seems to be a great effort towards creating a world in which nuclear forces will be placed under control. I consider it to be an effort towards: (a) preventing further nuclear tests being harmful, (b) preventing the spread of nuclear weapons, considered to be the greatest possible damage. This agreement may be the first step towards effective and probably complete disarmament.

The common interest of all nations today is to prevent the spread of nuclear weapons to new nations. But this seems hard to achieve because neither the government of France nor that of China will likely be deterred from continuing the development of their nuclear weapons. Such a stand of the French and Chinese policy-makers is dangerous. This has a real impact on all efforts leading to non-military solutions to problems which divide the world; it means the maintainance of the cold-war atmosphere. The political leaders of these countries, as well as some scientists in U. S. A. have created a concept of "national security"; "national supremacy" even in science, etc., based either on the differences in ideological systems, or on the need for national "prestige", or on the necessity of supremacy in armament, etc. But if all these "concepts" were submitted to a closer inspection they would appear to be deficient in appreciating a real impact of nuclear weapon technology upon our own security and the health of the coming generations which are still far away from us. Any new test will increase the contamination of the world. All the experimental data we have had up to today on the biological and genetic effects of radiation suggest strongly that any person, especially a political leader, cannot fail to take into account even the effects of low doses of radiation. The only reasonable solution to the problem of nuclear weapons is complete cessation of their testing and complete prevention of their spread and production.

In conclusion I would like to say that the Yugoslav scientists aware of the danger and hazards will strongly support any effort towards preventing the spread of nuclear weapons. Whilst, of course, the greatest danger resulting from the spread of nuclear weapons comes from the increased probability of the outbreak of nuclear war, be it deliberate or by accident, we must not forget the damage that nuclear tests do. We emphasize that the estimates of genetic and somatic damage, despite the uncertainties associated with them, and despite the long period of time in which they will occur, must be a powerful argument which will bring all tests (even underground testing) of nuclear weapons to an end, through an effective international agreement. Needless to say this attitude of the Yugoslav scientists does not mean that we approve the existing "nuclear monopoly" of nuclear powers. We know that the actions already done by the two great powers will cause a tremendous and unnecessary additional amount of human suffering, and we strongly condemn all those actions. We hope, however, that the "survival of man" will be the imperative for nuclear superpowers and all nations.

O. Kofoed-Hansen

A. A Role for Small Nations

Many scientists, government employees, authors etc. in small nations have a considerably more extended tether than their opposite numbers in the U. S. and the U. S. S. R. They are like small dogs on a very long chain. Thus, if they want to, they can permit themselves to say and do things which would be anathema for those similar persons from the big nations.

Thus my recommendation to the people "in the know" from smaller nations is to use this liberty to its utmost extent in order to criticize the two big camps, the tiger and the bear, in order to make them realize their own fallacies and follies, in order to make them realize the enormous amount of similarity between man's everyday worries and interests in all countries, what-ever kind of ideology or propaganda they are nursed on, and in order to crave for mutual understanding and improvement in universal relations and trust.

Personally, I am very much against any recommendation which is just an empty headline, a slogan or a propaganda phrase. Thus, in order to give my own recommendation a definite content I should like you to read an example of what I personally could write in this connection, and for this reason I attach a short essay called "Half-Truth" which exemplifies what I mean by criticizing the big ones.

B. Half-Truth

Governmental statements giving only half the truth are usually meant for propaganda purposes and nothing more. The definition of "propaganda" is "an organized group effort for the spreading of a certain doctrine". It may be that he who issues the propaganda really feels that he is justified in his effort and that his personal brand of "propaganda" must be equivalent to "his own untiring work for peace", but it is also absolutely certain that the partner who is the potential enemy considers this "propaganda" as equivalent to "his opponents' aggressive statements filled with lies, omissions, threats and provocative accusations". Thus, such statements do not improve world relations.

It is, of course, easy to find official statements both from the East and the West which belong in this category. It is easier for me personally to find such statements in material issued in Moscow than in Washington. This has three reasons: 1) I am a Westerner and my ears have

been deafened to our own propaganda; 2) a considerable change in the amount of carefulness used in phrasing very official statements has taken place in the U. S. during the last 20 years so that propaganda has possibly become much more sophisticated - the similar development in the U. S. S. R. is somewhat slowed in its progress; 3) I am talking about official statements only. Senators and Congressmen in the U. S. still tell the most transparent fairy tales in their speeches.

In order to illustrate what I have in mind I shall quote a Western statement and an Eastern statement concerning our own deepest concern, the nuclear weapons. I shall point to some misconceptions in these sentences and then draw some conclusions. I have picked the two statements somewhat at random. The first one is from President de Gaulle on the occasion of the first French test in the Sahara and here given as it appeared in Keesing's Contemporary Archives 172 179, February 29 - March 6, 1960;

"General de Gaulle expresses the gratitude of the nation to the architects of this achievement - ministers and scientists, officers and engineers, industrialists and technicians. Thanks to her single-handed national effort, France is now able to strengthen her defensive capacity, as well as that of the Community and of the West. At the same time the French Republic is now in a better position to take effective action for the conclusion of agreements between the atomic Powers with a view to nuclear disarmament."

It sounds grand, but apparently those effective actions have consisted in French absence from Geneva, French demolition of the moratorium on test cessation and recently negative French views onthe Moscow agreement on a test ban.

The next quotation is from Mr. A. A. Gromyko's note to the government of the U. S. A. dated April 8, 1963, and here quoted from "Moscow News".

"Disregarding the will of the peoples and the decision of the United Nations General Assembly, the United States, followed by France, resumed the testing of nuclear weapons."

The world is far from open, but it is open enough so that we may all of us write something which is much more correct, i. e. that France never stopped, and that the U. S. S. R. started the show of big bangs, and U. S. and later on the U. K. followed suit.

Thus it is openly evident that omissions are present in both of the above quotations and we may then be inclined simply to dismiss them and state that they are but propaganda, using this word in its most ominous meaning. But one may also have the feeling that this is too primitive an attitude, that something ought to be done and can be done.

The above examples are no exceptions. Most of the documents in the U. N. in Geneva and in almost every other case connected with modern negotiations concerning the arms race are filled with dozens or hundreds of this kind of fallacies. But why? None of us can be satisfied with this, so why is it done? None of us can help to realize the falsifications, so why is it done? It isn't even good propaganda when it is so transparent, so again, why is it done?

Is somebody just sparring for time? Is this just something to fill in empty space? There are more than enough pressing problems to deal with; nobody in a responsible position should be inclined just to waste time on empty phrases. But it may just be that that is what decision makers do when they themselves are scared and frightened by the overwhelming massive nature of the problems facing humanity. They are frustrated, they sulk, they fret, and none of them dare admit it; they are just like the old counsellor in Hans Christian Anderson's fairytale: "The Emperor's New Clothes". He did not want to lose face so, seeing the empty looms, he thought:

"Mercy preserve us, I cannot see anything at all!" and "Can I indeed be so stupid? I never thought that, not a soul must know it. Am I not fit for my office?" But aloud he said:

"Oh, it is charming - quite charming. Yes, I shall tell the Emperor that I am very much pleased with it." And the most important development in that story comes from a small child who simply states:

"But he has nothing on!" - "Just hear what the innocent says!" said the father; and one whispered to another what the child had said".

Unfortunately, the decision makers are deaf to the words of the child and even deaf to the cries from the entire population.

"The emperor thought within himself:

"I must go through with the procession"."

Such an attitude does not work any more because it isn't simply a dress that is missing, it is the entire future of humanity which is at stake, and it is worldwide agreement that is missing. Can we do something about it? Can we persuade the decision makers to stop delivering statements of half truth and propaganda?

In the U. N., in Geneva, even when scientists meet at Pugwash conferences, lots and lots of this kind of nonsense is dished out. Why? We cannot get through this and into more constructive undertakings unless we open up and admit what is behind the empty phrases.

Bohr urged for openness. Nobody listened, yet most of the decision makers didn't even try to understand what Bohr wanted to accomplish. But there is still time for further tries.

First of all, we are all of us afraid of criticizing our superiors. Some of us say that we are technical men and that technical men should not devote their thoughts to anything but technicalities. We are afraid to lose our jobs, we are afraid that our families will suffer from our actions. Thoughts and ideas which do not fit into the policies of our countries are considered revolutionary, and even governments based on revolutions are afraid of revolutionary ideas not belonging to their own brand of revolution making.

Revolutionary action has always been dangerous, and still, if humanity is to survive quite a revolution is necessary. This is a challenge to us who pride ourselves on the capacity of objective thinking. But even we dare not see these things eye to eye. Or do we? We must get away from our own scares and frights!

Secondly, without basic information we cannot do anything to solve the problems. Basic information must out in the open. I do not at present think of numbers of missiles, bombs, airplanes, etc. or their sites, bases and so on. The arms race is not the real big issue, it is but a symptom of hostilities, struggles for power, lust for power, mistrust, etc. The basic information I demand is that which pertains to the attitudes of our leaders who appear to me as lacking in sincerity, as delivering platitudes and distorted information in order to hide their own fears. We can phrase an enormous number of questions, of relevant questions, but no answer can be obtained because our inner thoughts are not open, they are closed and hidden. To reveal our innermost thoughts may be equivalent to losing face. And that we dare not do. The result might be that we or the leaders might reveal the precarious fact that we are filled with fright, scares,uncertainty, etc. and that would be most damaging for our positions, for our reputations. But suppose for a minute that Kennedy and Khrushchev dared to come out openly saying to each other: "Dear friend, something is wrong, we cannot solve it alone, what shall we do?" What a relief these utopian words would mean!

Therefore, let me finish with one simple question only: Can the small countries learn to behave like Hans Christian Anderson's small child, and can they do it even more forcefully, so that the big nations will admit their follies, so that a fresh start, a radical change, an open attitude to the huge problems can be developed? I hope they can, because they and their men are not so much hampered by fear of losing face and position, because they have less of it to start with.

K. D. Lapter

AN ATOM-FREE ZONE IN CENTRAL EUROPE (RAPACKI PLAN)

This paper presents an outline history and the present phase of struggle for the implementation of the Rapacki Plan, i. e. the Polish plan for disengagement in Europe.

To-date, this has been the only, officially advanced, plan for denuclearization and reduction of nuclear armaments in the region along the borderline between the armed forces of the world's two opposed political and military blocs.

The paper points to the relation of the Polish plan to general and total disarmament and to what are called partial measures, and discusses the objections raised against the Rapacki Plan. Pointing to the tremendous international significance which the establishment of a disengagement zone in Central Europe would have for world peace, the document concludes that the Polish plan should find support among all peoples and governments interested in peaceful development of mankind.

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Before the present Conference starts its debate on the problem of atom-free zones, a further improvement in international situation has taken place as a logical consequence of the Soviet-British-American partial nuclear test ban treaty. This treaty, apart from its directly beneficial influence, also serves to show the importance of all partial and limited agreements for the lessening of international tension; for, no doubt, it is thanks to such agreements that the danger of a thermo-nuclear war grows smaller, although limited agreements do not entirely eliminate this danger.

No wonder, therefore, that in the new international atmosphere another proposal for a partial solution, the Rapacki Plan and its various aspects, recurs again, and even more often, among the world's political circles.

It must be stated that the Pugwash Movement has long ago realized the possibilities opened by the Rapacki Plan for the cause of a strengthened peace in Europe and, consequently, in the whole world. In this connection, I shall take the liberty of recalling the resolutions of the 9th and 10th Conferences, and especially - of the European Pugwash Meeting in Geneva in March 1963 [1]. The "Tolhoek-Lapter Paper"[2] discussed at that meeting laid down some basic rules to be followed in setting up an atom-free zone in Central Europe.

Apart from the formal Rapacki plan, there exist more than 200 other plans related to disengagement in Europe[3] but the above paper differs from all others in that it had been drawn up jointly by Pugwash members in Holland and in Poland.

It is only natural that the principles, contained in the Tolhoek-Lapter Paper and supplemented by the results of the discussion held at the Geneva Pugwash meeting, have been accepted as basic directives also for the present paper which considers the so-called Rapacki Plan as the most relevant and serious (and the only one officially advanced) of the existing proposals concerning disengagement in Central Europe, in the most sensitive region of this continent where both the First and Second World Wars started.

The history of the Rapacki Plan is both long and short.

It is long when compared with the many plans and proposals which, like so many ephemereal creations, spring up to a day's, week's, or a month's life, only to disappear immediately afterwards from the international forum and take their place in archives, where they can be spotted by a scholar in international affairs. It is long, too, when we consider the greatly accelerated rate of development of humanity in the years following World War II, and take into account the multitude of important events which have taken place in the world during the six years since the proposal, named after Poland's Minister of Foreign Affairs, was first advanced.

And yet, this history embraces only a period of six years.

The world first heard of the Rapacki Plan on October 2, 1957, when Minister Adam Rapacki, speaking during a debate of the Twelfth Session of the United Nations General Assembly, made a short statement containing 57 words in the Polish text and 74 words in its English version.

"In the interest of Poland's security and of a détente in Europe, having agreed on this initiative with the other members of the Warsaw Pact, the Government of the Polish People's Republic declares that should the two German states express their consent to impose a ban on the production and stockpiling of atomic and thermonuclear weapons in their territories, the Polish People's Republic is prepared simultaneously to impose a similar ban on her territory"[4].

It should be recalled that the era of sputniks and of Soviet and American Cosmonauts began after that statement, that the development of the technology of annihilation measured in megatons has in these six years made a colossal stride forward, and that the world lived through several precipitous crises of which at least one, the Cuban crisis of October 1962, brought mankind to the very brink of a thermo-nuclear holocaust.

The turbulent and perilous development of the international situation and the nightmare of mankind's nuclear suicide have prompted all people of good will to call for a halt to the maddening race towards a catastrophe and to seek solutions to a seemingly hopeless situation. It was indeed the very same sentiments that gave rise, among others, to the Pugwash Movement, and which lent a growing support to the almost contemporaneous Polish initiative known as the Rapacki Plan.

In retrospect, those six years were a period very long indeed in the history of mankind, living as it does, in a state of permanent and deadly tension, although in the centuries-long development of the human race they may have been but a passing moment. Let's then recall in brief the long-yet-short history of the Polish plan.

At the same Twelfth Session of the United Nations General Assembly, the Czechoslovak Government associated itself with Minister Rapacki's statement of October 2nd, 1957. In this manner, the geographical outlines of the disengagement zone in Central Europe crystallized, embracing the two German states, Czechoslovakia and Poland.

In its general conception the Rapacki Plan linked up several other proposals for disengagement in Europe, advanced in the years 1952-1957, notably Eden's proposal of 1955 and the Healey-Gaitskell plan of 1957. It was contemporaneous with the deadlock in which the disarmament negotiations had found themselves, with the growing role played by Federal Germany in the NATO bloc, and with the growing momentum of armaments in Federal Germany as she was beginning overtly to reach for nuclear weapons. Those facts aroused general anxiety and stimulated the activity of all people interested in bringing about a détente in international relations and in supressing the danger of a thermo-nuclear war. The clearly self-destructive character of such a war was brought out and further reinforced by technological developments in rocketry and by the launching into orbit of the first sputnik.

The Polish proposals were made concrete in the Polish Government's Memorandum submitted on February 14, 1958, following a 19-week long debate over the whole concept. In a nutshell, the contents of that Memorandum[5] amounted to the following theses:

- The zone would embrace Poland, Czechoslovakia and the two German states. In these territories, a ban on the production, stockpiling and deployment of equipment and facilities for thermo-nuclear weapons and means of their delivery would be imposed. The ban would be binding on the

above-named four countries of the zone, as also on the four Big Powers maintaining their armed forces in that region. The Big Powers would pledge not to transfer nuclear weapons to any of the countries of the disengagement zone and not to make use of nuclear weapons towards any of these countries. A similar pledge would also be undertaken by other states maintaining their armed forces in the above-delineated zone.

The states concerned would institute an effective system of control for the implementation of the obligations assumed. The act of setting up an atom-free zone in Central Europe could be effected either in the form of an international treaty or in the form of unilateral declarations having the character of international obligation. -

The Polish Government suggested, while submitting these proposals, that the states concerned initiate negotiations in order to work out jointly details concerning the setting up of an atom-free zone inCentral Europe.

The text of the Polish Memorandum was transmitted to the Governments of the Czechoslovak Socialist Republic, the German Democratic Republic, and (through the intermediary of the Swedish Government) the German Federal Republic, as well as to the Governments of the Soviet Union, United States, United Kingdom, France, Belgium, Denmark and Canada, i. e. the states maintaining their armed forces in the territory of the suggested denuclearized zone.

The Governments of the German Democratic Republic, Czechoslovakia and the Soviet Union, with which the Polish initiative had previously been agreed upon, replied to the Memorandum swiftly and in the positive.

The majority of the other governments deemed it proper to laud the Polish initiative but rejected the Polish plan on the following grounds: a) that it allegedly would lead to the Soviet Union's military superiority in Europe, and b) that it would not solve the problem of Germany's unification[6].

In the course of a lengthy press discussion, some other objections were added: fear lest the German Federal Republic should withdraw from NATO, and United States troops withdraw fromEurope; misgivings concerning the validity of guarantees supplied by the four Big Powers; nonexistence of a meticulous plan of inspection and control; a too small territorial scope of the atom-free zone.

Giving due consideration to some of these reservations, the Polish Government suggested on November 4, 1958, that the realization of its plan might be effected in two stages.

In the first of these stages, there would be a freezing of the thermo-nuclear status quo in the territory of the suggested zone, which would also include a ban on the delivery of atomic weapons to states which do not possess them. In the second stage, there would take place simultaneously denuclearization of the zone and reduction of conventional arms within it, obviously to be effected under proper control.

In that manner, the Polish initiative, although it had not been formally accepted, nonetheless did provide a platform for a broad international discussion. Being fundamentally an endeavour to find partial disarmament solutions, the Rapacki Plan became a distinct alternative to the nuclear armaments race in Europe and to the grave consequences to world peace, flowing from the possible extension of the atomic club to include the German Federal Republic.

The longer the Rapacki Plan was debated internationally the more it gained in popular support, and the harder it became to shelve the Polish proposals in the face of world public opinion. The Polish Government paid great attention to all constructive suggestions relating to denuclearization of Central Europe, and undertook togive due consideration to such suggestions presenting a new version of the Plan, submitted to the 18 Nations Conference in Geneva on March 28, 1962, in the form of another memorandum[7].

The latest version of the Rapacki Plan also provides for two stages in the realization of an atom-free zone in Central Europe. We shall dwell on this version in order to review it in greater detail.

The aim of the Polish proposal remains the same, namely: elimination of nuclear weapons and means of their delivery,as well as reduction of troops and conventional arms in Central Europe where there is a clear cut borderline between the armed forces of NATO and the Warsaw Pact Organization.

Realization of this goal is divided into two stages.

Stage One has in view the freezing, within the suggested zone, of the existing situation as far as the nuclear weapons and means of their delivery are concerned. This would contribute to the preservation of the fundamental principle of the Zorin-McCloy agreement, that is to say, the maintenance of the existing balance of power both in this region and in

the more general proportion between the forces of the Warsaw Pact Organization and NATO. Geographically, the disengagement region would comprise, as a minimum, the above-named four states and those of the immediately neighbouring states which would specify of their own accord the period of time in which they would be ready to conclude a disengagement agreement. Needless to emphasize, the principle of voluntary adherence is likewise valid for the Governments of the four states named in the Polish proposal: Poland, Czechoslovakia, the German Democratic Republic, and the German Federal Republic. Practically, this means that consent is now necessary only on the part of the Government of the Federal German Republic since the other three states have declared theirs on many occasions. The Government of Federal Germany, however, has to-date maintained a definitely negative attitude towards plans for setting up an atom-free zone in Central Europe, which would be tantamount to renunciation of the thermonuclear weapon by the German Federal Republic. And the acquisition of this weapon is the avowed goal of the Federal Government.

Without the participation of the German Federal Republic the Polish proposal becomes nonsensical for it would then virtually mean unilateral disarmament while faced with a rearming West Germany which calls herself heiress to the German Reich. And a German Reich, and especially one armed with atomic weapons, is evoking in all European countries only too many dreaded associations and reminiscences originating in the not-too-distant past.

We would, however, be absolutely wrong were we to treat the absence of the German Federal Republic in the disengagement zone as a foregone and final conclusion, and thus consider the Polish plan as a miscarried idea of the wishful thinking of people isolated from reality. For there do exist powerful forces both within and without the German Federal Republic, which can, and in a sense must, influence the position taken by that country. Above all, this is a matter of the German people for whom yet another war may bring a result very similar to that brought by the Third Punic War for Carthage. Comprehension of this simple fact has been gaining ground in the German society, and our colleagues from the national Pugwash group from Federal Germany are credited with marching in the first ranks of that army which must win if the Germans and the other nations of Europe are to survive.

Among the external forces exerting pressure towards the same end we should list above all the growing understanding by the world public opinion and the governments of the nuclear powers that everything must be done in order to prevent another world war which inevitably would

escalate in to a thermo-nuclear war. Under Polish proposals, the nuclear powers maintaining their armed forces in the four countries of the suggested zone would pledge not to hand over to any of these states either nuclear arms or means of their delivery, not to introduce any new nuclear arms or means of their delivery into the territory of the zone, and not to set up in this territory any new bases for the stockpiling or maintenance of nuclear arms and means of their delivery.

Thus, the setting up of a frozen armaments zone, which would be the starting point for the establishment of an atom-free zone and reduced conventional armaments zone, requires the following:

1. Agreement by the Governments of Poland, Czechoslovakia, the German Democratic Republic, and the German Federal Republic.

2. Agreement by the nuclear powers maintaining their armed forces and thermo-nuclear weapons in the territory covered by the frozen armaments zone, that is the Soviet Union, the United States, Great Britain and France.

3. Agreement by the non-nuclear powers maintaining their armed forces in the territory of the German Federal Republic, that is Belgium and Canada.

4. Agreement by the Warsaw Pact Organization and NATO since the states of the frozen nuclear armaments zone are members of either one or the other of these two political and military organizations and the establishment of such a zone implies that the states of this zone would keep their membership in these organizations together with all consequences thereof.

5. A favourable attitude towards the establishment of a frozen nuclear armaments zone, and a prospective atom-free zone, in Central Europe on the part of a majority of other states which understand the weight of every form of disengagement in Central Europe for the cause of world peace and security.

The realization of a frozen nuclear armaments zone in Central Europe would likewise require an appropriate inspection and control system in the form of an international body instituted by the eight countries concerned or, at least, with their agreement. It may well be that a great role in organizing such inspection and control could be played by the United Nations.

At any rate, control over the maintenance of status quo in Central Europe seems to be easier to impose and carry through than the control over the quantitative changes in armed forces and weapons in this territory.

We have dwelt on the particulars of the realization of the first stage of the Polish plan because it constitutes an essential starting point for all further proposals of disengagement in this region. The advantages of the proposal for freezing armaments are evident, as they force all parties concerned to either declare themselves for a military status quo, otherwise called the existing balance of power, or else against it, which would mean siding with the arms race and the continued aggravation of the cold war with all its consequences. Small wonder then that all charges levelled against the Rapacki Plan have as a principle evaded the essential question of the Plan's first stage and have instead concentrated on the more complex problems connected with its second stage which provides for the elimination of nuclear arms and means of their delivery, as well as for the reduction of armed forces and conventional arms within the Central European zone of disengagement.

All of us know that it is the beginning that is the most difficult part of every work. Difficulties in the establishment of a disengagement zone envisaged by the Polish plan are considerable, and we would be unfair to ourselves if we attempted to minimize them even though the nuclear powers' agreement of last August certainly did create a much more favourable atmosphere. That is why the Polish plan suggests the easiest possible step leading in a good direction, and, precisely speaking, refraining from steps leading in a direction wrong and dangerous not only for the Poles, Czechs, Slovaks and Germans, but to all European peoples and to all inhabitants of our small planet. And what is more: the Polish proposals ought to be considered as subject to such changes and amendments as would emerge from a discussion with the other partners of a disengagement zone as soon as they come to an agreement on setting up such a zone in Central Europe and adopt as their starting point the principle of maintaining the existing nuclear status quo in that region and of coordinated action in the further stages of the denuclearization of Central Europe.

The German Federal Government's resistance against the setting up of disengagement zone in Central Europe has been the greatest, though by no means sole, obstacle on this road. It would, therefore, seem worthwhile to be acquainted with the fundamental argumentation put up by the opponents of the Rapacki Plan or even some of its lukewarm supporters. The following are their main arguments together with an attempted polemic:

1. Most arguments raised against the realization of the Polish plan are connected with the German problem or the attitude of the Bonn Government.

As we have pointed out before, the Rapacki Plan requires the participation of the German Federal Republic in the suggested disengagement zone as a sine qua non condition. Taking the view that the best national and state interests, realized by the people of the German Federal Republic, will eventually make her Government change their present negative attitude, we shall now try to polemize with such arguments regardless of whether they seem to have been advanced in good or, as the case may be, in bad faith.

A. The Rapacki Plan makes the unification of Germany more difficult and perhaps even impossible for it perpetuates the status quo, thus leading to recognition of the German Democratic Republic.

No doubt, the Rapacki Plan is not equivalent in meaning with the unification of Germany, and even less so with the liquidation of the German Democratic Republic, a peaceful country maintaining friendly relations with Poland. The Polish plan adopts as its basis genuine reality, that is the real existence for the past fourteen years of the two German states. Unification effected by means of force would lead to a world war since the existing German states are members of two political and military blocs opposed to each other. There seems to be plentiful evidence that such a war would not bring a unification of Germany but rather her final physical annihilation. Thus, only the peaceful road remains to be used, the road which the Rapacki Plan has done nothing to close but rather to open up, creating a basis for the peaceful co-existence of the two German states until the time comes when both internal and international conditions will permit the rebuilding of a united German state. In this sense, the Rapacki Plan even in its very first phase can be recognized as an act favourable for the prospects of Germany's reunification, if only because it would check the process of the aggravation of divergencies and controverses in the foreign policy of the two German states. When the realization of the Rapacki Plan enters its second stage, the process of rapprochement between the two states could take place in a peaceful atmosphere. Needless to say, such co-operation presupposes the mutual recognition of the two states not so much in the de iure sense as de facto. The Government of the German Federal Republic is doing just that even now when it does trade with the German Democratic Republic. There have been many instances in the history of international relations when a state did not formally

recognize another state and yet maintained trade and other relations with it. Consequently, the distinction has been introduced in international law between a de iure and de facto recognition.

The Government of the German Federal Republic proclaimed some time ago a doctrine (called the Hallstein Doctrine of 1952) in which they pledge to sever or to refrain from establishing diplomatic relations with states maintaining such relations with the German Democratic Republic. In autumn 1962, the Bonn Government extended that Doctrine to include states which would sign a peace treaty with the German Democratic Republic. That act did not prevent the German Democratic Republic from establishing diplomatic and trade relations with a great number of states. The September 1961 conference of 25 non-aligned states, convened in Belgrade, the capital of our host country, declared expressly for the recognition of the fact of existence of two German states; similar voices can be heard even among Federal Germany's allies in the NATO bloc. There is no doubt that the Hallstein Doctrine has done considerable harm to the German Federal Republic. A symptom of Federal Germany's gradual withdrawal from that Doctrine was, among others, the exchange of trade missions between the German Federal Republic and Poland this year. Nothing strange in that fact, either, for the attempts to deny the fact that the Berlin Government exercises a sovereign rule over a large territory inhabited by almost 20 million Germans have resulted in many more difficulties for Federal Germany than for the German Democratic Republic and the states which, like Poland, have been maintaining friendly relations with her.

B. The Rapacki Plan makes a breach in the sequence between the unification of Germany and disarmament.

This charge does not even formally concern the first phase of the Rapacki Plan, which phase provides only for halting nuclear armaments in Central Europe and not for disarmament which is provided for under another stage of the realization of the disengagement plan. In reality, this sequence continues to be valid although not in the sense lent to it by certain West German politicians who have advanced the thesis "unification of Germany first and then disarmament", which would practically mean an unlimited arms race subsequently leading to a war catastrophe. A different thesis, therefore, seems to be more apposite, namely one pointing to the halt to the armaments race, pacification of international relations, steps leading towards disarmament, and the setting up of an atom-free zone covering both German states - pointing to all these measures as proper means of perpetuating the very existence of the German

nation and prospects of its eventual unification. This problem can be viewed from an even broader platform, not only through the eyes of the German people. A question can be asked: what is more important for Europe and the entire world - an immediate unification of Germany or saving mankind from the threat of annihilation posed by the nuclear arms race? Not even citizens of the German Federal Republic should have any difficulty answering that question.

C. The Rapacki Plan is equivalent to Federal Germany's abandonment of NATO and enormous weakening of that organization, as a result of which the United States would withdraw their troops from Europe.

The charge is untrue, for neither the first nor the second phases of the Polish plan provide for the German Federal Republic leaving NATO or, for that matter, Poland, Czechoslovakia and the German Democratic Republic leaving the Warsaw Pact Organization. The adherence of the German Federal Republic to the disengagement agreement would signify absolute preservation and retention of the military status quo in the zone covered by the plan. The states of the zone would remain in the organizations of which they are at present members, that is to say, of NATO and the Warsaw Pact Organization. However, they would renounce the idea of acquiring nuclear weapons. This holds for the German Federal Republic, German Democratic Republic, Poland, Czechoslovakia, and possibly other states which would be covered by the disengagement zone in Europe. Obviously, this is the plan's raison d'etre.

As the abandonment of NATO by Federal Germany is out of the question, there can be no ground for the argument about the withdrawal of United States troops from Europe. One ought to bear in mind that the further development of the disengagement zone and its full denuclearization would depend on the consent of all states concerned, including the German Federal Republic and the United States. Bearing this in mind, we do not doubt that in the course of the realization of general and total disarmament there would be no need of any troops and bases in foreign territory.

2. Other objections are rather a suggestion of discussion.

D. The scope of control and inspection has not been stated precisely enough in the Polish proposals, and furthermore the full realization of control would prove insufficient, being restricted to the disengagement zone proper whereas there would be another four powers remaining outside, namely the Soviet Union, the United States, Great Britain and France.

True enough, the suggestions concerning control and inspection contained

in the Rapacki Plan do not present full particulars even as far as the first stage of the implementation of the disengagement zone is concerned. The Memorandum, submitted by the Polish delegation to the 18 Nations Disarmament Conference in Geneva in March 28th, 1962, speaks about strict international control and inspection on the land and in the air, and about the setting up of appropriate control posts. It further goes on to suggest the setting up of an international body supervising the implementation of such decisions, the composition and competences of the body being defined by the states concerned. The signatories to the treaty would pledge subordination to the control of such a supervisory body as well as all assistance and facilities it might require. The scope of control would likewise be agreed upon among the signatories.

Despite their preliminary character these proposals constitute a good starting point for discussion with a view to working out all the details upon obtaining consent from all states concerned on the establishment of a disengagement zone in Central Europe. What is important is the acceptance of the principle of international control and inspection, and the adaptation of their scope to the respective stages in the realization of the disengagement zone. To-date, no government has yet made an attempt to expand or supplement the Polish proposals. One such attempt, although unofficial and very preliminary, was made during the European Pugwash Meeting in Geneva, which found its reflection in the Tolhoek-Lapter paper published in the Pugwash Newsletter. We believe that the present Conference will bring further suggestions facilitating the selection of proper forms and methods in this pioneer task. The establishment of a satisfactory control and inspection system within a limited territory of Central Europe would create in that region laboratory-like conditions serving as an example for other denuclearized zones and, quite possibly, for the entire globe under conditions of general and total disarmament.

Bearing in mind the difficulties which arose in the matter of international on-site control and inspection in connection with the halting of nuclear weapons tests, it would have been naive on anybody's part to advance the demand of extending the territorial scope of inspection and control to include the territories of the nuclear powers. Nevertheless, since the setting up of a disengagement zone in Central Europe would depend, too, on the consent of these powers, and such a consent would mean that the nuclear powers consider the setting up of such a zone to be in their national interest, we can suppose that they would keep their pledges. And after all, each of the nuclear powers would be able to use all its means to detect and bring into open any breach in the obligations of the other parties. This factor would probably further inhibit any party from violating the agreement.

E. The territorial scope of the zone is too limited, it ought to be extended to include other countries or even to cover the entire European continent.

An essential, or even the most essential, element of the Polish proposals is prevention of the proliferation of nuclear weapons among European states which do not as yet possess such weapons and, in particular, prevention of the German armed forces from acquiring nuclear weapons, which tendency has become an official postulate advanced by the military circles and Government of the German Federal Republic. With this view in mind, any plan for disengagement and denuclearization in Central Europe must include the two German states. Since the German Federal Republic represents in many respects a unit of greater magnitude than the German Democratic Republic, another two socialist countries are covered by the Polish plan in an attempt to equalize the contribution of the two sides. This does not mean that other European states would be excluded from joining that zone even at the very beginning. This would be an evident advantage for the cause of the pacification of the whole region and Europe. On the other hand, it could make more complex the implementation of the principle of maintaining the balance of power and other matters connected with inspection and control. To be sure, however, these would not constitute insurmountable difficulties.

On the other hand, the idea of extending the denuclearized zone to cover the whole of Europe from the Atlantic Ocean to the Ural Mountains, as suggested by General de Gaulle in one of his speeches, must definitely be rejected. Such a plan would have to cover all the nuclear powers, for otherwise it would mean an intention to bring about unilateral nuclear disarmament by the Soviet Union the fundamental part of which is situated in Europe. The latter alternative being absolutely unrealistic, such a plan would essentially be tantamount to general and total disarmament. It thus would swap an easier job, that is to say partial disarmament, limited in scope and territory, for a task universally known as being much harder in realization and more complicated.

F. The Rapacki Plan does not specify the role of the United Nations in the realization of an atom-free zone in Central Europe.

True, the Rapacki Plan does not expressly mention the role of the United Nations in the implementation of the plan for an atom-free zone but it by no means excludes the United Nations. The latest Polish Memorandum of March 28, 1962, was formally submitted to the 18 Nations Disarmament Committee in Geneva, which is a body connected with the

United Nations, and the first Polish proposal was also submitted at a United Nations General Assembly session on October 2nd, 1957.

However, direct association of the implementation of the Polish plan with the United Nations encounters serious difficulties resulting from the situation which has prevailed in the United Nations' chief organ responsible for the matters of peace and international security, the Security Council. As we have stated before, the establishment of a disengagement zone would require, among others, the consent of the nuclear powers. If the creation of such a zone in Central Europe is to their interest, as we are convinced it is, they would then give their consent. On the other hand, extending the number of states with a voice on this matter to include other states not vitally connected with this geographic region or, for that matter, to include the Taiwan delegation who do not represent anybody, would at best introduce yet another unknown to a difficult equation. Therefore, I think that the scope of the United Nations' participation in problems of the atom-free zone ought to be made dependent on that organization's efficiency, which in turn depends on the extent of co-operation among the world's Big Powers. I should, therefore, suggest to declare for a maximum of co-operation, possible at a given stage, with the United Nations and its organs on all matters connected with the setting up and development of an atom-free zone inCentral Europe.

G. Would it not be wiser to start from setting up atom-free zones in regions where the two biggest political nuclear blocs do not immediately border on each other?

One of the evident results of the struggle for the realization of the Rapacki Plan has been the popularization of the idea of atom-free zones. Everyone for whom world peace is dear at heart cannot but rejoice over each new achievement in this respect. Should any nations succeed in setting up an atom-free zone in any part of the world this would constitute an enormous boost for efforts exerted towards the same end in other regions. Consequently, the existing plans for atom-free zones ought to be viewed as noble competition rather than as an alternative. Nonetheless, there do exist essential reasons to our judgment that the Polish plan covers a border region between the two biggest blocs, which is the most important both politically and militarily, that it covers a zone exceptionally unstable due to the German problem, and that the setting up in this part of Europe of an atom-free and reduced conventional armaments zone would be, in a global sense, a greater victory for the forces of peace than setting up similar zones in other regions. There is yet another reason, perhaps on a world scale a less important reason, why

Poland has been struggling for the realization of an atom-free zone in Central Europe: after all, Poland is situated right there.

3. A number of objections to the setting up of an atom-free zone in Central Europe have no logical argument whatsoever. Among such ungrounded charges are, for instance, statements that such a zone would impede general and total disarmament, that it would not lessen but, on the contrary, increase the danger of a thermo-nuclear war, that it would give unilateral advantages to only one of the two camps, that one of the two parties is immanently unable to keep its international obligations, etc. At one time, an attempt, nearly derisory, was made to compromise the Polish plan by alleging that Poland had not authored it. It seems that all such arguments can safely remain without a reply.

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In the social sciences, to which international relations and politics no doubt belong, it is a tremendously difficult, and often impossible, task to perform an experimental demonstration of a given thesis, after the pattern set by the natural sciences. Therefore, proving the justness of some thesis must often be done in a roundabout way, drawing heavily on the results of other sciences, including the natural sciences, resorting to historical experience, to the regularities of mankind's evolution, to the ability of foreseeing the outlines of future history on the basis of contemporary realities, in other words - to indirect and implicit evidence.

The starting point of our reasoning is the thesis lying at the cornerstone of our Movement namely, recognition of the fact that the development of the weapons of mass annihilation and, above all, the thermo-nuclear bomb together with the means of its delivery, has brought the alternatives; either humanity destroys the nuclear weapon or the nuclear weapon will destroy humanity. In other words, we recognize the advantages of politics over military strategy when we set ourselves the goal of nuclear disarmament and, consequently, also general and total disarmament.

Although generally there is agreement on this matter among the world's communities and even governments, as evidenced by the resolutions on general and total disarmament subscribed to by all members of the United Nations, only Utopians or blind people can think that in the present set-up of world forces such a radical move could be effected quickly and in a single act. The overwhelming majority of the people who have seriously dealt with this question consider general and total disarmament to be a distant, though fully attainable, goal.

Also in this question, like in many others, the "all or nothing" principle boils down to an actual rejection of the basic goal and, as a matter of fact, it is a declaration for "nothing".

The complex road towards total disarmament, therefore, requires the use of all avenues available, which would make the goal more feasible and near. There is a term in universal usage now to denote all moves of that kind: partial measures. Every international, or even national, act improving the international atmosphere is such a "partial measure".

Between such partial measures and the final goal, as well as between partial measures themselves, there is a relationship which Marxist terminology has termed a dialectial relation, and which is known in cybernetics as feedback.

Each of the partial measures is important; however, not all of them are equally important. Some of the partial measures influence but little the improvement of the political atmosphere, and bring us but an inch or two towards the distant goal, whereas others may constitute a giant's stride in the desired direction. Our experience tells us that we will be justified in proposing a thesis that implementation of each of the so-called partial measures not only brings us nearer to the final goal but at the same time facilitates the implementation of other partial measures. It would, therefore, seem advisable to use the tactics of implementing every feasible partial measure without postulating any artificial order of succession in this respect.

I should now like to project those general deliberations on the example of the Rapacki Plan.

Implementation of each of the possible partial solutions to be advanced now or in the foreseeable future would enhance the chances of setting up an atom-free and limited armaments zone in Central Europe. With this view, Polish foreign policy has consistently given support to any and all partial solutions, both on a global scale (as for instance, the Moscow partial nuclear test ban treaty) and on a regional scale (for instance, the treaty on the Antarctic, or plans for atom-free zones in other regions and other continents). Out of considerations already presented, the Polish plan must be viewed as one of the most important partial measures.

At this point, I shojld like to outline in brief the foreseeable results of the implementation of the two stages suggested in the setting up

of an atom-free zone in Central Europe, its influence upon other intermediate goals, and eventually upon the realization of general and total disarmament.

Stage I.

1. General improvement of international atmosphere including Soviet-American relations, the basic forces of the two opposed blocs.

2. Improvement in the relations between the German Federal Republic and her three Eastern partners; steps taken towards the normalization of diplomatic relations between Federal Germany on the one hand and Poland and Czechoslovakia, on the other.

3. Ebbing influence of Federal German revisionist forces which have stimulated distrust among the neighbours of the German Federal Republic towards a German state, striving to change the existing Polish-German frontier on the Odra and Nysa rivers and thus endangering world peace.

4. Improvement in the relations between the member countries of NATO and the Warsaw Pact Organization, which would open the road to negotiating and concluding a non-aggression pact between these two political and military blocs.

5. A decreased probability of an armed conflict accidentally erupting in this region. Research into the avenues and methods to this end on a regional scale.

6. An open road to a radical breakthrough in the whole complex of political, economic, scientific, and other cooperation among the countries of that region.

7. Possibility of extending that region to include other European states.

8. Facilitation of setting up atom-free zones in other parts of the world.

9. Research on a regional scale into the avenues and methods of efficient international inspection and control, with the

possibility of using the results of such investigations in other regions, as well as for purposes of general and total disarmament.

10. Improvement in the relations between the two German states, which would facilitate their peaceful unification on a democratic basis with a simultaneous "disarming" of the explosive issue of West Berlin.

Stage II - Denuclearization

This would be made feasible through the implementation of the first stage and would consolidate its achievements:

1. A study of the successive disarmament measures and the interrelationship between nuclear and conventional disarmament.

2. A study of the techniques and conditions for the control and inspection over the implementation of the successive measures in the field of nuclear and conventional disarmament.

3. A powerful impulse for all partial measures concerning general disarmament; a radical improvement in international relations.

4. An easing of the burden of armaments, which would enable the states concerned to obtain additional means for economic and cultural development.

5. A strengthening of the role of the United Nations and other international organizations participating in the establishment of the disengagement zone.

Such a laconic listing of possible achievements is not an attempt on our part to minimize the existing and future roadblocks which may crop up in the course of implementation of the plan calling for denuclearization and reduction of conventional armaments in Central Europe. The difficulties are great but not insurmountable, and the consciousness of bright prospects ahead is a powerful weapon in surmounting such difficulties.

It is a comforting and optimistic fact that of late there has again been an increased general interest in the Polish plan for disengagement.

It certainly is related to the recent relaxation of international tension and improvement of international atmosphere, an expression of which was the partial nuclear test ban treaty. Declaring its adherence to the treaty, the Polish Government stated, among other things:

"The agreement on banning experimental nuclear explosions should also facilitate the inauguration of talks concerning the Polish plan for an atom-free zone in Central Europe. Implementation of the Polish proposal would constitute an essential contribution to the cause of non-proliferation of nuclear weapons, checking the armaments race in Central Europe, and lessening the danger of a conflict erupting in this region which is so important for the cause of peace."

It will not be amiss at this point to recall that the Rapacki Plan not only does not reject but even presupposes the possibility of modifying and discussing any or all concrete suggestions concerning an atom-free zone in Central Europe which may be advanced by the Governments concerned. After all, as it is evident from the Plan, every single measure included in the second stage can be implemented only when given unanimous approval by the Governments concerned.

Although to date no such suggestion has been submitted, it must nevertheless be supposed that the timeliness of the very idea conveyed by the Plan, and its attractiveness for the nations of Central Europe and for the nuclear powers, will eventually force even those politicians who have so far been reluctant to the idea to revise their attitude. The undertaking by the Pugwash Movement of a detailed discussion on the Polish plan will no doubt provide another powerful stimulus towards this end.

The Rapacki Plan is aimed against those who place their trust solely in force and arms, thus leading the world to the brink of a terrible disaster. Being, as it is, only a partial plan and not claiming to be a panacea to mankind's multiple ailments, it is at the same time an ambitious plan whose implementation would favourably influence the peaceful development of the whole world.

For the Polish plan goes far beyond the political division of the world, though it does not overlook it as actual realities of present-day life. However, it looks upon the issue of peace not solely from the conventional standpoint dividing the world into East, West, and the non-aligned countries.

The Polish plan points to the most important line dividing the world at present. The line between those who defend the rights of all humanity to life, freedom and happiness, and those who, through their practical activities, deny humanity those basic rights. This is exactly the main front of battle on the international arena. Support given to the Rapacki Plan and struggle for the implementation of its basic postulates is really a struggle against the danger of a thermo-nuclear war and annihilation of mankind. This is why the Polish plan deserves the support, greater than heretofore, by all peoples of good will.

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Appendix

MEMORANDUM
SUBMITTED BY THE POLISH DELEGATION,
DATED 28 MARCH, 1962 CONCERNING THE CREATION
IN EUROPE OF A DENUCLEARIZED AND LIMITED
ARMAMENTS ZONE

Whereas

the conference of the 18-Nation Disarmament Committee is to consider, simultaneously with the elaboration of a treaty on general and complete disarmament, proposals on steps and measures aiming at the lessening of the international tension and increasing mutual confidence among states, thus to facilitate the implementation of general and complete disarmament;

Whereas

the creation of denuclearized and limited armaments zone constitutes one of the most important measures and steps of this kind,

the delegation of the Polish People's Republic, in agreement with the delegation of the Czechoslovak Socialist Republic, submits on the agenda of the committee a proposal for the creation of a denuclearized and limited armaments zone in Europe.

1. Purpose

The purpose of the Polish proposal is the elimination of nuclear weapons and nuclear delivery vehicles, a reduction of military forces and conventional armaments on a limited territory, on which this can contribute towards the lessening of tension and towards a substantial reduction of the danger of conflict on that territory.

2. Territorial scope

The zone ought to include basically the following states: the Polish People's Republic, the Czechoslovak Socialist Republic, the German Democratic Republic, and the German Federal Republic.

The agreement concerning the zone is open; other European states ought to have a possibility to accede to this agreement.

3. Rights and duties of states included in the zone or acceding to it

Rights and duties resulting from the creation of the zone should be carried out in the two following stages:

Stage one - freezing of all nuclear armaments and rockets and prohibition of the creation of new bases.

a) Rights and duties of states included in the zone.

1. On the territory of states included in the zone, preparation of production, and production of any kind of nuclear weapons and delivery vehicles for them shall be prohibited.

2. States included in the zone shall be prohibited to introduce any kind of nuclear weapons and delivery vehicles for them.

3. States included in the zone shall be prohibited to grant permission to establish new bases and facilities for stockpiling or servicing nuclear weapons and delivery vehicles for them.

b) Rights and duties of other states.

1. All states which dispose of any kind of nuclear weapons and delivery vehicles for them shall be prohibited to transfer them to states included in the zone.

2. All states which dispose of nuclear weapons and delivery vehicles for them shall be prohibited to introduce new quantities of such weapons of any kind into the zone.

3. Establishing in the area of the zone of new bases and facilities for stockpiling or servicing of nuclear weapons and delivery vehicles for them shall be prohibited.

Stage two - elimination of nuclear armaments and rockets and reduction of armed forces and conventional armaments.

a) Rights and duties of states included in the zone.

1. Elimination from the national armaments of all nuclear delivery vehicles by the states included in the zone.

2. Reduction to an agreed level of military forces and corresponding reduction of conventional armaments by states included in the zone.

b) Rights and duties of other states.

1. Withdrawal from the area of the zone of all kinds of nuclear weapons and all facilities for their stockpiling and servicing, as well as of all nuclear delivery vehicles permanently or temporarily stationed by foreign states, and of all facilities for their servicing.

2. Reduction of foreign military forces stationed on the area of the zone to an agreed level with a corresponding reduction of their armaments.

4. Control

1. To secure the effectiveness of disarmament measures mentioned in part 3 of this Memorandum, a strict international control and inspection on the ground and in the air will be provided, including the establishment of appropriate control posts.

2. A special control body will be established to supervise the implementation of the proposed obligations. The composition and competence of this body, as well as its procedure, will be agreed upon by the states concerned.

The signatory states of the agreement concerning the creation of a nuclear-free zone will enter an obligation to submit to the control of the said body and provide all facilities and assistance in its activity.

3. The signatory states of the agreement concerning the creation of a nuclear-free zone will agree on the extent and measures of control in each of the two stages.

5. Guaranties

In order to guarantee the inviolability of the nuclear-free zone, powers disposing of nuclear weapons will undertake to:

a) refrain from any steps which might violate directly or indirectly the status of the zone;

b) not to use nuclear weapons against the territory of the zone.

In view of the above, the delegation of the Polish People's Republic proposes the following:

1. The 18-Nation Committee will request the states concerned to take immediate steps to carry out the proposal concerning the creation of a denuclearized and limited armaments zone.

2. The 18-Nation Committee will request .... to initiate appropriate consultations on the creation of the zone, with the states concerned and to submit a report on these consultations not later than .... 1962.

3. The 18-Nation Committee will also request the General Assembly of the United Nations to adopt a resolution concerning the creation of a denuclearized and limited armaments zone in Europe.

F. A. Long

SCIENTIFIC STUDY GROUP ON SEISMIC PHENOMENA

1. Now that the 3-media nuclear test ban treaty has been signed, it will be desirable to proceed as quickly as possible to obtain understandings which will make it feasible to extend the treaty to cover underground nuclear tests. An important subject where increased understanding is needed is that of the scientific and technical aspects of seismic phenomena, including those generated by underground explosions.

2. A possible procedure to increase the scientific and technical understanding is to set up a continuing joint study group perhaps organized by scientists from the U. S., U. S. S. R. and U. K. to assess the items of scientific and technical programmes for increased understanding on topics of uncertainty, to assess the results of relevant experiments as they are done, to convey their interpretation of these results to their governments and to do other things which will assist in the better understanding of seismic phenomena.

3. An important first-step will be to determine the topics where there is now uncertainty or disagreement. The following topics are ones where there is likely to be reasonable agreement between U. S., U. K., and U. S. S. R. technical groups:

a) Numbers and distribution of earthquakes in the U. S., U. K. and U. S. S. R. areas of interest.

b) Characteristics of seismic equipment including utility of multi-element arrays.

c) Characteristics of seismic energy propagation from a source.

4. Among the items where the scientific knowledge is less certain or in possible disagreement are:

a) Detection capabilities, with particular reference to levels and properties of seismic noise.

b) The precision to which seismic events of a given magnitude can be located using distant stations.

c) Capability of identifying seismic events from large distances. Among the specific items of interest are: the utility of first earth motion; the precision of depth of focus determination; the utility of other diagnostic aids.

d) Number of earthquakes corresponding to underground explosions of a given size in a given medium.

e) Design and operation of unmanned seismic stations, their optimal location and their utilization in detection, location and identification.

f) Utility of seismic calibration explosions in increasing epicentre location capabilities and delineating the characteristics of seismic signals from explosions.

5. In order to proceed to the study of some or all of these latter items, it is proposed that a U.S., U.K., U.S.S.R. scientific group be convened to develop a specific task statement for a continuing study group and to make recommendations on its operation.

I. Malek and K. Raska *

SOME PROBLEMS OF DISARMAMENT IN THE FIELD OF BIOLOGICAL WARFARE

When considering disarmament and its control, attention has been mainly paid so far to nuclear weapons. The reason is obvious: the dropping of atom bombs on Hiroshima and Nagassaki clearly demonstrated the terrible extent of danger to mankind. Since then the development of weapons of mass destruction, however, has continued so that thermo-nuclear weapons today present an instrument of destruction the results of which, both immediate and long-term, are beyond human imagination.

In comparison with these horrors the danger created by bacteriological (biological) warfare naturally receded to the background, especially as humanity so far has no direct experience of biological warfare as of atomic weapons, and their result can hardly be visualized. Furthermore, people put a somewhat exaggerated trust in the possibility of controlling even intentionally disseminated contagion.

It is just in this underestimation of the possibilities and gravity of biological warfare that its danger lies to a great extent.

But the danger of using biological weapons, especially at the present stage of technical development, need not be much smaller than that of an atomic attack. This arises foremost from the different nature of these weapons. Atomic weapons, for the time being, are available only to a few great powers and a decision on their use is always influenced by the consideration that within an infinitessimally small interval of time retaliation will come from the attacked.

Biological (bacteriological) weapons, however, are available to practically everybody. A bacteriological attack (we have in mind here the possible use not only of microbes, but also of viruses, fungi and toxins) is difficult to ascertain and its results may become apparent only a very long time after the attack was carried out, so that all traces may have been covered up in the meantime, making it extremely difficult to reveal the attacker. The attacker is able to protect himself in time (preventive innoculation, etc.), whilst the attacked may be quite helpless when an infection unusual or unknown in his country (or a combination of such infections) is used. A biological attack may be also carried out during the period preceding the outbreak of war, through sabotage, etc.

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The combination of a biological with an atomic attack is naturally also possible, the results of which, however, are already entirely beyond our powers of imagination.

Besides, the special character and relative accessibility of biological means of warfare and the possibility of their wholesale use, even through sabotage, calls for exceptionally great caution. For it may become the instrument of individuals or groups of criminals interested in keeping up international tension and hostility among nations, with the real or only formal non-participation of the state on whose territory they may work.

All these circumstances, therefore, call for international co-operation and agreement on the question of international defence and disarmament also in the field of biological warfare.

It is generally known that the Geneva Convention of the year 1925 prohibited bacteriological warfare.

The fact that some countries refused to sign this Convention does not mean that these countries do not have the duty to observe it. On the contrary, the prohibition of bacteriological warfare has become a general norm of international law.

We are of the opinion, however, that considering the special character of biological (bacteriological) weapons, the Convention should be supplemented by an agreement also on international co-operation concerning defence against biological warfare, together with offers of help to those countries which have been attacked by biological weapons.

In biological warfare against human beings and animals (and possibly plants), bacteria, viruses, pathogenic fungi and bacterial toxins may be used. In order of severity viruses take first place, as their prevention and treatment is most difficult.

Considerations as to what means the aggressor will choose during various phases of war or in the period preceding hostile activities are naturally very difficult. The choice of means rests with the aggressor and the victim can only approximately consider what means or their combination the aggressor will choose.

The aggressor, to achieve the required effect (including the psychological one) will probably use:

a) means that are highly effective, causing death or mass epidemics,or

b) a combination of infections difficult to diagnose, thus complicating treatment and other elements of prevention, or

c) infections unknown at the time or at least in the country where they are applied, thus relying on the element of surprise and unpreparedness of the victim.

This means that the choice of means for biological warfare and the achievement of the desired effect of the attack will be influenced by the preparedness, and altogether by the possibilities for defence of the country attacked.

On the other hand, the preparation of defence against a possible biological attack today is in fact being forced on every country, that is by its health service, which is charged with ensuring prevention also of those infections which do not normally occur in the country. And this is tremendously difficult. It necessarily puts a strain on the various countries and the work and means that could be used far more effectively in the solution of other health problems of greater momentary importance to the country.

This is why we propose the opening of discussions the aim of which would be the conclusion of an agreement on international co-operation in protection against biological warfare, and disarmament in the field of biological weapons, on the following lines:

1) The use of biological means of warfare endangering the health and lives of human beings and animals (as well as plants) by individuals, groups of individuals or by a state constitutes a crime against humanity.

2) To ensure effective prevention of the use of biological weapons endangering health, and to ensure speedy and immediate defence within the framework of international co-operation (or international organizations - UNO, WHO), working groups should be formed composed of outstanding experts (scientists), representing various regions of the world, with the following tasks:

   a) The drawing up of definitions and criteria of biological warfare in its various forms. The working out of the criteria for judging whether the rise of diseases (individual cases or epidemics) is, or is not, the result of an intentional attack. The working out of diagnostic and technical possibilities for speeding up the detection of a biological attack and defence against it, etc.

b) The creation of a sufficient and immediately usable reserve of all means essential for the speedy determination of a biological attack, the identification of the agents used, further remedies, drugs, sera and vaccines, means for improving sanitary conditions, etc.

c) The creation of a staff of outstanding scientists, experts on problems of epidemiology, microbiology, virology, immunology, parasitology and DDD from all over the world, including the representatives of WHO, FAO and others, from among whom at any time and without delay a group of objective experts might be chosen (ad hoc international commission) to judge a case and work out recommendations for international assistance to the country attacked (should the government of the country, of course, so desire).

d) Realization of international co-operation on this question naturally presupposes long-term co-operation of all participant countries in the form of agreements on disarmament in the field of biological warfare.

This is naturally a rather difficult question. The study of effective means of defence is difficult to differentiate from the preparation for bacteriological warfare. Besides, the creation of means for the artificial dissemination of contagion does not demand nearly such complicated and costly equipment as atomic weapons.

Naturally, if means for detection, differentiation and identification of agents used for attack, and means for treatment and prevention of further spreading of all so-called exotic infections are ensured on an international basis, then each country can in its research and practical work in microbiology (including virology, etc.) limit itself only to infections occurring in this particular country. This means that within the agreement on disarmament, every country can pledge that no work will be done with certain pathogenic agents, nor that they will be stored in the country in question. All this refers to infection of people and animals (and also plants).

Also, for instance, as part of the activities of the Serum Reference Banks of the World Health Organization, it is possible in a relatively short time to gain a picture of what infections occurred and still occur in various regions of the world, apart from the fact that the storing of lyophilized sera, from representative samples of the population, makes it possible to ascertain later whether an infection not recog-

nized today has circulated among the population or not. All these and other circumstances can simplify not only the judging of a possible attack, but also the granting of international aid.

It is natural that conditions of disarmament in the field of biological warfare should be laid down for each state separately. Only a few great powers, especially as far as they hold territory or exposed places of work in all geographical regions of the world, would probably work with all known originators of disease.

e) Finally, international co-operation in the field of prevention of biological warfare and disarmament should serve for continuous and regular exchange of scientific information on the geographical occurrence of infection and disease, and on the possibilities of their timely diagnosis and prevention.

We are convinced that such a form of international co-operation would be of tremendous importance. Foremost, it would bring great relief to the health services of many countries which, for the sake of defence against biological warfare, must deal with problems of disease which do not occur in their countries under normal conditions.

At the same time this would mean the possibility of a better development of the fight against infection in every country and the opportunity for valuable exchange of scientific information.

Conditions might thus be established very quickly where the use of biological warfare against people, animals or plants would in all likelihood not attain the aims of the attack. And this is also the best way for a successful prevention of the use of biological means of warfare.

M. Meselson

POSSIBLE EFFORTS TOWARDS MISSILE DEFENCE AND THEIR EFFECTS ON INTERNATIONAL RELATIONS

Introduction

Both the Soviet Union and the United States have claimed to be making serious efforts to develop anti-missile systems for the defence of cities. Before long, both sides may face the decision of whether or not to install such systems on a large scale. This forecast may seem paradoxical in view of frequent statements from both sides that there can be no effective defence of cities against thermo-nuclear attack by modern missiles. But even if the designers of an anti-missile system can claim for it no more than marginal performance, certain other factors could act decisively in favour of its production and deployment.

This paper considers some non-technical factors which may lead to the widespread installation of missile defences and argues that this development should be opposed because it would have highly undesirable results for society and for relations between states.

Non-Technical Factors Which Could Lead to the Deployment of Missile Defences.

Factors, quite apart from technical performance data, may play a great role in decisions regarding missile defence. Among Soviet military planners, for example, there must be acute realization that the greatest wars of their countries' past have been won by the defeat of invading armies deep within Russian territory and only after terrible destruction on Russian soil. It would be natural for defensive concepts to play an exceedingly important role in the Soviet Union today and to constitute a strong pressure for the development and deployment of missile defences. Of course, this is not to say that other factors are less important in Soviet military planning. In the United States, cost-effectiveness analysis competes with inter-service rivalries and with domestic political and economic pressures which, under certain circumstances, could give powerful support to an anti-missile programme. There is no doubt that both sides pay close attention to the internal and international prestige benefits they consider to result from possession of the most advanced military forces. In this regard, the deployment of missile defences by one side would act strongly to provoke similar developments by the other side.

From a more military point of view, a powerful argument for anti-missile defence is that even a poor anti-missile system can help to offset the offensive capability of the other side. It is necessary only that the other side think the system may work in order for it to introduce considerable uncertainty into its calculations.

This short discussion is meant only to emphasize that a preoccupation with the technical difficulties of missile defence may lead us to a serious underestimate of the immediacy of the problems connected with the installation of anti-missile systems. Some of these problems are mentioned in the next section.

The Dangers of Anti-Missile Deployment.

So long as the strategic arms race concentrates on offensive weapons, such as missiles carrying nuclear bombs, the race can become self-limiting. There comes a point in such a race when, within wide limits, a further increase in numbers or yields of bombs has no significant effect on the strategic balance. To a considerable extent, the arms race now has acquired this self-limiting aspect. The result is to provide a breathing space for political adjustments and disarmament measures. The placement of missile defences about cities would put an end to this. Missile and anti-missile programmes would then be set against each other and an open-ended arms race would result. The two sides would race each other, and offensive and defensive teams within each country would compete, so that each side would also race itself. Such a race would have several deplorable effects. Not the least of these would be an increased emphasis on the territorial secrecy necessary to prevent the other side from learning the characteristics of ones' missiles and missile defences. A little knowledge of the penetration and defensive techniques of the other side may go a long way toward improving the design of ones' own systems.

Aside from provoking an open-ended arms race, the general deployment of missile defences would have another effect inimical to better international relations and disarmament measures. Along with anti-missile systems, each side would very likely have to build and discipline its citizens in the use of extensive shelters. In the United States, and I imagine in the Soviet Union as well, society would harden as a result. In the long run, the hardening of the societies of the great powers could be the greatest of all threats to peaceful development.

Both the United States and the Soviet Union should restrain themselves from major ventures in the preparation of missile defences for their cities. The problem may be sufficiently urgent to require special efforts at understanding and mutual restraint before formal disarmament arrangements can be devised and instituted.

Netherlands Pugwash Group

REPORT ON THE "EXTENT OF A DENUCLEARIZED ZONE IN EUROPE"

1. Purpose of the Study: participants in the discussions.

During the European Pugwash Meeting, which was held in Geneva on March 2-4, 1963, it was requested of the Pugwash Groups in Poland and the Netherlands to form study groups and to prepare reports to serve as a basis for discussions at the eleventh Pugwash Conference in Dubrovnik. The terms of reference for this study were defined as follows: "What extent should a denuclearized zone* in Europe have, so that it satisfies point 5 of the Zorin-McCloy agreement:

> "All measures of general and complete disarmament should be balanced, so that at no stage of the implementation of the treaty, could any state or group of states gain military advantage and that security is ensured equally for all".

The general purpose of the study is to contribute to an investigation destined to determine whether a denuclearized zone in Europe could serve:

(a) to relieve tensions in world politics by reducing existing tensions in Europe;

(b) to further the main goal of general and controlled disarmament by serving as a limited step into the direction of this goal.

The problems are discussed in the spirit of the paper by Tolhoek and Lapter "General principles for a zone of disarmament in Europe (Pugwash Newsletter, vol. 1, p. 10).

The report presented here is the result of discussions held on April 6, April 10, May 13, June 7, June 17 and June 22, 1963 with members of the Netherlands Pugwash Committee and a number of members of the VWO (Netherlands Association of Scientific Research Workers). It was attempted to collect as completely as possible the objections which were put forward against a denuclearized zone in Europe, to analyse them and to find such extents of denuclearized zones in Europe that the objections would be smallest and the advantages greatest.

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* The terms "denuclearized zone" or "zone of disengagement" will often be used more or less as equivalents, although this is not quite correct in a linguistic sense; more detailed proposals are defined when the need for it arises, for example in Appendix I and in section 5.

It was realized during the discussions that the problem, as it was put forward, would require a really scientific solution for a more developed social science than exists at present. Hence the arguments in this report are given with due modesty in this respect. Of course, we have tried to attain scientific objectivity as much as we could. The available time has also been a limitation on the amount of detail which could be considered. Hence the arguments given in this report do not pretend to be unchangeable final results, but it is hoped that they are a useful starting point for further discussions.

Advice on the military aspects of the problem was provided by Mr. W. Wierda, military specialist of the Netherlands Labour Party, member of Parliament.

Advice on the political aspects of the problem was provided by Prof. B. V. A. Röling, professor of international law at the University of Groningen and

Prof. B. Landheer, professor of the sociology of international relations at the University of Groningen.

The military and political advice are given as appendices. A fourth appendix contains collected data on the present military strength of both great power blocs.

During the discussions it became clear that the remaining level of(conventional) forces in the zone and the measures for inspection of the disarmament are problems which are so closely related, that they also had to be considered to a certain extent.

2. Aspects to be considered

When asking for criteria such that the "East-West balance" remains unchanged - when reducing armaments (in particular, removing nuclear weapons) in a disengagement-zone in Europe - one should take into consideration distances, areas, populations as well as industrial capacities.

With respect to possible military events and keeping a balance when reducing armaments, one should consider different aspects of the military situation:

I The mutual deterrence of full-scale strategic nuclear bombing. The maintenance of a "balance of terror" between East and West, especially between the U. S. A. and the U. S. S. R.

II Prevention of surprise attack (of limited extent) in Europe.

III Limitation of frontier incidents at the dividing line between NATO and Warsaw-pact countries.

IV Prevention of German civil war and internal instability in Germany.

V Limited tactical warfare in Europe.

We shall discuss these different aspects in the following sections.

Of course it should be recognized that no exact methods exist for defining precise equations expressing an East-West equilibrium.

It may be mentioned that the general problem of attaining peace is insoluble if it is approached with the conviction that at the least sign of weakness of the opponent an attack is the necessary and immediate result.

However, the important thing seems to be that attacks of any kind be made unattractive for an eventual aggressor. Certain, even not too small, margins exist by which the real situation may deviate from an ideal balance before the possibility of an attack becomes an attractive proposition. Hence one may hope that it is possible to define extents of the disengagement-zone at least in an approximate way. A serious problem is that it is almost unavoidable that estimates are used which are to a certain extent subjective, and may be influenced by different judgments in the different countries in Western and Eastern Europe. In order to avoid bias as far as possible, the procedure used is to have separate reports on the subject made by scientists in Poland and the Netherlands, and comparing the reports afterwards is a confrontation of the separate reports.

Finally, it seems desirable to give not only one possibility for a zone of disengagement, but to give several which may be considered either as alternatives or as different stages.

Apart from the military aspects, other arguments exist for including certain regions in a zone of disengagement, in particular:

a) removing nuclear weapons from Germany would cause a psychological "détente" in those neighbour-countries of Germany, which have strong fears of a German aggression;

b) removing nuclear weapons from depots in densely populated areas would psychologically relieve many people in these areas fearing nuclear attacks on such depots in time of war.

3. Review of main arguments concerning the extent of a denuclearized zone. Discussion of the maintenance of a "balance of terror".

The importance of the Central European region in maintaining a "balance of terror" between the U. S. A. and U. S. S. R. depends greatly on the systems of delivery for nuclear weapons which exist. In this respect a rapid evolution has taken place since 1955.

The most dangerous delivery systems were initially long-range jet bombers, then MRBM's (medium range ballistic missiles) were developed, then ICBM's (intercontinental ballistic missiles). Also solid-fuel missiles were developed later than liquid-fuel missiles, enabling the change from fixed launching sites to launching from submarines (e. g. the "Polaris" submarines). This evolution is of importance because of the asymmetric geographical position between the U. S. A. and U. S. S. R. In the time that MRBM's with fixed launching sites were the most advanced delivery systems, it was a substantial advantage for the U. S. A. to be able to use launching sites in (Central) Europe against the U. S. S. R. At present, with the availability of ICBM's and missile-delivery from Polaris-submarines, the availability of missile launching-sites in Central Europe seems to be of entirely secondary importance for the "balance of terror" between the U. S. A. and U. S. S. R. (see also section 4).

Prevention of surprise attack.

The importance of certain regions with respect to the eventuality of surprise attack is not independent of the extent of the remaining (conventional) forces and of the agreed inspection system. Surprise attack would no longer be tempting if the following conditions existed:

a) the level of the remaining conventional forces were to be low enough that aggressive operations would be substantially more difficult than the defence against them;

b) the inspection system located in the territory of the "other" party were such that preparations for offensive actions would be immediately reported;

c) the width of the disengagement zone were to be sufficiently large that a surprise attack by means of forces located outside the disengagement zone would become less attractive, because displacements of troops into the zone would be reported in an early stage by means of the inspection system located in the territory of the "other" party.

Limitation of frontier incidents.

In order to limit and prevent possible frontier incidents at the dividing line of NATO and Warsaw-pact countries, it seems of importance that:

a) this line should be sharply defined and strict rules should exist for the troops located at the border; these rules should be agreed and mutually known;

b) frontier-incidents should never justify penetration into the territory of the other party.

If these conditions are satisfied and the troops located at the frontiers have no nuclear weapons, frontier-incidents should not present a major risk of developing into a large-scale conflict.

Prevention of a German Civil War.

For this purpose it seems desirable that:

a) both East and West-Germany should be entirely "denuclearized";
b) the dividing line between East and West-Germany should be sharply defined;
c) the remaining conventional German forces should be so limited that aggression of the other part by means of surprise attack would be difficult;
d) troops from one or more other NATO countries should remain in West-Germany; troops from one or more Warsaw-pact countries should remain in East-Germany in order to "tranquillize" possible internal German tensions which might arise.

Limited tactical warfare in Europe.

A point of major importance for maintaining the balance between East and West is the discussion of possible events in case of limited tactical warfare in Europe. The large difference in distance from the dividing line between NATO and Warsaw Pact countries to the Atlantic Ocean (about 500 km.) and to the Pacific Ocean (about 10, 000 km) illustrates the radically different defensive depths for military land operations for "East" and "West". Correspondingly the "loss" of a disengagement zone of a certain depth (in km) can be considered to be a more serious military disadvantage for the "West" than it is for the "East".

On the other hand this argument (which can be handled in such a way that it excludes any agreement on a zone of disengagement) has real value only so long as one considers a limited tactical warfare in Europe as something, which does not necessarily develop into a world-wide full-scale nuclear war. Indeed, it seems very doubtful that a conflict in Europe involving military operations over whole European nations could still be localized to Europe. However, in case of a full-scale nuclear war, the danger of being occupied seems to be something which is relatively small when compared with the dangers of total annihilation, which dangers are determined by entirely different factors. If there is any chance of survival in a full-scale war the optimum chance of survival for Europe would probably consist in a minimum of armament, because any substantial armament is likely to attract offensive nuclear attack. From this point of view any fixed launching sites for missiles or airfields for strategic bombers are dangerous for the home populations; launching of missiles from submarines presents less dangers (with respect to attracting nuclear attacks) for the populations.

The preceding discussion seems to lead to the conclusion that a denuclearized zone in Europe involving, amongst other nations, both East and West-Germany, could be realized; in this respect we want still to mention the following points:

a) as long as no general disarmament is attained, the present frontiers in Europe should be guaranteed by the U. S. A., U. S. S. R., NATO and Warsaw-Pact Organization. This would make it exceedingly improbable that a somewhat extended warfare in Europe could be carried out without developing to a full-scale nuclear war;

b) in case of extended warfare in the zone of disengagement (which involves only distances of hundreds of kilometers) it is to be suspected that nuclear arms would be carried into the zone, as soon as military operations threaten to pass the limits of the zone. A treaty on a disengagement zone (without nuclear weapons) would contain probably the two following points (amongst many others):

i) The frontiers of the states situated in the zone, would be guaranteed by the other states of the zone as well as by the other NATO and Warsaw Pact countries.

ii) No nuclear weapons would be left in the zone;

Extensive tactical (conventional) warfare in the zone be a violation of point (i) of the treaty; after such a violation the participating states would no longer feel bound to point (ii) either, hence nuclear weapons outside the zone may still continue to act as a deterrent also for conventional attacks within the zone.

The importation of nuclear weapons into the zone would involve only short times with the present means of transportation. This possibility demonstrates that a zone of disengagement can only be considered as a first step to peace and general disarmament, but not as the final solution for world peace;

c) However, a zone without nuclear weapons would make it impossible for a conflict within the zone to start immediately as a nuclear conflict; this fact can be expected to lead to a "détente".

d) A disengagement zone with conventional and "tactical" nuclear weapons seems undesirable, as the difference between "tactical" and "strategic" nuclear weapons is extremely vague. A conflict starting with "tactical" nuclear weapons would probably lead to the use of larger and larger nuclear weapons within a short period and thus be extended to a full-scale nuclear war;

e) A complete cessation of tensions can only be expected, when the arms race has stopped and world-wide general disarmament is attained.

4. Different geographical well-defined regions to be discussed in connection with denuclearized zones.

In many respects it would be most desirable if suitable regions could be given, involving entire states. This would avoid a number of political complications, which would arise, if only parts of states would be involved in the zone.

We first mention a number of regions with areas and populations which have mostly already been proposed in the past (area in $10^3 km^2$; population in 10^6 (about 1960)).

A. Zone consisting of:

NATO country		Warsaw-pact countries	
area	population	area	population
West-Germany			
248	53.3		
		East-Germany 107	16.6
		Poland 312	28.8
		Czechoslovakia 128	13.6
		Total 547	59.0

B. One may think of adding to this zone:

NATO countries	area	population
Netherlands	41	11.5
Belgium	30.5	9.1
Total (A + B)	320	74

Warsaw-pact country	area	population
Hungary	93	10.0
Total (A + B)	640	69.0

C. Another proposal was made to extend the denuclearized zone to the Scandinavian countries (Norway, Sweden, Denmark, Finalnd)

	area	population
Norway	323	3.6
Sweden	449	7.5
Denmark	43	4.5
Finland	337	4.4

These countries form a rather quiet region of the world in which no particular political tensions exist. Denmark and Norway belong to NATO, but have not accepted depots of nuclear weapons on their territory up to the present. Sweden and Finland do not belong to military blocs.

D. A similar extension of the disengagement zone might consist of the neutral countries Austria and Switzerland

	area	population
Austria	84	7.0
Switzerland	41	5.4

We do not discuss the possible addition of Balkan-countries, as this will be studied by another Study Group.

E. Except for the preceding proposals one may think of more limited regions, involving parts of countries only, especially as an intermediate stage (we can mention in this respect e. g. the proposal made in 1958 by Kirkpatrick). Such a zone may consist of a region extending for distances of about 150 km on both sides of the dividing line between NATO and Warsaw Pact countries.

5. Resulting proposal for the "extent of a denuclearized zone" connected with certain levels for the remaining conventional forces and certain measures for inspection.

The various arguments discussed in section 3 and the appendices have led the Study Group to the following proposals for the most desirable extent of the zone for (nuclear) disarmament, which should be considered in connection with the remaining conventional forces and measures of inspection.

(a) The zone from which all nuclear weapons (and if possible also all bacteriological and chemical weapons) are removed should contain the following NATO-countries:

West-Germany, Netherlands, Belgium;

and the following Warsaw Pact countries:

East-Germany, Poland, Czechoslovakia and Hungary.

The limitation to West-Germany, East-Germany, Poland and Czechoslovakia would still seem reasonable, but somewhat less desirable.

(b) The countries mentioned should remain members of the NATO and Warsaw-pacts as they were before. The remaining level of conventional forces should be limited to a certain percentage α of the population.

Foreign troops of the same military bloc (e. g. troops from U. S. A., U. K. or France in West-Germany, or troops from U. S. S. R. or Poland in East-Germany) should be limited to some percentage β of the populations of the different countries. The precise values chosen for α and β seem not to be very critical but values for α from 0. 5% to 1% and $\beta = \frac{1}{2}\alpha$ seem reasonable.

Armaments should be limited proportional to the total number of conventional troops; numbers of tanks and fighter-planes should be specified. No strategic bombers, ICBM's or MRBM's should be left in the zone. However, sufficient (non-nuclear) defence against attacking planes may remain.

In this way the armaments race in Central Europe would at least be stopped, although conventional armaments would remain at a considerable level.

(c) After the disarmament zone had existed for some time (e. g. 2 years) the countries participating in the treaty should assemble again to consider whether they can agree to reduce the values of α and β (it is hoped that this will be possible as a consequence of a "détente" resulting from the existence of the zone).

d) The measures of inspection should be such that military concentrations in the Eastern zone would be reported by the Western inspectors in that zone and vice-versa. It should also be sufficient to check, whether, for example, too many U.S. troops move into the Western zone and vice-versa. Hence Eastern inspectors should be located at the Western frontier of the Western zone and vice-versa.

e) As part of the agreement, or as a first step, one may think of the following possibility:

a limited zone of 50 to 100 km on both sides of the dividing line between NATO and Warsaw pact countries is denuclearized and the only conventional forces remaining are troops from Belgium and the Netherlands in the Western Zone and Polish and Czechoslovak troops in the Eastern Zone.

As these troops belong to small countries which have scarcely other interests than peace in the international situation this may be quite effective in avoiding any frontier incidents.

It may even be considered whether these troops could be placed under UN-command in some stage.

(f) The treaty on the denuclearized zone and the presently existing frontiers are recognized by the nuclear powers, U.S.S.R., U.S.A., U.K. and France.

(g) It would be desirable if the denuclearized zone could involve the Baltic Sea, at least those parts of it which are near to Germany, Denmark and Poland (Cf. also Appendix 1).

We are of the opinion that the preceding proposal is not vulnerable to objections which have been made on a number of occasions against proposals for "denuclearized zones" or "zones of disengagement" in Europe.

We now enumerate a number of these objections (objections from a Western point of view) and the reasons that we think that they are not valid for the proposal just formulated (cf. also H. Schmidt's book for a discussion of some of these points).

Our discussion of these objections from a Western point of view does not necessarily mean that we share all premises of all Western attitudes discussed. However, we try to show that the objections are not valid against our proposals on the basis of premises which are taken for granted in a large part of the Western World.

Objection A.

NATO would be left with too small an area for effective defense, if West-Germany were to be abandoned in case of disengagement.

Reply:

This objection holds only for those proposals in which very few Western troops remain in West-Germany; the objection does not hold for our proposal if the values of α and β are chosen not too low. The values of α and β proposed above would leave a rather considerable conventional force in Western Germany and Benelux and does not necessitate displacement of American and English forces to a (too limited) region in France with difficulties for the quartering, as well as political difficulties (at the present international relations). (Cf. H. Schmidt concerning this point).

Further, the limitation of the conventional forces to fixed percentages α and β of the populations would represent a slight relative strengthening of the Western troops.

Objection B.

NATO would be decisively weakened, if one would no longer have "tactical" nuclear weapons in the front lines.

Reply:

This may have been a valid objection to a certain extent in the period (about 1956) when Western military circles were in favour of a "trip-wire strategy": reliance on "tactical" nuclear weapons as well as "strategic" use of nuclear weapons with a minimum of conventional forces. Even a small local attack would then have been followed by a "massive retaliation" of a strategic nuclear attack.

This trip-wire strategy is now replaced by a "graduated deterrence" (see Appendix 1) in which a small local attack could find its answer by a defence with conventional forces only; it is gradually recognized how dangerous the tripwire strategy was.

One can distinguish between the following uses of nuclear weapons (of course, this is not quite a sharp distinction):

(a) Use as "tactical" weapons even in the front lines at the disposition of local commanders.

(b) Use of nuclear weapons by means of fighter-bombers (e.g. the F104) some 1000 km behind the front lines.

(c) Use of nuclear weapons for strategic attack by means of ICBM's or long range bombers.

The use as "tactical" weapons has particularly large risks as local commanders would have the decision on their use. Once used, "escalation" to a large nuclear war would be probable as there is no clear technical division between "tactical" and "strategic" nuclear weapons whatsoever.

Hence the removal of "tactical" nuclear weapons from the front-line (see (a)) may be quite acceptable in McNamara's "graduated response".

Nuclear weapons in the categories (b) and (c) could be placed very well outside the denuclearized zone in Central Europe. They would only be used in case of a massive attack (either by conventional or nuclear forces) from the East, in this picture of "graduated response"; however, such an attack would be against the proposed treaty on the denuclearized zone, in which the U. S. S. R. would guarantee the existing frontiers.

Our considerations on a possible nuclear defence of the West against a massive attack from the East represent current Western attitudes. We do not imply that we like this situation. According to our opinion it only shows that the step of a denuclearized zone in Europe should be followed as soon as possible by further steps towards complete disarmament. (Cf. also H. Schmidt for discussion of this point).

Objection C.

The U. S. S. R. has many more conventional troops than the West and could conquer Western Europe within a short period if a "disengagement zone" were realized.

Reply:

This objection is only valid against proposals with a very drastic reduction of the conventional forces. The values of the coefficients a and b we have proposed leave substantial Western conventional forces intact, which would be sufficient for anything but a really massive attack. However, a nuclear reply should be expected in case of such a massive attack.

Objection D.

Nuclear weapons could remain hidden in a denuclearized zone in Central Europe or could be reimported in a secret way.

Reply:

This objection is valid to a certain extent against any disarmament proposal. One must weigh the risk of the continued arms race against the risk of elusion of a treaty. One should attempt to find a system of inspection which gives very little possibility of evasion of the stipulations of the treaty. (cf. Schmidt pp. 182 and 183 for this point).

Objection E.

A denuclearized zone in West-Germany would lead the U. S. to abandon West-Germany in the event of an attack from the East. Such feelings showing a lack of confidence in the support of the "big ally" (U. S. A.) in case of a massive attack on West Germany could lead to the wish in West Germany to dispose independently of nuclear weapons.

Reply:

Such attitudes are indeed found in certain circles in West-Germany as well as in France.

On the other hand, there are also many circles (e. g. the Labour parties in England and the Netherlands) which are inclined to rely on the American nuclear weapons and do not favour independent European nuclear weapons. These circles realize fully the danger of the "spread of nuclear weapons" to many countries with the accompanying increased risk of nuclear war.

It should be replied that the U. S. A. have asserted on many occasions that they would reply with nuclear weapons to a major attack on Western Europe from the East. Of course verbal assertions have a limited value in international politics in which ethical values play only a minor role.

However, in our proposal substantial U. S. conventional forces would remain in West-Germany so that the U. S. A. would necessarily become deeply involved in case of a major attack from the East on Western Europe.

Hence we think that this objection is not really valid and the wish for independent nuclear weapons for smaller countries seems really to represent remainders of military thought more appropriate to the 19th century, but outdated in the present Nuclear Age.

Objection F.

The withdrawal of the troops of U. S. A. and U. S. S. R. from a denuclearized zone in Central Europe could easily lead to an armed conflict between the parts of Germany and might even lead to other political instabilities in Eastern-Europe.

Reply:

Although it is difficult to predict with certainty what might happen in case of a withdrawal of these troops, it must be admitted that a German Civil war would not be entirely excluded. However, this objection does not hold against our proposal in which substantial conventional forces from U. S. A. and U. S. S. R. would remain in West and East Germany respectively.

Objection G.

Denuclearization of a certain region of Europe would increase the probability of outbreak of a border-conflict which could escalate to a full-scale war. Denuclearization is, therefore, a step which would increase the probability of a nuclear war.

Reply:

This may be debated on two rational grounds. The first is purely military. The only way an effective attack could be carried out would be to concentrate troops at a certain point. This is not forbidden by the present plan but would not go unnoticed, especially since inspectors are present on both sides of the dividing line. As discussed in the reply to objection B only weapons in category (a) will be removed in this first step. Thus any military commander concentrating troops in preparation for an attack would know that within an hour "deterrents" of category (b) could be brought into play. This does not appear to be an enticing proposition. What it amounts to is that denuclearization in itself changes essentially nothing in this military balance.

The second argument against this objection is psychological in value. The achievement of a denuclearized zone would represent, as stated in the reply to objection B, only the first small step in the direction of total disarmament. The very fact of its coming into being would represent nevertheless an enormous relaxation of tension everywhere, and this in itself is identical with the reduction of the probability of any kind of incident.

6. Geographical extent of the zone of denuclearization.

Data about population and areas of the proposed zone were given in section 4. Arguments about the military value of the proposed Eastern and Western parts of the zone are given in Appendix 1. Political arguments concerning the problem are given in Appendix 2 and 3.

The countries proposed under A in section 4 (which is the region proposed in the Rapacki-plan) involve an area which is 22 times larger for

the Eastern than for the Western countries, and involve a somewhat larger population in East than West (59 millions compared with 53 millions). However, in this respect the fact of the smaller "defensive depth" of NATO should be remembered. It seems that this region is acceptable, when coupled with the level of conventional forces, etc. proposed in the beginning of this section.

However, the addition to this region of the countries mentioned under B in section 4 seems preferable:

Because of the geographic situation of Hungary, the minimum distance of large military forces from the Eastern block (outside the disengagement zone) to NATO countries is substantially increased. This would be attractive from the point of view of prevention of surprise attack discussed in section 4; however, the military importance of this point should not be overestimated.

Further the removal of nuclear weapons which may attract nuclear attacks in time of war, from the densely populated Benelux countries would be welcomed by large sections of the population of these countries.

A somewhat different matter is whether the Scandinavian countries (see section 4C) and Austria and Switzerland (see section 4D) could form a denuclearized zone. Both these regions could be treated as a somewhat separate problem. At present these regions do not contain nuclear weapons and most of the countries in these regions are neutral. It would certainly be desirable if it could be fixed in a treaty that also these regions should remain denuclearized and if their conventional forces could be limited to some definite percentage of the population. Of course, it would then also be desirable that the nuclear powers guarantee the present frontiers of these countries.

Appendix 1

W. Wierda

Some considerations on the military aspects of the "extent of a zone of disengagement in Europe"

The following remarks will be confined to the relatively narrow field of the military effects of a zone of disengagement, although the problem on hand has many political, economical and other aspects.

The following theoretical and feasible kinds of disengagement will be considered, especially as to their effect on the mutual deterrent, the prevention of surprise attack, the limitation of frontier incidents, the prevention of German civil war and limited tactical warfare in Europe, if any (cf. section 2 points I ... V of the report).

A. Freezing of the present situation.

This would mean that in a clearly defined area the number of troops would not be raised and that no more or more effective "tactical" nuclear weapons would be added to the existing stockpiles under American or Russian control and if possible in their home countries, but this comes under the heading of general disarmament. The most positive effect of this measure would be that new roads towards an effective disengagement and disarmament could be opened.

The present relation in strength between the Eastern and Western blocs is such that freezing will be favourable to the defender, as the real danger does not arise from the present troops in a future "frozen" area, e.g. Germany, Poland, Czecho-Slovakia and Hungary but from the number of troops in the hinterland, in the United States and particularly in the Soviet Union. The NATO-troops can deal with the Russian troops in East Germany and vice-versa. Provision has to be made for supplies and replacements, also by air which implies control on both ends and on the spot. Inspection would be possible on the Russian-Polish frontier, which would spare Russian feelings.

All this must be an introduction to further measures, otherwise it would be futile.

In this stage it is not necessary to discuss the effects on points I to V.

B. Removing of "tactical" nuclear" weapons from a defined zone.

Let me start with a few remarks related to points a) and b) of section 2 of the report.

I do not think that the presence of nuclear weapons on German soil in fact endangers the neighbours of Germany who allegedly have strong fears of German aggression. Those weapons are under strict American control and, moreover, the German troops are so strongly interwoven with the allied forces that they cannot even move without the help of their allies. This danger would arise only if the allied armies withdraw and forgot to take their nuclear devices with them.

Except in a case of surprise attack by the Russians, densely populated areas lodging nuclear weapons would not have to suffer from attacks as the stocks would have been removed at the first sign of a major crisis. Removing of nuclear devices from a certain area would affect the balance of forces considerably, especially as they act as a kind of minor deterrent. If they should be used now, they would in a very short time cause escalation - local or limited nuclear war seems unthinkable - and therefore they are not used now.

The new trendin American military policy, as expressed at Ann Arbour last year, the so-called graduated response, is in my opinion opposed to or should be opposed to nuclear weapons on very low levels, a batallion e. g. as they are practically beyond control there and could cause very dangerous situations. The new doctrine by McNamara is that the vital decisions should be made by politicians and not by soldiers. That view would fit in nicely with disengagement plans, provided that McNamara's "moving up" of the tactical weapons would practically end up in removing them to such high tactical levels, that they would be out of Germany. This view has for other reasons been supported by Schmidt and Strachey to avoid a conflict by misunderstanding or miscalculation.

1. A comparison of strength (estimated) would then give the following results in our future disengaged zone:

Troops, Army			
Germany	350. 000	East Germany	65. 000
France	40. 000	Poland	200. 000
Great Britain	51. 000	Hungary	75. 000
U. S. A.	300. 000	Czecho-Slovakia	150. 000
Canada	6. 000	U. S. S. R.	500. 000
Netherlands	3. 000		
Total	750. 000		990. 000
About 23 divisions		About 58 (smaller) divisions, plus approx. 175. 000 paramilitary formations.	

2. I am quite aware of the fact that these figures don't matter much, as the respective air forces will be able to cross this denuclearized zone in one or two hours and fulfil certain prepared missions. They may also be used to bring in nuclear devices, as everybody will say that the other side must be marked as the aggressor.

It will not be too difficult either to destroy the communication lines on the opposite side. If guarantees have been given, we must remember that nearly every war started by breaking certain pacts or treaties. As no tactical nuclear devices will be available in the area concerned, there will be no limited nuclear war at first. If anything should arise, it would be conventional war. What would happen then?

The Soviets would be able to bring in more troops from their homeland, the Americans would, for the time being, not be in a position to do so. Their alternative would be to apply the strategic deterrent or to bring in "tactical" nuclear weapons from France or Britain or whereever they had been stored, to act as a minor deterrent. If possible, for a second time. They could have served as a deterrent, if the Americans would have stated beforehand, that in case of emergency, i.e. attack by another party, they would use these atomic weapons. Then their nuclear weapons in Western Europe would have the same role as the strategic deterrent in the U. S. A. or on ships.

Frontier clashes might have a little more chance as concentrations of troops will not be so very disastrous as in atomic surroundings.

Unless both parties firmly state that any breach of a possible agreement will result into bringing back nuclear weapons, local conflicts would not seem to be so full of risks as they are now for fear of escalation. Salami tactics might be tried as it does not seem worth while for instance to risk a nuclear war by bringing atomic devices in for capturing a Western or Eastern German town, let us say Lübeck or Warnemünde. We might get back to the tripwire period, when there was one alternative to strategic bombing (retaliation) or nothing.

3. Considerable attention should be given to the Baltic north of Germany and Poland up to the Russian frontier and to the North Sea north of Germany as far as the Dutch frontier, as it would be foolish to remove nuclear weapons from a certain area and have U-boats or surface-ships, carrying nuclear arms, on the surrounding seas. Wouldn't it be very alluring to keep a few ships close at hand for an emergency? It is only logical that those seas should be included as well.

C. Withdrawal of foreign troops from certain countries in the different areas.

As to the different areas which dould be mentioned, there are not so many which would fit into the picture. If foreign troops are removed, the same thing should be done in the opposite camp and what happens if there were none, if the big country concerned did not need to have any troops on foreign soil, as is the case with a landmass country like Russia, on the inner lines, as the soldiers call such a situation? So it will be difficult to make agreements about the Middle East or the Far East, as the Soviets simply don't want or need any troops there. Their own country will do. With a country like the U. S. A.- on the outer lines - things are far more complicated. It would be possible to talk about Cuba, where American and Russian troops are stationed. If both were to go it would be easier for the Russians to get in again than for the Americans, to say the least of it. And what would happen then? The Americans would still be threatened and if they forced their way in at Guantanamo they would be branded as aggressors. Not so very easy. For the Soviets it would even be easier than to get into Poland again once they had left.

1. There have been suggestions indeed to create a denuclearized or even a neutral belt from the North Cape to Saigon, including the Scandinavian countries, both Germanies, the Eastern European and the Balkan countries, the Middle East and so forth. In fact there are no nuclear weapons in that huge area at all except in the two Germanies and the Warsaw Pact countries, respectively under American and Russian control and custody. There are no foreign troops in Western Germany, Eastern Germany, a few in Poland, none in Czechoslovakia and a few in Hungary.

What would be the logical conclusion? To withdraw these foreign troops together with their nuclear weapons.

Here some intricate and very difficult problems would arise.

2. Let us first consider what number and kinds of forces would be left in the area concerned.

ARMY

Western Germany	350. 000	Eastern Germany	65. 000
		Czechoslovakia	150. 000
		Poland	200. 000
		Hungary	75. 000
			490. 000
		Paramilitary force	175. 000

AIR FORCE

Western Germany	100.000	Eastern Germany	9.000
		Czechoslovakia	35.000
		Poland	45.000
		Hungary	5.500
			94.500

AIRCRAFT

Western Germany	604 fighters)	
	F 104 G)	Together approx. 1500 fighters.
	400 others)	

This seems to strike a rather fair balance. There would be no nuclear weapons unless they were hidden, which is not so difficult. Inspection would of course be inevitable.

3. We must assume that European countries would be kept in check by a treaty, but more effectively by the political and military influence of the two big powers.

Nevertheless, the minor dangers as stated in section 3 of the report, will be enhanced. We do not know what will happen to the communist rule in Eastern Germany and the temptation for the Western Germans to lend a hand would be obvious, resulting, perhaps in a civil war. Everybody will see that Russian intervention at that moment will seem only natural. If the West-Germans knew this and they are apt to know, they might keep themselves in check. Thinning out, reduction and abolishing of the fighting forces would seem the only logical sequence of the situation mentioned before. But then difficult economic problems would arise. West Germany would be a very heavy competitor in every field to the other Western allies, still bearing the burden of their heavy defence budgets. Would the Germans be willing to share the costs? We must not forget that there are still certain differences to settle between Poland and Czechoslovakia, between Poland and Hungary and perhaps they would avail themselves of this excellent opportunity. Would the Americans and the Russians think it worth while to intervene in such minor local difficulties?

4. What would happen to the American, British and other forces withdrawing from Western Germany? And to the Russians leaving Poland, Hungary and Eastern Germany?

For the Soviets it would be comparatively easy to return to their homeland and take up positions east of the Polish frontier, behind the Bug for that matter. It would only take them a few days to get back to their present positions, which they know. They could even do it much quicker as they can muster 9 airborne divisions of which two can be transported simultaneously. The follow-up could be effected in a few days and it is well known in military history that airborne troops can easily hold out for a rather long period.

For the Americans it would not be so easy. They would have to withdraw for about 400 kms, but they would find no place to encamp their troops in Holland, Belgium or even in Great Britain. Things being as they are, General de Gaulle could use very effective blackmail tactics to make the Americans pay for the favour to stay in France. In my view it would be impossible for the Americans to stay in Europe unless they withdrew to Spain, which might even be worse than the United States.

5. Suppose something would happen in the neutralized area. The Russians would be able to get in quickly, either by land or by air. They would perhaps be able to occupy the whole of Germany before any Americans would be on the spot.

They cannot possibly deploy fifteen odd division in the narrow western European strip of Holland, Belgium and perhaps Denmark. The Americans do have an airborne Force Strike Command, but it is stationed in Florida and it will at least take a week to bring a considerable amount of troops over the Atlantic.

What could they do but threaten to use their Strategic Air Command to restore the balance, the strategic balance and at the same time the old balance of terror?

6. For these reasons it has been suggested to draw the dividing line not at the Elbe but at the Oder and to withdraw the NATO-troops as far as the Weser to give them some room for manoeuvre. Poland would perhaps favour this in exchange of Germany's recognizing the Oder-Neisse frontier. But those are political considerations which I am not supposed to go into. But thinking in military terms it would be an attractive move.

7. Maintaining police forces only in the disputed areas has been dealt with in par. 3.

I do not agree with the thesis that a "thinning-out" procedure would lessen the risk of clashes. The consequences would be less serious,

of course, but as Alastair Buchan said in the June issue of Encounter: "Primitive but murderous wars could take place in a nominally disarmed world". (page 3). Anyhow there would be no nuclear explosions and no fall-out. Troops, ever so thinly spread out, tend to attract each other and you'll always find the enemy, big or small, right in front of you and if he isn't there he will appear in due time. Your presence is the only reason for him being there.

D. Neutralization of the area concerned.

By this expression we mean demilitarization. No troops or military forces whatsoever would remain in the area, a no-man's land would be created. There would be a police force of course but close scrutiny would be necessary to prevent them to build up an army. This would be a very unsatisfactory situation as long as other countries would have a right to maintain considerable forces and even nuclear strategic weapons.

A very, very difficult situation would arise. Two big powers on both sides of a "cordon sanitaire' would not be able to withstand the temptation of occupying the empty spaces for political and strategic reasons. Some day they would rush at each other and the less quicker one for fear of being the loser would try to make this up with strategic bombing, either on the adversary troops or on the enemy's hinterland.

There would be no time for a tactical pause, there would be no chance for the UN to play for time, which is one of their main reasons of existence. Perhaps a rather narrow zone of no-man's land would be useful.

E. The balance of terror still exists, whatever it may be. Anyhow it is an extremely precarious balance. Some spectacular line of progress on one side may upset the balance, e.g. when one party would succeed in making an anti-missile missile operational.

But, on the other hand, there are a few hopeful developments in the military field. Medium-range missiles have been practically removed from Europe and have been replaced by missiles stationed on U-boats and perhaps on surface ships. The medium-range aircraft is still serving its purpose but will be obsolete within a few years.

Interceptors will continue to play their role. The real danger lies in the "tactical" nuclear weapons on low tactical levels, but I think developments take an opposite direction. Mr. McNamara wants to have the American forces and their arms and equipment under close civilian control, which is right. He wants to be able to control them and, therefore, tactical nuclear weapons on low tactical levels are not his piece of meat. Perhaps he wants to move them up, which means further backward and this would fall neatly into place and correspond with the different disengagement plans. It may be a ray of hope.

Appendix 2.

B. V. A. Röling

Political aspects of the territorial extent of "Zones of disengagement".

In general one distinguishes between the military and political aspects of "disengagement". The military aspects are concerned with the balance of military power. It is more difficult, however, to state the nature of the political aspects; one could say that it is a question of political power, but that is a vague concept, because political power is a vague concept. It is really a question of the political consequences; of the effect on the opinions and ideas of governments and peoples and the consequences of these on international relationships and alliances.

Under political consequences one must take into account the influence of the Rapacki plan on the future political course of both Germany's, as well as the value of the experience with inspection, or the good effect on the formation of nuclear weapon-free zones in other regions (Asia, Africa or South-America) of a nuclear weapon-free zone in Middle-Europe.

A second question is concerned with the meaning of the word "disengagement". Many different interpretations can be given. Tolhoek and Lapter are presenting a report on "principles for a zone of disarmament in Europe". The many proposals relating to Middle-Europe have as a goal the bringing about of changes in the regions where the two great power-blocs touch each other, or, rather, where the spheres of influence of the two super-states Soviet Union and the U. S. A. are in contact. The spheres of influence have political, but mostly military significance. The armies of the super-states are arrayed against each other on the territories of the smaller allied states. Every demilitarizing is, therefore, a form of disengagement. The disengagement could go so far that a neutral territory could be created between the power-blocs; that would mean political disengagement.

Michael Howard distinguishes four kinds of plans for disengagement in a report to the 8th Pugwash Conference in Stowe (1961):

(1) plans for inspection,
(2) plans for inspection and diminution of manpower,
(3) plans for zones without nuclear weapons,
(4) plans for political "disengagement".

All these four are thus forms of military or political disengagement that differ in purpose and intensity.

The territorial extent depends on the intensity and the goal. All plans for inspection have as a goal in the first place the prevention of surprise attack. It is very clear that military considerations are here primary in deciding on the necessary extent of the region. Political considerations are more important in determining the territorial extent in other forms.

There is one question concerning the physical extent that to a certain degree can be treated independently of the intensity of the disengagement; that is the question as to whether the boundaries of the zone should coincide with the boundaries of existing political units. If national boundaries are followed, there is the danger that special measures, such as the prohibition of nuclear weapons or other military limitations can lead to a feeling of national discrimination. Exactly because the origin of political ideals is national, this discriminating factor could play an important role in the national political scene if national boundaries are followed. In this respect zones limited by lines of longitude and latitude would have a certain advantage but this would have the disadvantage that different conditions would exist in the same national unit.

If one strives for a narrow demilitarized strip, approx. 100 km broad (in order to avoid boundary conflicts) then it is not necessarily a disadvantage that national boundaries are not followed, but if one strives for nuclear weapon-free zones of large extent in the heart of Europe then it would be simpler from the political view-point to follow national boundaries, for example, as is proposed in the Rapacki plan.

It follows that the question of the territorial extent and the question of functional or political boundaries must be answered differently for different kinds of disengagement.

The special dangers which threaten Middle-Europe are:

1. A surprise seizure of limited extent as a fait accompli, in which the opponent has the choice of re-seizure with limited means or to begin a full-scale war. The last is not probable (150 million dead the first day, according to Kennedy), and the re-seizure extremely dangerous because of the possibility of "escalation". The situation, if possible, should eliminate the possibility of this type of fait accompli. Berlin is the greatest danger-point here. A narrow demilitarized strip, perhaps with U. N. inspection troops, offers good guaranties against limited "surprise" occupation.

2. Civil war in East-Germany, that would become possible if no Russian troops were stationed there. A withdrawal of the occupation-armies in West-Germany would increase the danger that West-German troops would combine with East-German groups that wish to separate from the Soviet Union and the Warsaw treaty.

Therefore, given the East- and West-German militarization, it is undesirable to withdraw the occupation-troops from the territories. The armies of occupation were originally used to suppress Germany. They have remained and they have been increased in armaments because of the anxiety of the super-states for each other. Because of the development of the hydrogen-bomb and associated intolerability of a third world war, the armies of occupation are returning more and more to their original purpose. This original purpose is gaining new meaning with the militarization of both Germany's.

3. A military adventure of West-Germany (that officially strives for the old boundaries of 1937 and where strong currents exist in the direction of complete military freedom, i. e. their own nuclear weapons), and the anxiety in the Soviet Union, justifiable or not, that such an adventure may take place. In this respect it is desirable to make a ruling wherein: a) the Oder-Neisse line would be recognized by the Atlantic Community and the Soviet Bloc as a consequence of the war against Poland begun by Germany; b) the nuclear weapons would be removed from Middle-Europe because it is to be feared that gradually the German control over these weapons will increase, factually if not legally.

It seems, therefore, that a nuclear weapon-free zone as proposed in the Rapacki plan is a good starting-point. It has the advantage that it has been accepted in principle by the Soviet bloc. It would diminish the anxiety of military adventures of West-Germany. Given the presently existing long-distance rockets, there is no reason to fear that the power-balance between the blocs would be disturbed. The possibility of the seizure of limited regions as a fait accompli would be diminished by combining the Rapacki plan with a narrow demilitarized strip under U. N. control. The question remains if the putting into effect of this zone against the will of West-Germany (that does not wish to see the Oder-Neisse line or the existence of the D. D. R. recognized) would not create the danger of a political "agonizing re-appraisal" in West-Germany. This possibility is dependent on so many factors that it is not necessary at the present moment to consider it as serious.

The Rapacki plan proposes a nuclear weapon-free zone including both Germany's, Poland and Czechoslovakia. In the second modified version there is also proposed a diminution of conventional armaments, but the degree of diminution is left to a future agreement. The Rapacki plan does not propose that all foreign troops be withdrawn. It is conceivable that the agreement over the foreign troops in the zone be dependent on (a) the extent of the national armaments permitted in the zone and (b) factors which are related to the balance of power between the blocs. The diminution of the conventional armaments was introduced in the second version in order to make it more acceptable in the West*), because the tactical nuclear weapons were introduced by the West because of the Russian superiority in troops. It is doubtful if this Western argument is still valid since (a) the Soviet Union also has nuclear weapons, (b) the long-distance rockets determine the power-balance in part, and (c) the accent lies more on the "stable deterrence" of Polaris submarines. The nuclear disarmament in Middle-Europe is really an important step with or without diminution of conventional troops. A control-system will be necessary. The inspection is less sensitive here because it is a question of inspection in foreign territory while the army units stationed there are not of serious importance for an attack on the U. S. or the Soviet Union. The experience with this inspection would be important for every future inspection system necessary for general disarmament.

It appears to me that the territories proposed in the Rapacki plan i. e. West- and East-Germany, Poland, Czechoslovakia, are not unwisely chosen for the reduction of weapons. Denuclearization would have the great advantage that the Soviet anxiety for West-Germany would be diminished. The most difficult question is: is West-Germany already so strong that the conclusion of a Rapacki treaty is no longer possible against her will? She is militarily and economically strong, and because of the special relationship with France her "nuisance value" is still greater. The question is to what extent currents in West-Germany can be awakened which would accept the rejection of the boundary-line of 1937, and which would be ready in principle to accept a qualitative limitation of the German military power.

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* Adam Rapacki: The Polish Plan for a Nuclear Free Zone Today. International Affairs (London) 1963 state that the second version is "based on conclusions drawn from international discussion over the original proposal".

APPENDIX 3.

B. Landheer

"Disengagement in Europe"
Political aspects

If the political aspects are considered of a zone of disengagement in Europe, the most relevant problem seems to be that of the decision-making machinery.

The disarmament discussions within the framework of the United Nations have repeatedly dealt with zonal problems. Since May 1955 the Soviet Union has included in its disarmament proposals the withdrawal of foreign troops from Germany, liquidation of bases on foreign soil, etc. Many other zonal disengagement proposals have been made by the Soviet Union, Poland, England, France, and more recently the United States and other countries.

There is no need to go into those proposals, many of which were made for propaganda reasons.

The crucial point is that no real initiative by the bloc-countries has hitherto seemed possible, unless preceded and conditioned by an agreement between the U.S. and the Soviet Union. If such an agreement would be forthcoming, zonal problems could receive a meaningful function.

If such an agreement does not develop, cross-zonal limitation of armaments does not seem possible, and the only remaining possibility would be a reconsideration of the armaments-problem within the framework of the blocs, with the possibility of creating some confidence on the other side.

It will not be possible to reach this situation of some confidence as long as the armaments-race continues. Whether the motivation of the armaments-race is predominantly political or predominantly economic is not decisive. The crucial point is that continued armaments on one side is the cause of similar efforts on the other side.

While it has been repeatedly stressed that, strategically speaking, a conventionally armed Western-Europe would be preferable to nuclear armaments, this has not had a decisive influence on European politics. The possession of nuclear weapons has become a matter of political prestige, not so much of Europe as a whole, but of individual European nations.

As European integration is not supposed to concern itself with defence matters, the situation has become dualistic: on the economic level the aim of European integration is continued but in a divided and confused fashion, while in regard to defence, decision-making is Atlantic and national but not European.

The question can be raised whether any improvement could be expected from a more European consideration of defence matters. Within the context of NATO, a conventionally armed Europe would be feasible and even desirable, as it would reduce the danger of escalation while it would not basically alter the relation between the U. S. and the Soviet Union.

It is, therefore, Europe itself which prefers the present situation and the increase in national nuclear strength. It can be left out of consideration whether this is nominally done upon a multinational basis as having no essential value of any kind.

If the causation of the present situation lies in the political, economic and psychological realm, it is in these realms that we must look for solutions or, at any rate, changes.

The political-psychological factors seek increased European prestige to counterbalance the power-losses of Europe in the past decades. It is a strange aspect of this development that in reality Europe could profit only from a co-ordination process in the entire world, and not from a unilateral increase of its own power which would tend to engender tensions instead of reducing them. The image of a stabilized Europe within a normal world, conflicts directly with the aim of continued economic expansion. The political climate, however, is such that moderation and stabilization have not the slightest chance as political goals, as all mass groups have given themselves expansionistic goals. As long as increase in power rather than stabilization of power remains the overriding aim, it is not logical to expect that the prestige-factor of nuclear weapons would diminish, nor can it be expected that the economic and man-power sacrifices necessary for adequate conventional armaments would be forthcoming.

The only possibility would be to create a European Defence Council which would analyse defence problems as interlinked with economic problems, in order to arrive at a new and meaningful interpretation of the European situation. The fact that mobile nuclear forces of the U. S. and the Soviet Union hold one another in balance has not been re-evaluated in terms of the European situation, and there is in fact no adequate organ for such analysis, as this function cannot be attributed in a meaningful fashion to the deliberations within the Assembly of the Council of Europe of the political aspects of defence problems.

The most objective analysis of the European situation seems to occur in England, and this country, or groups in this country, could be requested to take the initiative for a reappraisal of the European situation in which economic and defence-problems would be interlinked. They cannot be really separated.

A conventionally armed Western Europe could arrive at a modus vivendi with an equally armed Eastern Europe. From a political viewpoint, this would seem the only possibility in which European countries and political and other groups within them could arrive at any activity of their own. The dichotomy of economic integration on one side and Atlanticism and nationalism on the other side seems to create more confusion than order, because they are conflicting rather than complementary aims.

The other solution of a complete Atlanticism would tend to aggravate world-tensions and to sharpen the contrast between rich and poor nations.

The task of Europe is essentially an open one, and this means decentralization of power rather than centralization. This would also seem the only road towards a normal relationship between Western and Eastern Europe, without diminishing the balance-of-power possibilities between East and West.

The European countries, and political and pressure-groups within them, could also exert pressure on the U. S. and the Soviet Union in order to stabilize and formalize a world system. This could be done by means of arms-control in relation to the security function within agreed-upon spheres of influence. Whether this should be done via the United Nations, or via a new organ for regional security, is a matter that can be considered from all sides. A more hierarchical control-system might fit in much better with the basic trends of modern society than a watered-down control system in which nominal influence is granted to countries which do not have a power function and often only confuse the basic issues. As an example it might be mentioned that the democratization of the disarmament conferences in Geneva has not led to any tangible results.

If matters are evaluated according to probability, the conclusion seems justified that the probability for arms-control is better than for disarmament, and efforts should be concentrated on this issue, particularly since it enables medium and small countries to take some initiative while disarmament does less. The entire process should be seen as one of a gradual evolution to which many groups and individuals can contribute.

Nevertheless, it must be realized that the opportunities for social change are becoming smaller. There are many equilibrium-maintaining forces that cannot be altered at will, and perhaps should receive a new evaluation rather than be modified. More important than technical means themselves is the psychological function which they exert.

If the equilibrium between the U. S. and the Soviet Union should become institutionalized, the problem of a denuclearized zone in Europe would immediately become meaningful. If not, this same problem should be seen in the light of an arms-control system on which some remarks were made above.

As far as peace-strategy is concerned, both the possibility of global bloc-conciliation and resulting opportunities for zonal denuclearization should be pursued, as well as the more limited function of a denuclearized European zone within the context of, or as an initiative toward, an arms-control system.

APPENDIX 4.

(Data from the Institute of Strategic Studies: October, 1962)

A. Russian

East Germany:	10	tank divisions each with 345 tanks	
	10	motorized divisions each with 219 tanks, all operational,	260,000 men.
Hungary	: 4	divisions	45,000 men.
Poland	: 2	divisions	23,000 men.

One motorized division at full war-strength has 14,500 men, and a tank division has 11,250 men (included in both are supporting artillery and anti-aircraft).

B. Warsaw-pact countries

	divisions	soldiers	population $x10^6$	% of the population	%male working population
East Germany	6	85,000	16.6	0.5	1.79
Czechoslovakia	14	185,000	13.6	1.4	5.04
Albania	5 brigades	29,500	1.6	1.8	5.14
Bulgaria	10	120,000	7.8	1.5	4.81
Poland	14	257,000	28.8	0.9	3.1
Roumania	13	222,000	13.4	1.2	3.68
Hungary	4	80,500	10.0	0.8	2.66
Total	63	979,000	96.8	1%	
Russia	160	3,600,000	218	1.7%	5.5
Grand total		4,579,000			

C. United States

5 divisions plus 3 regiments in West Germany,
5,000 men in Berlin.

One division probably has 13,700 men plus five combat groups of 1,450 men each.

A total in West Germany of about 100,000

D. England

55,000 men in West Germany
3,000 in Berlin

E. France

About 30,000 - 40,000 men in West Germany
2,000 in Berlin

F. N. A. T. O. Countries

	soldiers	population 10^6	% of the population	% male working population
Belgium	110,000	9.2	1.2	4.33
Denmark	46,500	4.6	1.0	3.18
France	705,000	46	1.5	5.33
West Germany	353,000	53.4	0.7	2.20
Greece	≥ 160,000	8.4	≥ 1.9	6.24
Italy	470,000	51	0.9	2.84
Luxemburg	5,500	0.35	1.6	4.95
Netherlands	141,000	11.6	1.2	4.23
Norway	34,000	3.6	0.9	2.92
Portugal	80,000	9.15	0.9	2.89
Turkey	455,000	29.5	1.5	5.14
England	415,000	52.5	0.8	2.47
Total	2,974,000	239.00	1.2	
U.S.	2,815,000	181	1.6	5.68
Grand total	5,789,000			

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P. Noel-Baker

NOTE ON THE PART PLAYED IN DISARMAMENT NEGOTIATIONS BY THE "MIDDLE", SMALLER AND NON-ALIGNED NATIONS

1. Disarmament Negotiations:

From 1953 to 1957 the only serious disarmament discussions in the United Nations took place in the so-called U. N. "Sub-Committee". This Sub-Committee consisted of delegates from 5 nations only; 4 from NATO (U. S. A., Britain, France and Canada) and the Soviet Union.

The creation of this Sub-Committee was proposed by India in September, 1953; it was unanimously agreed to by the General Assembly. Thus the search for Disarmament was handed over to the major military Powers, with all the "middle", smaller and non-aligned nations voluntarily resigning their right to a voice in the negotiations.

The plan proved to be both absurd and disastrous. The Sub-Committee only met at irregular intervals; in some years its sessions were very short (1954 - 5 weeks; 1956 - 6 weeks); its debates were ill-tempered and sterile; in September, 1957, it separated with no achievement to its credit, and never met again. The shock of its failure was so great that for the next two years no attempt was even made to re-start Disarmament discussions. Thus 6 years - 1953-1959 - were wholly wasted; they were years of crucial importance, during which fusion weapons, fission-fusion-fission weapons, long and short-range ballistic missiles, supersonic aircraft, biological and nerve-gases were all made "operational"; in which large stocks of most of them were built up; and in which military research was enormously expanded (expenditure was multiplied by at least a factor of 5). Thus, while the "great" military powers were in charge, the arms race was accelerated as never before, and the U. N. did literally nothing to check its momentum.

In September 1959, however, Mr. Selwyn Lloyd and Mr. Khrushchev proposed to the U. N. General Assembly that a new effort should be made to secure what they both called "general and complete disarmament". It was agreed in the Assembly that a new Commission should be set up, on which ten nations should be represented, 5 from NATO and 5 from the Warsaw Pact: U. S. A., Britain, France, Italy, Canada; Soviet Union, Poland, Roumania, Czechoslovakia and Bulgaria.

This decision left the Disarmament negotiations to delegates from the two main military alliances. The Ten nations had a total population of approximately 700 million; thus three-quarters of mankind were unrepresented; almost all the middle, and smaller nations, and all the non-aligned nations, were left without a voice.

This again proved to be a bad plan. It was irrational in principle and quite contrary to the general law and practice of the U. N. All nations are almost equally affected by a world conflict, as Hitler's war proved to the neutrals; since the creation of the nuclear stockpiles, the interest of the non-aligned and smaller powers in disarmament is no less than the interest of the major military nations.

In any case, the Committee of Ten, like the "Sub-Committee", ended in total failure, although, thanks to Mr. Khrushchev, M. Jules Moch and Sir David Ormsby-Gore, it had helped to advance thinking about how disarmament could be brought about.

The failure of the Committee, and the advent of President Kennedy to power, brought two important changes: the drafting of the McCloy-Zorin Principles, and the creation of the new "Committee of Eighteen". In this Committee eight non-aligned nations were added to the members of the Committee of Ten.

Great hopes were built on the presence of these eight non-aligned spokesmen. Unfortunately, these hopes have not been fulfilled. The debates have been more courteous; the importance of the Committee's task has been constantly drawn to the attention of the major military powers; on a Test Ban, the Eight put forward collective compromise proposals, and undoubtedly, by their ingenuity and their persistence, they made a considerable contribution to the signing of the Treaty of Moscow.

But their very concentration on a Test Ban showed up the inadequacy of their efforts on the Committee's principal task, the preparation of a Treaty of General and Complete Disarmament. When this was being discussed, the spokesmen of the Eight were very often silent; meeting after meeting went by without their making a single speech. Sometimes on an important subject, e. g. on the elimination of the means of delivery, one of them would say how important it was that the "Great Powers" should agree; but that, of course, it was not for him to make any concrete suggestion about what should be done or about what compromise solution might be acceptable. Thus the contribution of the Eight on the Committee's major task has been virtually nil.

This means that the Governments of the Eight, and of other middle, smaller and non-aligned nations, are not really taking the Committee's work seriously. Many of them have General Staffs, and scientists, who could enable their delegates to play a most effective part in the work of the Committee and of the General Assembly. Since the League of Nations Disarmament Conference of 1932-1933 ended in failure, many people assume that it has no lessons of value to teach. In fact, the Conference, with the League of Nations Preparatory Commissions, solved all the technical problems of conventional disarmament, and of the reduction and limitation of military budgets; it secured virtually universal agreement to the principle of "qualitative" disarmament, i. e. the abolition of weapons which assist offensive attack against national defence; and more than once the Conference came very near to political success. These results were in very great measure due to the efforts of the middle and smaller nations, and to the studies and memoranda prepared by their General Staffs and experts. There is no doubt that the middle and smaller nations could, and should, play an equally effective part today.

2. Collective World Security:

The middle, smaller and non-aligned nations could, no doubt, play a most important part in the organization of collective World Security.

It is notable that in the U. N. Forces established in Sinai, the Congo and West Iran, all the contingents have been furnished by these nations (except for Canada, whose troops were acceptable because the Canadian Government had shown its loyalty to the Charter in the Suez crisis). The Commanders-in-Chief of these Forces have been Canadian, Swedish, Irish and Indian.

It may well be that the creation of a standing U. N. International Force might be easier to obtain, if it were agreed that no one from the Great Powers were accepted in the Force, at least in the earlier stages. If some of the middle and smaller states, both from West and East, were to agree on a plan for a pilot U. N. Force based on individual recruitment among their nationals, and commanded by officers from non-aligned countries, this might maximize the chance of success.

P. J. Noel-Baker

THE DISCUSSIONS OF THE COMMITTEE OF EIGHTEEN ON THE SOVIET PROPOSALS FOR THE ABOLITION OF THE MEANS OF DELIVERY AND ON MR. GROMYKO'S SUBSEQUENT PROPOSAL FOR THE RETENTION OF A MINIMUM NUCLEAR DETERRENT

1. PROPOSALS FOR THE ABOLITION OF THE MEANS OF DELIVERY

The Soviet Draft Treaty of March 15th 1962

1. When the Committee of 18 met, the Soviet delegate (Mr. Gromyko) presented a Draft Treaty for General and Complete Disarmament (GCD).

This proposed the abolition in Stage I of all the means of delivering nuclear weapons. Stage I was to be completed in 21 months. (Later, the Soviet offered to extend this to 30 months).

2. The means of delivery to be abolished were thus defined:

i) Rockets)
ii) Military aircraft)"capable of delivering nuclear weapons"
iii) Surface warships)
iv) Submarines
v) "Artillery systems capable of serving as means of delivering nuclear weapons."

3. The rockets to be destroyed were to include "all rockets capable of delivering nuclear weapons, of any calibre or range, whether strategic, operational or tactical, as well as pilotless aircraft of all types." (Article 5).

4. An exception was made for rockets agreed by all Parties to be necessary for the peaceful exploration of outer space.

5. Surface warships were to be destroyed only if they are "capable of being used as vehicles for nuclear weapons". (Article 7).

But no such limitation appears about submarines; Article 7 says: "There shall be ... destroyed ... submarines of any class or type."

Presumably this means that all submarines shall be scrapped, whether they are specially adapted for launching nuclear missiles or not. This may be because any submarine could be used for the clandestine laying of nuclear mines.

The point is important, since the Communist bloc possesses 457 submarines plus 50 in reserve, against the Western Alliances' 244 plus 48 in reserve*

6. All artillery systems which can deliver nuclear weapons were to be destroyed, including dual-purpose guns which can fire non-nuclear ammunition. Article 8 includes elaborate provisions for the destruction, not only of these guns, but also of the "subsidiary instruments and technical facilities" for fire-control, of all stocks of non-nuclear ammunition, and of all plants where such guns or non-nuclear ammunition can be manufactured.

7. There are similar provisions in Articles 5 to 7 for the closing and dismantling of factories, workshops and ship-yards where rockets, military aircraft, surface warships and submarines are manufactured, and for the destruction of machine-tools and equipment specially designed for the manufacture or construction of these means of delivery;

i) Proving grounds for rockets;
ii) Military airfields serving as bases for the aircraft to be destroyed;
iii) Training establishments for the crews of such aircraft;
iv) Naval bases and installations for the maintenance of the surface warships and submarines to be destroyed

were to be "closed", or "demolished" or "dismantled and converted to peaceful use".

8. All these various measures for

i) the destruction of means of delivery;
ii) the demolition of the plants in which they are produced;
iii) the closing of testing and training stations and maintenance depots

were to be carried out under the control of the International Inspectors of the International Disarmament Organization (IDO).

9. These Inspectors were also to "supervise" the manufacture, testing and use of rockets for the peaceful exploration of outer space.

10. These Articles of the Soviet Draft Treaty constitute a carefully considered plan, all the parts of which hang closely together.

In particular, the abolition of the means of delivering "tactical" or "battlefield" nuclear weapons is linked to the abolition of the means

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* The Military Balance, 1962-63. Institute of Strategic Studies. p. 26.

of delivering "strategic"weapons. The elaborate provisions of Article 8 about artillery systems show that the Soviet Government regarded this as vitally important. They have never given any hint that strategic weapons could be dealt with first, leaving battlefield weapons to be dealt with later; and there is no such hint in Mr. Gromyko's proposal for the retention of a minimum nuclear deterrent until the end of Stage II.

This important point will be dealt with later (see paras. 40-45).

The Soviet proposal has provoked Western experts to complain that their dual-purpose 5-inch guns should be retained for use with non-nuclear ammunition. The Soviet Government evidently considered that the retention of a clandestine stock of nuclear shells would be a grave danger, and that the only true safeguard was to abolish the guns, and also the non-nuclear ammunition, so that a disloyal Government would have no temptation to cheat.

11. In making this proposal about artillery and short-range rockets and military aircraft, the Soviet Government had no doubt come to Sir Solly Zuckerman's conclusion that the so-called "tactical" or "battlefield" nuclear weapons could not be used in a land battle without creating chaos and disaster for all concerned, including not only the enemy, but also the forces which used them, and, of course, the civilian population. This view is re-inforced by the fact that the 5-inch nuclear shell has a yield of 10 kilotons.

The Origin of the Proposal for the Abolition of the Means of Delivery

12. This proposal for the early abolition of the means of delivery received a hostile reception from the Western delegates in the Committee of 18. But it was, in fact, originally a Western idea.

It was first publicly, though unofficially, discussed in the United Kingdom in 1958-9. Disarmament negotiations had then been deadlocked since 1955 by the argument that the danger of the clandestine nuclear stock made nuclear disarmament unsafe, and that, without nuclear disarmament, nothing else could be done. In answer to this argument, the British United Nations Association put forward the following propositions:

(i) In the words of the U. S. delegate to the U. N. Sub-Committee in 1957: "The atom bomb cannot be effective in itself. . . . It is useless without the means of conveying it to its destination."

(ii) Therefore, if the means of delivery are abolished, the danger of the secret nuclear stock will be enormously reduced.

(iii) In the abolition of the means of delivery, there is no serious problem of inspection and control. A disloyal Government might seek to violate its undertakings either by new production of rockets, aircraft, etc., after its original stocks had been destroyed; or by seeking secretly to retain some of those stocks. In neither case would its hope of evading the vigilance of the International Inspectors be good:

Treaty Violation by New Production of Means of Delivery (vehicles)

(a) No vehicle capable of delivering a nuclear weapon is so small that its manufacture could not be detected in the factory or workshop by competent International Inspectors;

(b) no new means of delivery could be tested without discovery by the International Inspectors;

(c) troops could not be trained in their use without discovery.

There is no real risk that a disloyal Government could make new stocks of vehicles.

Treaty Violation by the Clandestine Retention of Existing Vehicles

A disloyal Government which attempted secretly to retain existing vehicles would be faced by similar difficulties:

(a) the vehicles would not be at all easy to conceal.

Rocket-launching sites are very large installations, and a great many people know of their existence. There would be a serious risk of their detection.

Military aircraft might be broken down and kept hidden in component parts. But it would be very difficult to re-assemble them and to use them for military purposes, if the airfields had been shut down, and their specialized equipment (bomb-loading apparatus, radar, etc.) had been destroyed.

Surface warships and submarines could not be concealed.

It has been agreed since 1932 that artillery and conventional ammunition would be very difficult to conceal in any quantity that would be significant.

(b) The vehicles, if retained in a form ready for use, would require more or less regular maintenance. It would be difficult to keep this work concealed, especially if there were a proper system of budgetary control.

(c) The troops who were to use the vehicles would have to be given regular instruction and drills. Except possibly in the case of rockets, this would be extremely difficult to conceal.

13. The conclusion reached from these arguments was that the risk of the clandestine retention of vehicles capable of delivering nuclear weapons would be small; and that, therefore, the danger of nuclear disarmament accompanied by the abolition of vehicles would be much less than the constantly increasing danger of a continuing nuclear arms race.

14. Others who could speak with much greater authority than the British U. N. Association had reached the same conclusion.

(i) In September 1959, M. le President Jules Moch put forward on behalf of France a formal proposal for the total and early abolition of the means of delivery, as a safeguard for total nuclear disarmament.

(ii) In March 1960, M. Moch renewed the proposal in the Committee of Ten. Speaking of the danger of the secret nuclear stock, and admitting that "the exact amount of the stocks will never be known", he said:

> "There are, however, two ways in which our nuclear fears may be allayed. One is to tackle, while there is still time, the means of carrying these weapons - satellites, missiles, aircraft, aircraft carriers, submarines, launching ramps, etc. Once the vehicles have been banned and destroyed, the military stocks will appear worthless."

(iii) The British Foreign Secretary, Mr. Selwyn Lloyd, had already given in the House of Commons his "warm support" to the principle of M. Moch's proposal (October 1959).

(iv) President de Gaulle had also strongly endorsed M. Moch's proposal in speeches to the British and Canadian Parliaments, and to the U. S. Congress, and he emphasized that it should be quickly carried out - "while there is still time".

It was only after all this had happened that Mr. Khrushchev, in his Memorandum of June 2nd, 1960, proposed in the Committee of Ten that the abolition of the means of delivery should be carried out in Stage I of the Disarmament Treaty.

The Discussion of the Soviet Proposal about the Means of Delivery in the Committee of Eighteen

15. But although the proposal for the abolition of the means of delivery as a safeguard for nuclear disarmament had been originally a Western idea, and although M. Moch and President de Gaulle had urged that it should be swiftly carried out, the provisions of the Soviet Draft Treaty which dealt with it (Articles 5 to 8) were given a most unfavourable reception by the Western delegates in the Committee of 18.

The Western delegates said:

(i) The proposal was quite "unrealistic";

(ii) it would violate the 5th McCloy-Zorin Principle; by seriously upsetting the military balance in favour of the Soviet Union;

(iii) it offered no genuine guarantee that the means of delivery would really be destroyed - the Soviet provisions left the door open to cheating;

(iv) it was far more practical and fair to adopt the U. S. proposal of a 30% cut in both means of delivery and conventional weapons in Stage I, with further cuts of 35% and 35% in Stages II and III.

16. The Western delegates gave no indication of what they meant by "unrealistic", although they often used the word. The British delegate put in elaborate papers showing how a small number of qualified experts could control the effective and irremediable destruction of a large number of missiles and aircraft. This was arguing the obvious; but it showed one sense in which the Stage I abolition of the most essential means of delivery was not unrealistic.

Surface warships and submarines can be disposed of by opening their sea cocks, as the Germans showed at Scapa Flow in 1919. Artillery can be melted down, and ramps and launching sites destroyed by dynamite.

17. The Western delegates' argument that the Soviet proposal would violate the 5th McCloy-Zorin principle was mainly argued on three grounds:

(i) The Soviet bloc had overwhelming superiority in "Conventional" forces, and the abolition of the means of delivery would deprive the West of their only real means of holding these "conventional" forces in check;

(ii) This advantage was much increased by the facts of geography:
(a) the Soviet bloc could operate their forces on "interior" lines.
(b) their lines of communication were relatively short, and supplies could come by rail and road; the West's main supply bases were overseas and far away.
(c) The Soviet nations were a compact regional group - the NATO allies were separated by the North Sea, the Atlantic Ocean and the Alps.

(iii) The numerical superiority of the Soviet bloc was further increased by the fact that their armed forces were under a centralized and unified command; they were virtually one Army, Navy and Air Force, while the NATO and other Western Alliance forces consisted of separate contingents, many of them not under any central command. Moreover, the Soviet bloc were politically more closely united than the Western Powers, among whom there were often differences of opinion about defence.

18. None of these three arguments is prima facie conclusive.

19. (i) In reply to the first, the Soviet delegate said that they had offered reductions of conventional forces that would give the West parity with the Soviet bloc by the end of Stage I; they had proposed a "ceiling" on manpower of 1.7 million, or, if the West desired, 1.5 million or even less, together with the destruction of approximately 70% of their "conventional" weapons and equipment; with parity of forces, the Western argument fell to the ground.

(ii) Since the discussions began in the Committee of 18, doubts have been expressed in the West about their delegates' assumption that the Soviet bloc had overwhelming conventional superiority.

(a) In the "Military Balance, 1962-63", issued by the British Institute of Strategic Studies, the manpower of the Western Alliances is estimated at 8,010,000; the manpower of the Soviet bloc at 7,670,000. The latter figures include the forces of Albania and China.

(b) The Pentagon recently made a reappraisal of the "conventional" strength of the Soviet Union, admitting that in previous estimates there had been an error similar to the error they had made over the alleged "missile gap". In their new calculation, they estimated the land forces of the Soviet Union at 60 effective Divisions, instead of the figure of 175 which they had always previously used.

There has also been a Western reappraisal of the Western delegates' argument about the geographical advantage of the Soviet bloc's "interior lines" and lines of communication. The Military Correspondent of the London Times reported on August 12, 1963, that "Defence planners in Washington, and a growing number of military observers in Europe" now point out that NATO forces could gain "air superiority in areas of their choice", and that "the Russian lines of communication to the European front would be long and restricted, and that the rail traffic on which the Russians rely for much of their transport would be vulnerable to attack from the air." (Or, it may be added, to sabotage).

He further said:

"Suggestions of the disengagement of military forces in central Europe have met, apart from the obvious political arguments, the military objection that it would be easier for the Russians than for the Western powers to move back into Europe after a withdrawal. In face of the latest estimates, these objections seem to lose some of their force."

(iii) Third, the Western delegates have urged that the forces of the Soviet bloc constitute a close-knit military unit under central command, while the Western forces are contingents under national command, whose Governments are often divided on matters of defence policy. This argument rests on delicate political considerations, which it would not be useful to discuss. But this much may safely be said: It would be as easy, and as dangerous, to over-estimate the policy differences of the West, as it would be to over-estimate the political and military unity of the Soviet bloc.

20. The Western delegates' third argument against the Soviet Draft Treaty provisions on the means of delivery was that these provisions offered no genuine guarantee that the means of delivery would really be destroyed, in accordance with the Disarmament Treaty. There were many and oft-repeated variants of the proposition that, without full and unrestricted inspection of "armaments that remain", a disloyal Government would be able to cheat, and to retain a secret stock of means of delivery which would upset the military balance.

There was in the Committee of 18 no adequate discussion of the difficulties of secretly making new means of delivery, or of retaining a clandestine stock, which are set out in paragraph 14 above.

There was equally little discussion of the psychological and political difficulties of cheating.

But these points may be more conveniently considered later on. (See paras. 31-36).

21. The last argument of the Western delegates was that the means of delivery could be more fairly and practically dealt with on the same basis as conventional weapons, by cuts of 30% in Stage I, and of 35% in Stages II and III. There would thus be the same reduction of all kinds of weapons and equipment "right across the board" - if one side, the West, were left with greater strength in one kind of armament, for example, nuclear missiles and bombers, the other side, the Soviet bloc, would retain greater conventional strength, and thus a rough but equitable balance would be maintained.

This argument is open to various objections.

(i) As shown above, it is not now believed that the Soviet bloc has significantly greater conventional strength than the West. One essential assumption of the argument thus falls to the ground.

(ii) On the other hand, the West certainly have greater strength than the Soviet bloc in "strategic" nuclear missiles and bombers. The U. S. Secretary of State, Mr. McNamara, told the Senate on August 13th 1963, that the U. S. then had 500 Atlas, Titan, Minuteman and Polaris missiles, and planned to have 1,700 by 1966. These are all inter-continental weapons (range over 2,000 miles). * Mr. McNamara further said that the Soviet Union's intercontinental weapons "numbered only a fraction of those possessed by the U. S."** "Between now and 1966", he added, "the American superiority in ballistic missiles would increase both absolutely and relatively."

He also said that the U. S. "had twice as many 'strategic' bombers as the Soviet Union". "Strategic" bombers carry 10 or 20 megaton bombs.

Some Western experts believe that the Western superiority is equally great, if not greater, in the "tactical" or short-range means of delivering nuclear weapons. The U. S. Deputy Secretary of Defence, Mr. Gilpatric, said not long ago that the U. S. means of delivering nuclear weapons numbered "tens of thousands". The great majority of these are "tactical".

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* This is the definition of ICBMs adopted by the I. S. S.

** The number possessed by the Soviet bloc in early 1963 is given by the I. S. S. as 75 plus.

(iii) If the West thus have very significantly greater numbers of vehicles capable of delivering nuclear weapons than the Soviet Union, then a 30% cut by each side would not operate fairly between them. The Report of Group I of the 8th Pugwash Conference said:

"The group discussed whether in this stage of disarmament the stockpiles of each country should be reduced to the same percentage of their present size (which gives an advantage to the country possessing the larger initial stockpile)."

Thus, if the facts are as Mr. McNamara, Mr. Gilpatric, and other Western experts have declared them to be, the Western proposal for a 30% cut in means of delivery in Stage I is not a plan that the Soviet Government could be expected to accept; and the conception of percentage cuts "right across the board", i. e. of all kinds of weapons and equipment, including means of delivery, is not one that would work fairly to both sides.

22. The above analysis of the work of the Committee of 18 on the means of delivery is based on a careful study of its verbatim records. It is possible - perhaps probable - that others would draw a different conclusion from mine; but my conclusion is clear: the Committee has never considered the real case in favour of the proposal to abolish the means of delivery at an early stage of the disarmament process; many of the speeches made were based on Intelligence appreciations which, of course, the delegates were in no position to question, but which the General Staffs do not now believe to be in accordance with the facts. The key to an understanding of these supremely unsatisfactory debates has been the Western delegates' use of the undefined word "unrealistic".

The Soviet Government's Change of Attitude

23. As said above, the Western delegates often used the word "unrealistic", but gave no indication of any specific sense in which it should be understood. But the intention behind the words they used was soon extremely clear; irrespective of the merits of the matter, they were conveying a political objection to the Soviet plan. Their governments were firmly resolved not to agree to the abolition of the means of delivery in Stage I.

24. After six months of fruitless and very unrealistic debate in the Committee, the Soviet Government evidently decided that the plan must be dropped. They had put it in the very forefront of their Draft Treaty,

because, like M. Moch, they regarded the abolition of the means of delivery as the most important and most urgent single measure of disarmament. In September 1962, they still held that view; but they had come to the conclusion that, if they stuck to their proposal, it would be a fatal obstacle to any further progress in drafting a Treaty of General Disarmament.

Accordingly, they substituted another plan, which had been put forward in discussion by Western members of the 8th and 9th Pugwash Conferences at Stowe in 1961, and at Cambridge in 1962. This was the proposal for the retention for a longer period of a "minimum nuclear deterrent". At the U. N. General Assembly in September, 1962, four weeks after the ninth Pugwash Conference in Cambridge, Mr. Gromyko put forward a new Soviet proposal on these lines.

II. MR. GROMYKO'S PROPOSAL FOR A MINIMUM NUCLEAR DETERRENT

25. Mr. Gromyko said:

"At the talks in Geneva, the U. S. Government categorically objected to the elimination, at the first stage of disarmament, of all vehicles for the delivery of nuclear weapons, declaring that states embarking on disarmament would for some time allegedly need some sort of protective umbrella. We do not believe such arguments to be justified, but in order to make a genuine move forward we are ready to make yet another effort.

"Taking account of the stand of the Western Powers, the Soviet Government agrees that in the process of destroying vehicles for the delivery of nuclear weapons at the first stage exception be made for a strictly limited and agreed number of global intercontinental missiles, anti-missile missiles, and anti-aircraft missiles of the ground-to-air type, which would remain at the disposal of the U. S. S. R. and the U. S. alone. Thus for a definite period the means of defence would remain in case someone, as certain Western representatives fear, ventures to violate the Treaty and conceal missiles or combat aircraft. "*

26. No doubt the Soviet Government regarded this proposal as a major concession to the West.

But it only received a rather tepid reception from the Western delegates in the General Assembly; and without serious discussion the Assembly referred it to the Committee of 18.

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* Cmnd. 1958, page 76.

27. In the Committee of 18, the Western delegates made many speeches about the proposals. With one exception, these speeches made no constructive suggestions about how the Gromyko plan could be made to work. On the contrary, they all had a common theme: "Please give us more information; we do not understand what Mr. Gromyko means; in particular, we do not gather how we could be certain that the Soviet Government would not secretly retain more vehicles than the Treaty allowed". Throughout, there was major emphasis on this last question of inspection and control.

28. The speeches did less than justice to Mr. Gromyko; he had given a clear summary of the kind of arrangement the Soviet Government were ready to accept:

(i) The U. S. and Soviet Union would each retain an agreed number of vehicles, together with the appropriate warheads.

(ii) The number would be the same for the U. S. and Soviet Union; the warheads would have an equal total explosive power. Thus the U. S. and the Soviet Union would reach parity in nuclear strength at the end of Stage I.

(iii) No other nation would retain any vehicles capable of delivering nuclear weapons.

(iv) The retained vehicles "would remain at the disposal of the U. S. S. R. and the U. S. alone"; this would clearly exclude a NATO or other multilateral nuclear deterrent, or the supply of "nuclear capability" to any third power.

(v) Taken with the rest of the Soviet Draft Treaty, the phrase may also be intended to mean that vehicles should be sited only on the territory of the U. S. S. R. or U. S.; but this is not clear. No one in the Committee tried to find out.

(vi) The retained vehicles would be of three types only:

(a) "global" ICBMs, i. e. missiles capable of reaching any target on earth, and of changing direction in flight; these would constitute the deterrent or "protective umbrella".

(b) Anti-missile missiles; these must be for defence against the use by an aggressor nation of what Mr. Gromyko called "concealed missiles". They must presumably have a less than inter-continental range, or they would be a potential addition to the deterrent, which cannot have been intended.

(c) "Anti-aircraft missiles of the ground-to-air type", for use against "concealed combat aircraft". These would likewise be purely defensive, and evidently of short range.

(vii) This enumeration of the three categories to be retained clearly excluded the means of delivery for all "tactical" or "battlefield" nuclear weapons. On this point, the Soviet Government adhered to the view expressed in their Draft Treaty, and discussed above.

(viii) There would clearly have to be a limitation of the numbers allowed in each separate category.

(ix) Mr. Gromyko made no mention of the precise numbers which should be retained, nor did the Soviet delegate in the Committee of 18. This is not, perhaps, surprising, if Mr. McNamara's statements correspond to the facts. But General Burns of Canada was right to urge in the Committee that the question of numbers is the very heart of Mr. Gromyko's proposal. Although Mr. Gromyko gave no figures, he did use words which gave a general indication of what he had in mind. He spoke of "a strictly limited and agreed number."

It is true that the words "strictly limited" might apply to a number measured either in tens or in hundreds; and perhaps Mr. Gromyko desired to leave that open until some progress had been made towards agreement on the principle of the plan. But the words could not possibly apply to a deterrent numbered in thousands - Mr. Gromyko was ruling out the kind of missile strengths foreseen in Stages I and II of the U. S. Draft Treaty.

(x) The retained missiles were to be abolished at the end of Stage II. By that time, more than two-thirds of all existing armaments would have been abolished, and the arguments for a minimum nuclear deterrent would have lost their force.

(xi) Mr. Gromyko said nothing about inspection and control of the retained missiles. But, of course, his proposal was made within the framework of the Soviet Draft Treaty, which provided for inspection on the spot of the destruction of the means of delivery, and for the closure under control of the factories and plants in which the means of delivery had been made.

29. It cannot truly be said that, except for one speech by General Burns, the Western delegates in the Committee of 18 made any serious attempt to analyse or discuss the points set out above.

Soviet Proposal for On-Site Inspection of the Minimum Deterrent

As said in para. 27, there was major emphasis on the question of inspection and control. In reply to the continued pressure of his colleagues, Mr. Tsarapkin announced a new Soviet concession in March, 1963. He said:

"The Soviet Union accepts the establishment of control over the remaining missiles directly at the launching sites."

This was a very important addition to the Gromyko plan; it was an acceptance of inspection over "armaments that remain", and in the most vital category of all.

30. But no sooner had this offer been received than the Western delegates concentrated their efforts on showing that it was not worth much; the real question, they said, was that of "undeclared" missiles; how could they verify that the Soviet Government were not retaining a number of clandestine missiles or other means of delivery that would make them the military masters of the world?

31. Throughout all recent disarmament discussions, the Western delegates have made two unargued assumptions:

(i) There would be disloyal Governments which would do everything in their power to "cheat", i.e., to violate the obligations of the Disarmament Treaty by retaining forces or armaments which they had undertaken to eliminate.

(ii) These disloyal Governments would have a good chance of succeeding in retaining sufficient clandestine forces and armaments to enable it to blackmail its neighbours or the world.

The Report of Group I of the 9th Pugwash Conference at Cambridge can be read as an acceptance of the validity of these assumptions in respect of the means of delivery.

It may, therefore, be worth while to consider afresh how far the assumptions are justified.

32. "Cheating". This assumption has been challenged in the important paper by Mr. R. Neild.* I will not attempt to summarize his argument; to do so would be to give a most inadequate impression of its cogency.

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* R. Neild. Cheating in a disarmed world. (To be published in "Disarmament and Arms Control).

The paper should be read and considered as a whole. It shows, I believe, that current discussion about disarmament has gravely under-estimated the factors that would restrain a disloyal Government that was contemplating the violation of its Treaty obligations; and has no less gravely over-estimated the risk that a Government which had succeeded in retaining a clandestine stock of armaments would dare to threaten its use to blackmail other nations.

This is a point of capital importance to the whole problem of a minimum deterrent, which I hope the Conference will debate.

33. Could clandestine stocks of the means of delivery be concealed? The second assumption is equally open to challenge.

The Report of Group I of the Cambridge Conference spoke of "the uncertainties of the initial verification process, let us say 10% for the sake of argument, although it would be rather less for large systems such as submarines and long-range rockets, and rather more for the smaller means of delivery."

I believe this to be quite unrealistic.

(i) The uncertainty with regard to surface warships, submarines and bombing aircraft would, I submit, be nought per cent.

(ii) The difficulty of concealing long-range rocket sites would be very great; large numbers of people would know about them, and the risk of detection, under the system proposed by Mr. Gromyko, would be high.

(iii) But it would not help a disloyal Government simply to retain clandestine means of delivery; to be of use for blackmail, they must be ready for instantaneous use. This means that:

(a) They must be maintained in perfect order;
(b) their supplies of fuel must be kept up, in quantity and quality;
(c) their supplies of ammunition or bombs must be readily available, together with bomb-loading and other similar installations;
(d) the personnel who are to use them must not only be fully trained, but must be kept in constant practice.

34. It must be remembered that at all stages of the disarmament process, from the first day onwards, there will be thousands of international Inspectors on the territory of each major signatory state. Whether or not these Inspectors had the right to inspect "the armaments that remain", a disloyal Government would find it impossible to conceal from them the "maintenance" activities set out in (a), (b), (c) and (d) of paragraph 33, at least in respect of fighter-bombers and other "combat aircraft"; in respect of artillery; and also, I should have thought, in respect of missile systems of all types and ranges. But if this maintenance and drill were allowed to lapse for even so short a period as six months, might not the subsequent use of the means of delivery be very dangerous to the pilots, gunners and others who were called on to use them?

35. The above argument is not intended to cast doubt on the desirability of fully effective inspection, including inspection of "armaments that remain". It is only intended to show that the degree of inspection already agreed to in both the U. S. and Soviet Draft Treaties, and accepted by all other delegations in the Committee of 18, would make it very difficult for a disloyal Government to violate, without detection, a Treaty obligation to abolish the means of delivery.

36. I submit that, for the reasons explained above, the argument used by M. Moch and others in 1959 and 1960 is sound; the risk of undetected retention of the means of delivery is very small indeed and very much less than 10%; and that is why the abolition of these means of delivery would be an effective safeguard for nuclear disarmament.

How many Missiles in the Minimum Deterrent?

37. Another factor of importance was explained by General Burns in the only constructive speech made in the Committee of 18 about Mr. Gromyko's plan.

General Burns argued that the danger to loyal nations from the retention of clandestine missiles by a disloyal Government would depend on the number of missiles to be retained in the minimum nuclear deterrent. Assume, he said, that the disloyal Government might be able to retain 30 clandestine missiles (it was evident from his argument that he thought this was an outside figure); then, if the permitted number were 10, the 30 might dangerously upset the military balance. But if the permitted number were 200, the 30 would not matter very much.

38. General Burns thus brought the Committee of 18 to the central problem of the Gromyko plan, that of the numbers of missiles to be retained. Unfortunately, none of his colleagues pursued his lead.

But it is surely in terms of concrete numbers, rather than in terms of the percentage of uncertainty of verification, that the proposal for a minimum nuclear deterrent should be discussed. It may be useful to recall three opinions which are entitled to respect.

In January, 1963, Professor P. M. Blackett wrote:

"At the end of the first stage of such a disarmament plan, both the U. S. and the U. S. S. R. would reach ... approximate parity of strategic nuclear striking force at a low minimum deterrent level of one or two dozen invulnerable missiles." (Harper's).

In September, 1962, Dr. Hans Bethe wrote:

"In the era of invulnerable deterrent, it is no longer necessary to have large numbers of such strategic delivery vehicles." (Here followed an account of the U. S. nuclear forces and delivery systems). "It seems to me entirely safe to reduce this varied force to a few hundred missiles, each carrying one megaton, in contrast to the 10 or 20 megatons now carried by our planes. This would be an enormous reduction of the total destructive force." (Bulletin of Atomic Scientists).

In June 1960, Dr. Jerome Wiesner wrote:

"Studies made independently by the U. S. Army and Navy have indicated that, even in the absence of international agreements limiting force size and permitting inspection, 200 relatively secure missiles would provide an adequate deterrent."

39. All the Governments of the nuclear Powers declare that deterrence is the sole purpose of the nuclear armouries they have built up. If so, their purpose could be most surely, and most safely, fulfilled by the adoption of Mr. Gromyko's plan, with a number of permitted missiles within the range suggested by Professor Blackett, Dr. Bethe, and Dr. Wiesner. I hope that the Dubrovnik Conference will feel able to discuss the problem in these concrete terms.

III. COULD STRATEGIC MEANS OF DELIVERY BE DEALT WITH SEPARATELY FROM "TACTICAL" OR "BATTLEFIELD" NUCLEAR WEAPONS?

40. It has been suggested that an agreement might be reached more easily, if the so-called "strategic" or long-range means of delivery could be dealt with as a preliminary measure, leaving "tactical" or "battlefield" nuclear weapons unrestricted until a later stage.

This proposal, like others, should be treated with respect; any plan that achieves real progress, however partial, would be welcomed by those who desire to reduce the dangers of the arms race.

But this proposal appears to involve great difficulties, both technical and political.

41. Technical

(i) It would be necessary to define what is a "tactical" or "battlefield" weapon.

(a) This may seem relatively simple, so far as atomic artillery and bazookas are concerned.

(b) Difficulty would certainly arise about such ground-to-ground Army missiles as the Pershing, which has a range of 300 miles plus, and a powerful warhead; or the Sergeant, which has a range of 85 miles, and a warhead of 20 kilotons. It is only by a strange abuse of language that such weapons can be called "tactical".

(c) But if these two categories of means of delivery are admitted to be in the "tactical" class, there remain the short and intermediate range aircraft - fighter-bombers and ground-support aircraft - which are designed to deliver bombs which have a yield of 10 to 100 kilotons, or even larger. (In the well-known exercise, Spearpoint, the British Army used simulated weapons of 10, 20, 30 and 50 kilotons, and called them all "tactical"). *

(d) There would thus be most controversial points to be settled about the maximum permissible yield of a tactical weapon. It has been suggested that 20 kilotons would be a suitable figure; but, apart from the gross absurdity of calling such a weapon "tactical", this definition would evoke strong opposition, both from those who said that 20 kilotons is too high a yield to be acceptable, and those who say that it is too low.

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* Some "fighter-bombers" can deliver megaton bombs.

(e) There would be a similar difficulty about defining what means of delivery should be called "tactical". If range is made the criterion, and a given figure fixed, e.g., 200 miles, which has been proposed, then the question of bases at once arises. Moreover, the normal or "declared" range of aircraft can be extended by various devices.

(f) If limitations of range or yield of warhead were laid down in the Disarmament Treaty, there would be great difficulty over the measures required to ensure that these limitations were observed.

If inspection were agreed to, the Inspectors would be faced with a task of formidable complexity.

If inspection were not agreed to, then the existence of these "tactical" nuclear weapons and their means of delivery would be a serious cause of fear and suspicion.

42. These difficulties of control would be most acute in respect of the means of delivery which can be most readily defined as "tactical", namely, atomic artillery and bazookas.

43. Political

No less serious is the political difficulty of the proposal. The Soviet Government have never shown any inclination to accept a distinction between "strategic" and "tactical" nuclear weapons. Apart from their objection of principle, there is the further disadvantage that some of the means of delivery which the West call "tactical" could probably be used against Soviet territory, while U. S. territory would be immune from attack by Soviet weapons of the same range.

44. Finally, it may be asked whether there is any real strength in the case for allowing even atomic artillery and bazookas to be retained after the "strategic" means of delivery have been abolished.

(a) Atomic artillery and bazookas and other Army ground-to-ground missiles were developed when it was thought that they were necessary to enable a victim of aggression to resist attack by conventional forces of overwhelming strength. This is no longer believed to be a danger.

(b) There would be a grave risk of escalation in a war which began with weapons as powerful as that which destroyed Hiroshima. In the frenzy and terror which it produced, all the restrictions of the Disarmament Treaty would be quickly cast aside.

(c) It is said, by those who think they know, that, for these reasons, President Kennedy is now most anxious to restrict the production of "battlefield" weapons; that he has already cancelled large contracts for them; and that he plans to withdraw them from his combatant units.

45. In the light of these considerations, it seems doubtful whether the Dubrovnik Conference should spend long on the proposal about which this section of my paper attempts to set out some preliminary and tentative thoughts.

IV. THE PROCESS OF REDUCTION FROM PRESENT STRENGTHS OF DELIVERY SYSTEMS TO THE LEVEL OF THE MINIMUM NUCLEAR DETERRENT.

46. If the facts of present strengths are as Mr. McNamara describes them, it follows that the U. S. would have to make a much bigger reduction in the means of delivery than the Soviet Union to reach parity at the level of the minimum nuclear deterrent. This no doubt poses a serious political problem for the Government of the U. S.

47. The following suggestions may be tentatively made.

If the time schedule for the process of general disarmament were fixed, as may be hoped, at a compromise of 3 stages of 2 years each, then:

(i) An intermediate reduction of the means of delivery, e. g. of 50% of the present U. S. strength, might be made, e. g., within 18 months.

(ii) The reduction to the level of the minimum nuclear deterrent might be made not by the end of Stage I, but within 3 years.

(iii) The final abolition of the minimum nuclear deterrent might be made, not at the end of Stage II, but within 5 years.

(iv) Since, under (i), the U. S. would be making a greater absolute reduction than the Soviet Union in the means of delivery, this might be balanced by a greater reduction by the Soviet Union in the weapons in which it has superior strength, e. g., tanks and mobile artillery. (The I. S. S. say that the Soviet bloc have 38, 000 tanks against the West's 16, 000). This would mean that the West was making a disproportionately larger reduction in its means of attack from the air, while the Soviet Union was making a disproportionately large reduction in its means of attack on land.

(v) In any case, under the present proposals of both the U. S. and Soviet Draft Treaties, the Soviet Union would be making a larger absolute and proportionate reduction in manpower and conventional armaments than the U. S.

48. Something on the lines of these proposed compromise agreements might facilitate the kind of bargain which there will have to be, if any plan for a minimum nuclear deterrent is to be adopted.

CONCLUSION

49. I am well aware that the proposals set out above will seem too ambitious to some members of the Dubrovnik Conference. I am likewise aware that this paper will seem to them both superficial and impatient.

But in the life of nations there are times when too great refinements are a danger, and when patience - or hesitation - is the gravest fault. There was such a time at the Geneva Disarmament Conference in 1932, when President Hoover's proposals could have succeeded, if the British and French Governments, which both accepted the proposals in the end, had not hesitated too long. There may be another such time today.

50. The Pugwash Movement is seven years old. In that time, it has had great successes. It has greatly advanced constructive thinking about the armament problem both in Government circles and outside. It has earned the respect both of military and other experts, and of the Press.

51. But the practical result in the halting of the arms race has been small. There is only one credit item in the balance - a Test Ban Treaty which, however welcome, still permits test explosions with a yield of several hundred kilotons, and the manufacture of 100 megaton bombs.

52. Meanwhile the last seven years have seen the most menacing development in the arms race which there has ever been, both in resources allotted to defence, and in the character of the weapons produced. The race is still gathering momentum, under the impulse of military research, which is the most significant and dangerous factor of all.

The Pugwash Movement should be realistic and face the facts. Time is against us. If the arms race goes on, and the spirit of the Moscow Treaty fades, there will be new crises, even graver than that of October last. If there is ever to be disarmament, there is not a year to be lost.

Alexander Rich

ARCTIC DISARMAMENT - A POSSIBLE NEXT STEP

One of the more significant early agreements in the field of disarmament is embodied in the Antarctic Treaty, the signatories to which include both the U. S. and the U. S. S. R. In this Treaty it is agreed that the Antarctic should only be used for peaceful purposes, and it expressly forbids the use of this region for military activities. Furthermore, the signatories have the right to inspect the stations and installations of other nations in the Antarctic to insure that the treaty has not been violated. The purpose of this short paper is to consider various disarmament agreements which might encompass part or all of the Arctic region.

At the present time the Antarctic represents one of the largest regions in the world in which disarmament is insured by a treaty. This came about because of several factors, the most significant of which is the fact that this part of the globe had very little military value and was not used by any nation for military purposes.

The Arctic region may provide a useful area in which the initial stages of a disarmament agreement can be developed. This does not come about because the Arctic has no military value, but rather because its military value is relatively less than that of many other regions. Accordingly, this may be a fruitful area to investigate as a possible next step in a disarmament agreement which eventually leads to complete and general disarmament.

The early stages of any disarmament agreement are often the most difficult because many new conventions and modes of operations must be established. It is agreed that any disarmament programme must have as an important component a system of inspection to insure that the disarmament is maintained. This requires the evolution of a set of working rules, rights and obligations which are assumed on the part of the Inspectorate as well as by the nations or regions which are being inspected. It is not easy to formulate the practical details of the inspection system without prior experience. It may be useful at an early stage in the disarmament agreement to use an area which is not of prime military value so that it would not cause great concern on either side, but at the same time would permit the evolution and development of the rules which govern the operations and responsibilities of inspection teams. Most regions in which there is a confrontation of military power between East and West are areas of critical importance to the defensive alliances of both NATO and the Warsaw Pact countries. The

difficulty, for example, in evolving a set of rules in which to carry out disarmament in Central Europe are considerable. However, this might be facilitated much more easily in the Arctic region.

Let me give three specific examples of increasingly general disarmament agreements which might be considered for the Arctic area.

(a) Alaska - Eastern Siberia

The only common frontier which is shared by the United States and the Soviet Union is that between Alaska and Eastern Siberia. It is possible that these two nations could negotiate a disarmament agreement involving all or part of Alaska and a corresponding region in the adjoining area of Eastern Siberia. The exact areas to be chosen would be left open to negotiation since it is generally agreed that any disarmament agreement must be such as to give no military advantage to either side. There are some military installations in both of these regions. However, they are not usually considered areas of prime importance in the overall military balance between East and West. This would be especially true if, for example, one considered only those parts of these areas which lie north of the Arctic circle.

The agreement would stipulate that these regions would contain no nuclear weapons or delivery vehicles, long-range bombers or missiles. However, military installations per se, airfields and bases, would be allowed to remain and defensive installations such as radar would also remain intact and operational. Thus the Distant Early Warning system of the United States would be intact as would the corresponding installations of the Soviet Union.

There may be several advantages in negotiating the first step in disarmament agreement between the United States and the Soviet Union directly without the intervention or inclusion of other nations to which they are allied. It is these two nations that have the major responsibility for evolving a disarmament agreement and it may be that this will be facilitated by having them negotiate alone. Ultimately a disarmament agreement involves many nations, but they need not be included in the difficult first step.

Furthermore, this would not be a token disarmament step since it could involve a very large land mass. The area of Alaska is about 1.5 million square kilometres and even if half of this were included in the agreement, it would still constitute a substantial beginning.

A possible fringe benefit in an agreement of this type is that it might include areas bordering on the Pacific Ocean such as the Kamchatka Peninsula which is the site of a large number of earthquakes of natural origin. It is these earthquakes that have given rise to many of the difficulties in negotiating a nuclear test ban treaty which includes underground tests. Disarmament in this region might, therefore, facilitate the extension of the nuclear test ban treaty to include underground tests as well.

An Arctic disarmament treaty might, therefore, become a proving ground for developing an inspection system. The treaty could have provisions for periodically revising the procedures used by inspection teams, their composition, equipment etc. The successful execution of a disarmament agreement in this one area would facilitate its extension to other areas as well.

However, I should point out that it will not be easy to select areas which have correspondingly equivalent military value to be included into this initial disarmament step. The strategic forces of both the United States and the Soviet Union differ both with regard to their composition and their tactical emphasis. A major goal in evolving an agreement of this type is that of building up mutual trust; therefore, great consideration must be placed on the selection of corresponding regions which do not embarass either country strategically.

(b) Greenland - Alaska - Eastern Siberia

A relatively simple extension of this disarmament plan could be brought about to the inclusion of Greenland. The Foreign Minister of Denmark has already declared that his nation would be willing to include Greenland in a disarmament plan. The United States has military bases there and if this area were incorporated into the disarmament agreement, a corresponding larger part of Eastern Siberia could then be included. Greenland has an area of over two million square kilometres. An agreement including it might then encompass several million square kilometres. However, it could be brought about with a minimum of political complexity because it would still primarily involve only the United States and the Soviet Union with the inclusion of Denmark.

(c) Disarmament of the Complete Arctic Zone

A broader disarmament plan might include the entire Arctic zone. This would involve the inclusion of Canada as a major partner as well as minor regions of Norway and Sweden. In short, even in this comprehensive form, the number of nations involved is quite small, the political complexities of negotiating the agreement are correspondingly diminished and yet the actual area involved in this disarmament plan is quite considerable. This would bring about a complete separation of the offensive forces of both East and West over the entire Northern Pole of the globe. This is a

significant amount of disarmament but, at the same time, it leaves the overwhelming bulk of both military establishments intact. The virtue of a plan of this type is the fact that it would enable both sides to develop a well-established inspection system. This accomplishment in itself would be a considerable measure of reassurance and could contribute materially to the development of the kind of mutual trust which is a necessary basis for complete and general disarmament.

It is of course evident that an Arctic disarmament plan could be used in two ways. On the one hand, it could serve as the basis of a first step in a zonal disarmament scheme. This would in effect be zone one and further zones could then be incorporated at later time periods. Alternatively, Arctic disarmament could be a single step by itself. Its main function would be that of establishing a reliable system of inspection and gaining experience in its daily operation. This might be accompanied by the growing trust which would enable us to turn next to the development of a more comprehensive disarmament plan to deal with the bulk of the military establishment.

In summary, Arctic disarmament offers the advantage of disarming a large area, it minimizes the political difficulties in negotiations and provides a laboratory or testing environment for the evolution of inspection techniques which can serve as a basis for complete and general disarmament.

G. Rienäcker

ON THE CREATION OF AN ATOM FREE ZONE IN CENTRAL EUROPE

1. Introduction

The situation which has developed in Germany since World War II is of focal importance in world politics. It is especially characterized by the fact that not only two German states exist here, each with a different political and social system, but that at the same time the frontier between these two states is the most important European dividing line between the two world systems, a line where, in addition, the two military groupings of the NATO and the Organization of the Warsaw Treaty are directly face to face.

The peculiarity of the situation in Germany is that the two main forces in the world today - the socialist states headed by the Soviet Union and the western states headed by the U. S. A. - are both involved directly and at the same time in this very heavily populated area. Every incident, even of the most local nature, which occurs on the state frontier between the German Democratic Republic on the one hand, and the German Federal Republic or West Berlin on the other, would inevitably affect the interests of the great powers, and might well trigger off their military mechanisms at this dividing line. It thus has the potential hazard of turning into a world-wide atomic conflict. The maintenance of peace on the frontier between the two German states, their peaceful co-existence and a military disengagement in Germany are, therefore, questions which are of deep interest, not only to the German people, but to the peoples of the entire world.

2. Plans for atom-free zones

The question of a military disengagement of the two German states, including especially their participation in a Central European atom free zone, has been discussed for years. This is particularly true of the plan proposed by Polish Foreign Minister Rapacki in October 1957, further elaborated in November 1958, which calls for the creation of an atom free zone consisting of both German states, the People's Republic of Poland and the Czechoslovak Socialist Republic, for the formation of a corresponding control mechanism, as well as for other measures in the field of disarmament in these countries. But western political leaders have also drafted plans - sometimes officially, sometimes unofficially - which proposed the creation of atom free zones in Europe in the framework of a disengagement of the

two military groupings; especially noteworthy have been the plans and ideas of Eden (1955), Kennan (1957), Gaitskell (1957), Kirkpatrick (1958), Phillips (1958), Mansfield (1959), Fulbright (1959), Mendes-France (1959), Moch (1959), Unden (1962) and Kirkonen (1963), as well as those of other leaders.

All these plans - regardless of how much they diverge from one another - call for the creation of a partially or fully demilitarized zone of a certain width between the troops of the NATO and those of the Warsaw Treaty. By no means of least importance in these plans was, as Kennan formulated it, to achieve a "geographical disengagement of the armed forces of those great powers in possession of nuclear weapons".

The signing of the Moscow Treaty on ending nuclear tests in the atmosphere, in the outer space and under water has made these efforts more timely than ever. That is why, at the signing of the Moscow Treaty, U. N. Secretary-General U Thant called once more for "the creation of atom free zones in different parts of the world". And because of the special nature of the situation in Germany, the creation of an atom free zone in Central Europe is of very particular importance.

3. Disengagement in Germany

The Government of the Federal Republic, unfortunately, has not only opposed all proposals for the creation of an atom free zone in Central Europe but, it is alarming to note, the West German politicians and military leaders are also demanding a voice and a share in controlling nuclear weapons within NATO, and are moreover trying to gain direct possession of atomic weapons through their co-operation with France. I believe that all peace-loving peoples, but above all we as Germans, must prevent a situation in which, for the third time in this century, a world war might start from German soil, a world war, in fact, which in this case would be an atomic war.

The creation of an atom free zone in Central Europe including both German states and involving disengagement in Germany is necessary because the rearmament of the Federal Republic, and especially atomic arms for the Bundeswehr, evoke an extremely dangerous situation and must inevitably increase tensions.

The creation of an atom free zone in Central Europe which would include both German states is quite possible in the existing situation because, at present, neither the G. D. R. nor the Federal Republic possess atomic weapons, and an agreement between the four major powers and the two German

states in this important section on a world-wide general and complete disarmament, based on the principles of the Potsdam Agreement, the Charter of the United Nations organization and in the spirit of the Moscow Agreement on a partial nuclear test ban, would really have definite chances of success.

4. Responsibility of the German people

I find it especially important to stress the particular responsibility of the German people for the maintenance and strengthening of peace in the heart of Europe.

Whoever observes the facts objectively cannot overlook the repeated declarations of the Government of the German Democratic Republic regarding its complete willingness to join in signing an agreement for the creation of an atom free zone in Central Europe, if the Government of the Federal Republic takes the same step.

Like the majority of my colleagues and of the population of our country, I am in complete agreement with the resolution of the General Assembly of the United Nations directed against increasing the number of countries possessing atomic weapons. Scientists are in a very good position to value the positive results emerging from a limitation of armaments, not least of all those advantages which would ensue for the development of science itself.

5. The Tolhoek-Lapter proposal

The measures contained in the proposals of Tolhoek and Lapter* coincide in their essential features with the Rapacki Plan supported by the Government of the G. D. R., since they call for the withdrawal of nuclear weapons and delivery systems from Central Europe and for the reduction of armed forces and conventional weapons in this region so as to lessen world tensions and reduce the danger of an atomic conflict.

Tolhoek and Lapter also propose a non-aggression pact between NATO and the members of the Warsaw Treaty to be signed simultaneously with the creation of an atom free zone in Central Europe. I would consider it more practical to strive for such a non-aggression pact now, as the very next step in easing tensions after the Moscow test ban agreement. This would help to create an international atmosphere which would make it very much easier to form an atom free zone in Central Europe. This

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* Pugwash Newsletter, 1963. Vol. 1, p. 10.

demand is quite feasible, as is proved among other things by the Moscow communiqué on the initialing of the treaty for a partial atomic test ban. This mentions that the delegations of the three major powers have already discussed the Soviet proposal for a non-aggression pact between the members of NATO and the Warsaw Treaty and have decided to inform their allies and consult with them so as to arrive at an agreement satisfactory to all participants.

6. The need to reduce tensions

Here in Europe, where, due to the still existing remnants of World War II, political conflicts collide with particular severity, it is of special moment to decrease tensions and to create conditions for increasing confidence among the different countries and for ending the threat of a third world war which makes itself so acutely felt among all peoples. This is most especially true for the situation in Germany.

I am of the opinion that the German people can and must take advantage of the understanding between the three major powers on a partial nuclear test ban in order to reduce tension and to achieve an understanding within Germany. Of course, the most sensible way of reducing tensions in the heart of Europe would be a German peace settlement and the solution of the West Berlin problem on this basis. However, whoever wishes to reduce tensions in the heart of Europe must base it on the actual situation as it exists and on the steps which, one by one, can really be achieved. This means that it is necessary to abolish the remnants of World War II step by step. The creation of an atom free zone in Central Europe would be a major contribution towards this goal.

Max Steenbeck*

THE GERMAN PROBLEM AND ITS RELEVANCE TO REGIONAL AND LIMITED DISARMAMENT AGREEMENTS IN CENTRAL EUROPE

At the meeting of European Pugwash members in Geneva from 2 to 4 March 1963, Professor Burkhardt and I were requested to develop the views we expressed at that meeting in such a way as to make it clear where we agreed and where we disagreed. In this paper, as well as in the paper by Professor Burkhardt (p. 132), those paragraphs where there is disagreement of opinion are indented and marked with a vertical line. The remaining paragraphs are identical in both papers.

1. Introduction

Central Europe as a geographical concept consists of Austria, the Benelux Countries, Czechoslovakia, Hungary, Poland, Switzerland and the divided Germany. A military potential of a density never in history, and nowhere else, previously experienced, is at present concentrated in this area. It is, therefore, understandable why plans are constantly being developed with the aim of either disbanding or reducing the huge massing of armed forces within this confined space, where the two blocs of power meet.

The reasons for misgivings at such measures are, among others, the following: the very existence of these extreme risks inherent in any forcible change in existing conditions is a safeguard against the actual happening of such incidents.

On the other hand, the exaggerated concentration of military power in this area tends to make a reduction of political tension and a real solution more difficult. A real solution cannot be achieved by purely military measures. Regional restriction of armament and disarmament agreements also are inadequate, unless the causes for political instability are eliminated by political agreements at the same time. And the central political problem in this area at present is the German situation.

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* Jena, German Democratic Republic

It is neither possible nor intended to submit proposals for the solution of the German problem in this paper. Its purpose is merely the representation of the political preliminary conditions which must be fulfilled, if a regional agreement for the creation of a "relaxed zone of reduced armament" in Central Europe is to become feasible.

2. Historical Comments on the Partition of Germany.

A total demilitarization of Germany was carried out in 1945. The victorious Powers developed a programme for the re-education of the German population, aimed at eliminating all tendencies towards militarism and at educating the people in accordance with the basic laws of democratic life. New political parties were founded or old ones revived. The programme of all these parties can be called "progressive-socialist" or orientated relatively "leftish". There was collaboration beyond the borders of the occupation-zones and "All-German" talks were held. The German people found themselves at the turning point of German history and gathered courage for new hope after their despair.

The decision, taken unanimously at the Conference of the victorious Powers in Potsdam, to which France was not invited, stated that the German people could not yet be allowed "to determine its own government. The fate of the German nation was to be guided for an unlimited period by the victorious Powers. There was, however, unanimity that Germany should be governed as a whole and not in sections; there was also unanimity that the German people should participate in their administration, even though they should have no part in their government. With this purpose in mind it was decreed that State Secretariats for Economic Affairs, Trade and Transport be set up, which were to be staffed by German officials."*

The main opposition to a unification tendency emanated from France, whereas the Soviet Union was the State most in favour of unification. The Soviet Union had the most logical programme with regard to the future of Germany. It aimed at preventing the whole of Germany ever again becoming a military threat to the Soviet Union. Furthermore, the whole of Germany was to be held responsible for the consequences of the war and for reparations, restitution and compensation. Thus economic and political conditions on the model of the Soviet Union were created in the Soviet occupation zone. The German Communist Party and the German Socialist Party were merged into the People's Party of Germany in the Soviet Zone.

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* Paul Settie: "Zwischen Bonn und Moskau" (Between Bonn and Moscow), page 8, published by Scheffler, Frankfurt/main, 1956.

Increasingly, the aim of the Western Powers came to be the containment of the advance of the Communist sphere of influence, or its roll back. Thus, in the Western occupation zones a unified economic sphere was created (Bizone 1948, Trizone 1948). This economic sphere was given its own currency by the Currency Reform (1948). This destroyed the pretence of the economic unity of Germany, which had so far been maintained; it also made it impossible for the Soviet Union to realize her claims for reparations in the area of the Western Zones. The blockade of Berlin, which followed in the same year, made it clear to all the world that the anti-Hitler-coalition had disintegrated. As no agreement on the future shape of Germany could be reached among the occupation Powers, and as on the other hand the occupation status could not be maintained indefinitely, the Federal Republic was founded in the three Western Occupation Zones (Proclamation of the Basic Constitutional Law on the 23rd May 1949). This was followed a few months later, on the 7th October 1949, by the proclamation of the German Democratic Republic in the Soviet Occupation Zone. Thus the partition of Germany had been carried out.

Both German states existing since then call themselves democracies, but they differ basically in their political and economic structure.

The constitution of the Federal Republic is based on the fiction of a parliamentary democracy, according to which the democratic rights of the people are provided for by the "free and secret election" of party representatives into the parliament. In effect, however, by far the largest number of voters cannot really appreciate the political results of their "decisions", for the most part they do not even attempt to do so but allow themselves to be guided by emotional impressions. That is the reason, for example, why Hitler was able to become Reich Chancellor perfectly legally in a parliamentary democracy. The voter in such a democracy has in reality no influence on the concentration of economic power in the hands of a few people, privileged usually due to wealth or background, who are thus able to exert a decisive influence on political events.

The democratic rights and duties in the German Democratic Republic are expressed especially in the possibilities, open to all citizens, of themselves taking part in economic and political life, learning at first with less important tasks and then, in accordance with their abilities, succeeding to greater influence. No privileged background or economic wealth can create unequal starting conditions. Decisions are always made by persons who are recruited

from the broad masses of the people. The elections to the People's Chamber are only a small sector of this democracy: democracy is here the daily toilsome and genuine co-operation in administering society; whoever does not wish to participate has consequently nothing to say in the matter.

I believe that this form of people's democracy, despite numerous weaknesses which are doubtless still existent, is the only real possibility for a future rule of and by the people, and that it is in no way less "democratic" than the parliamentary form.

The legally untenable claim of the Federal Government to be the only legitimate German government and the policies which result from this claim are based on the dogma of the sole permissibility of a certain form of government which actually prevails in less than half the world; this claim is the real source of tension in the German question.

Two basic theses as a summary:

1. The German post-war situation is essentially the consequence of the German policy during the National Socialist Era, and of the war which was caused by Germany, for the consequences of which we are responsible and answerable.

2. The present "German problem", which is a source of tension in Central Europe and a danger to world security, is not merely a German problem. It is the result of the disintegration of the anti-Hitler-Coalition and the world tension between the two antagonistic blocs created in consequence. A satisfactory solution can, therefore, not possibly be achieved by the Germans alone. However, the increasing gravity of the worldwide conflicts and the fact that these find their most dangerous expression in Germany itself, has not come about without the assistance of the Germans. For this reason the solution of this problem cannot be put on the victorious Powers alone, it is a vital task for the Germans themselves.

3. The Re-Unification of Germany

It is quite illusory to hope for a re-unification of the divided Germany under a common government in the foreseeable future.

During the early fifties the Soviet Government submitted proposals for a re-unification with free elections in the whole of Germany, which naturally implied the neutralization of the reunited Germany. These proposals were never seriously discussed either by the Federal Republic

or by the Western Powers; among the reasons given it was stated that this solution would, with continuing tension between the powerful blocs, represent a risk and would bring about the danger of isolation. This policy of the Federal Government was expressly approved in elections by a majority of the population of West Germany.

> The creation of a unified western economic area in the three western occupation zones meant that the Soviet Union, whose territory had been far more heavily destroyed in the war than that of any other ally, received no kind of reparations at all from the larger part of Germany. The next step of the West was to recruit the Federal Republic into the western military potential - also in violation of the Potsdam Agreement, which forbade the remilitarization of all of Germany. The Soviet Union had stated, repeatedly and unambiguously, that any participation by West Germany in this military alliance, which was manifestly directed against the Soviet Union, would obviously rule out the political unification of Germany. Nevertheless, the majority of the people of the Federal Republic approved in "free and secret elections" the policy of the West and thus wrote off reunification, although due to their lack of political understanding they did not see these consequences then, nor do they see them or want to see them yet today. The introduction of compulsory military service in the Federal Republic in 1956 was not followed by military conscription in the German Democratic Republic until January 1962. Since then the world-wide contradiction between the socialist and capitalist camps has manifested itself undisguised and in its full bitterness in Germany.

A re-unification in such a manner that the whole of Germany is drawn entirely into one of the two camps, either the Western or the Eastern, is unthinkable without application of force by one side; it would lead to a war and most probably to a world war.

A re-unification of the whole of Germany by neutralization would mean that the Federal Republic would secede from NATO and the German Democratic Republic from the Warsaw Treaty. The West declares this to be unacceptable, as in the meantime the Federal Republic has become the strongest NATO partner on the Continent. Therefore, her secession would of necessity lead to a decisive weakening of NATO and to a considerable shift in the balance of world power. Tertium non datur.

The rearmament of the Federal Republic was explained to the West German voters, in complete ignorance - or distortion - of reality, as the most effective step towards re-unification; this occurred, for example, during the elections of 1953, with the argument that if the mere prospect of West German rearmament alone had sufficed to get the Soviet Union to make an "offer" on re-unification - how much more might be expected when rearmament had really been achieved! That was the beginning of a far reaching re-education of the Germans in imperalism - and, therefore, perhaps the most serious of all violations of the Potsdam Agreement. Some political understanding may well have been required to realize that this "policy of strength" necessarily rendered any reunification illusory; but it was perfectly clear to all citizens of the Federal Republic that any other policy would have meant a loosening of their ties to the wealthy West, and especially the ties to the United States, a country left undestroyed in a war which had made it more productive economically than ever before - and this would have meant endangering the "economic miracle". Those were the background reasons for the approval of remilitarization by the citizens of West Germany, a decision which, in our eyes, represents a national betrayal.

If the policy of the Federal Government had only prevented the re-unification of Germany, one might view this development simply as an internal German drama. But the same basic idea - "When we get strong enough militarily, they will give in to our demands" - is still in effect today. And today the Federal Republic is repeating and magnifying its past mistake by claiming a share in the right to determine the use of nuclear weapons. If ever this demand is satisfied, the result would be, not a strengthening of the Federal German position in respect to the socialist camp, but would lead instead, probably immediately, to a world-wide crisis which would resemble in many ways the Cuban crisis in reverse. The Soviet Union would have far more cause to feel herself threatened by a Bundeswehr armed in this way than had the United States in terms of Cuba.

This crisis towards which the Federal Republic is heading would be much more far-reaching and much more substantiated in terms of a real threat. It is inconceivable that the responsible politicians of the Federal Republic have not foreseen these consequences. This policy is no longer an internal German question but directly affects all people everywhere.

No government in the world which desires peace and a relaxation of tension can, in view of this situation, take into consideration even the most humane of the rights of man for a people with our historical German guilt, not, at least, as long as this people as a whole does not demonstrate its political insight. It is bitter for a German to have to say this. It is in the most basic interest of our people to help in reducing tension. If we do not do this, the German nation has no future, and there are enough people in the world who would not even consider that a bad thing. That is all the more reason why this is a task for the Germans themselves.

Thesis:

In the interest of world peace Germany must delay her understandable desire for re-unification until such time as a world-wide relaxation of the East-West conflict occurs. It is, therefore, in the Germans' own interest to seek seriously for means to bring about this relaxation and to collaborate in this direction.

4. Political Measures for Relaxation as a Preliminary Condition for the Creation of a Zone with Limited Armament.

Acquiescence in the continuation of the partition for a considerable time must be based on a change of attitude of the two parts of Germany towards each other. The population of the Federal Republic must accept the existence of a second German state, even if she rejects the form of government of this state, and must find a way of living with each other - or rather, for the time being, next to each other.

The fact that this living side by side still has to be learnt is a melancholy testimony to the depth of the divergence which has taken place in Germany in only 15 years. If the present generation does not at least find the road towards living side by side, the problem of re-unification will cease to exist, regardless of how painful such a statement may be to us.

The Federal Republic is mistaken if it believes that the citizens of the German Democratic Republic might perhaps support, in "free elections", the return of the nationalized factories to private ownership after they have been rebuilt, by the people's own efforts, from a state of total destruction, or for

the reversal of either the land reform or the formation of co-operative farms and the restoration of the old private landed estates, or the anulment of our social legislation, our health system, and so forth - all of them things which are typical of the basic difference between a parliamentary and a people's democracy. True enough, many citizens of the German Democratic Republic envy the economic strength of the Federal Republic, the possibility of making trips to different parts of the world, and other such factors, and the Federal Republic does all it can to encourage this envy. Such people often forget, however, the completely different starting positions of the two areas after the defeat of Hitler Germany: the assistance, right from the start, from an economically powerful America which was also interested on its own behalf in investments and sales and, on the other hand, our participation in the reconstruction, minor as it was in comparison with the total, of wrecked Eastern Europe which had equally been destroyed by those Germans who now live in the Federal Republic, while at the same time we had to rebuild our own economy solely by means of our own strength and efforts.

The Federal Republic used and is still using its great economic and political potentials systematically and ruthlessly to make the reconstruction of economic and political life in our German state more difficult - and it calls this a national-minded policy. There will never be any relaxation of tension between the two German states and consequently, in Central Europe as a whole, so long as this policy is maintained, with the support of the western world.

An important task of the Pugwash Movement is to use its influence in preparing the way for an objective necessary solution in situations where official diplomacy has bogged down owing to prestige considerations. In this category would fall the recognition of the fact that the "Hallstein Doctrine", promulgated by the Federal Republic and declaring that diplomatic relations would be broken with any country recognizing the German Democratic Republic, is no longer practicable as soon as the other countries refuse to bow to this doctrine, in the interest of relaxing tension at a main danger-point in the world political arena. Adapting their policies in conformity with this doctrine may perhaps bring economic advantages for a time; but these must eventually be paid for with an increase in danger which places the whole future of these very advantages in jeopardy.

Another good tradition of the Pugwash Movement is that it does not always place the complete blame for all political difficulties in the world on one side only. I advocate fully and on principle the policy of the German Democratic Republic. But by no means do I wish to deny that many measures here are carried through more severely and sometimes, too, less skillfully than circumstances require. This has often made it more difficult to understand the measures themselves. But above all, it is difficult to build up the completely new system of a people's democracy, with its constant readiness to take part in government and to assume responsibility, even in lesser matters, over and above participation only on the level of technical advice, with a people who have been accustomed to an authoritarian state for practically their entire history. The development of our people from an imperialist past towards a qualitatively different future is more difficult than may be imagined by people in countries which are not affected so directly by these problems as we are.

The freedom of travel to the Federal Republic, to a state, which lays claim to jurisdiction over our citizens and which joyfully welcomes everything weakening our own state, materially and personally, cannot be realized until this attitude, at least de facto, has been dropped unambiguously. The undeniably great human suffering which the present situation involves is nevertheless slight in comparison with the catastrophe of a hot war - and that is the alternative which threatens us constantly, even if some people do not wish to recognize this fact.

What is needed is the honest and official recognition of the situation which really exists. This cannot be achieved immediately. It will assuredly never be achieved, however, unless the responsible governments negotiate with one another on a possible modus vivendi, without any regard to all the prestige difficulties which have been piled up in the past, either through clumsiness or with evil intention. Every other procedure would mean ignoring the necessities of the present situation.

5. Berlin

In the potential field of tensions between East and West particularly powerful field strengths appear in this place. The now existing position of West Berlin is maintained solely by the resolute engagement of the United States.

West Berlin is an island of capitalist economy within the territory of the German Democratic Republic, an acknowledged fact which must be taken into account in any future settlement. Actually, this island offers all the conditions for becoming a bridge of economic and cultural relations which could cover over the chasm of tension between East and West; indeed, an island of this kind can exist legitimately only on this basis. - West Berlin was not and is not and has not been a part of the Federal Republic.

A solution of the tensions which have risen very close to the breaking point is urgently necessary and can be achieved at present only by means of a special contractual status for West Berlin.

But West Berlin in this case can no longer view its role in the German question and in Central Europe in the manner expressed repeatedly by Ruling Mayor (Regierender Bürgermeister) W. Brandt - "If Berlin is called a peace-breaker because of its constant remonstrances in German questions, it should rather prefer to be a peace-breaker than a sleepyhead". *

Hardly any statement has ever indicated more clearly than this one the dangers inherent in the present situation; and hardly any other statement indicates more clearly what kind of guarantees must be firmly secured in any future agreement.

Any settlement of the questions broached in this section will have to be provisional for the time being. A final solution cannot be achieved isolated from the development of the German problem. This, however, can only be solved by a decrease in general tensions between East and West. Co-operation in bringing about such a decrease is also a German duty.

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* Quoted in the "Telegraf", a West Berlin newspaper, on September 27, 1958.

Leo Szilard

THE TEST BAN

(Text of a statement presented to the Committee on Foreign Relations of the U. S. Senate on 23rd August 1963).

The Test-ban Agreement which the Administration has submitted to the Senate for ratification would advance the cause of peace, if subsequent to its ratification, the Government were to propose to the Soviet Union an agreement providing for an adequate political settlement, which would serve the interests of the Soviet Union and the other nations involved, as well as our own interests, and which the Soviet Union might rightly be expected to accept. If this were not done, however, and if the Government proceeded with an extensive programme of underground bomb testing, then, rather than furthering the cause of peace, the Test-ban Agreement would be likely to do just the opposite.

By engaging in this type of testing on a large scale, the United States would force the Soviet Union to conduct numerous bomb tests also. The underground testing of bombs is very expensive, however, and since the Soviet Union is economically much weaker than the United States, it would in the long run be forced to abrogate the Agreement. Such a turn of events would prove my old friend and distinguished colleague, Dr. Edward Teller, to have been right - for the wrong reasons.

The problem of establishing peaceful co-existence between the United States and the Soviet Union involves the rest of the world as much as it involves Europe. It is difficult to visualize a political settlement in which Russia would agree to co-exist with parliamentary democracies located in its proximity which look to us for support, while at the same time the United States would continue to maintain its present position that it cannot co-exist with a communist country, located in this hemisphere, which looks for support to the Soviet Union. Any attempt on the part of the Government to arrive at a political settlement with the Soviet Union on such a basis would be an attempt to "eat one's cake and have it too", and few people, if any, have ever accomplished this feat.

If I were a member of the Senate, I think I would want to know at this point how the Government proposed to follow up the conclusion of the Test-ban Agreement, before casting my vote for the ratification of the Agreement.

I am not speaking here as a scientist who can claim to have special knowledge of the atomic bomb, but rather as a citizen whose political judgement is not obscured by being in possession of too much "inside information".

H. Thirring

NATIONAL SECURITY WITHOUT ARMAMENTS*

1. THE NEW SITUATION

The radical revolution of weaponry caused by the advent of thermo-nuclear bombs and intercontinental missiles during the last decade, and, moreover, the ensuing shift of military and political thinking, have created an entirely new situation. The time is ripe for an experiment which could

a) help to reduce international tensions;

b) serve to enhance the welfare of the very state that performs the experiment.

Consider a small or middle-sized country, like some of the European neutrals that are surrounded by frontiers which are not a subject of dispute with their neighbours. What will happen to this country if it disarms unilaterally and proclaims itself to be a test case of the possibility of peaceful co-existence?

The answer to this question will be different according to place and time of the experiment. In 1955 the responsible people in Austria felt that their country would become an easy prey of communism soon after the withdrawal of the occupation forces unless they were replaced by a national army. In other places the threat of conquest and humiliation persists even today for a country that would dare to disarm; Israel for instance would commit national suicide by disarming unilaterally.

The case is quite different, however, in the present situation of Austria and other European countries if they disarm, and proclaim their position among heavily armed neighbours a crucial test of peaceful co-existence. By doing so they would gain more security than in their present state of being armed with rather inadequate conventional forces.

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* (From a Memorandum to the Austrian People)

The reason for this apparent paradox is the top priority attributed today to disarmament and peaceful co-existence. The big powers on either side, both U. S. A. and U. S. S. R. are absolutely sincere in stressing their enormous interest in general and complete disarmament for three realistic reasons:

a) No war between them would make any sense, except one for world hegemony and total defeat of the other system. Such a total war, however, though possibly begun with conventional forces, could never end without the use of the strongest weapons with their annihilating consequences. The threat of total destruction is, therefore, impending as long as the armaments race continues.

b) Abolition of the gigantic military expenditure would be a decisive relief for the national economy of both sides.

c) Both sides are convinced that after terminating the cold war and switching over to peaceful competition, and also particularly after the release of an enormous amount of capital and manpower for productive purposes, the superiority of their own economic and political system would manifest itself more clearly.

Apart from these purely realistic arguments for disarmament, the moral aspect of the problem begins to be recognized by an increasing number of people outside the Chinese wall. The terrible threat of total destruction of our civilization helped to a realization of what in former times was grasped only by a small minority: it is a crime, and moreover a proof of the immaturity of our civilization, that today, two millennia after Christ's crucifixion, at a time when we are probing deeply into the secrets of atomic nuclei and even attempting to conquer space, we have not yet succeeded in abolishing the primitive barbarous method of settling inextricable international conflicts by organized mass slaughter. The term modern times has been used prematurely in history denoting the era beginning with the 15th century. But in spite of the conspicuous progress of science, technology and social conditions, the entire epoch up to now was essentially a dark age. A radical transition from barbarism to an enlightened age that really would deserve the proud title of modern times, will occur only when general and complete disarmament is carried out.

There are cynics who scoff at the idea that moral feelings could influence political decisions. But in the nuclear age the moral abhorrence of the monstrosity of war is supported by a dawning recognition of the fact that neither gain of unlimited power nor wealth could make life worth living in a world destroyed by a nuclear holocaust. Both for moral and realistic reasons, therefore, disarmament and peaceful co-existence have

come to the forefront of international issues. The radical shift from pre-war political philosophy manifested itself very clearly in the Moscow negotiations of July 1963 in which a first step towards disarmament was made against the protest of China on the one hand and the U. S. right wing Republican on the other.

2. GAIN IN SECURITY THROUGH DISARMAMENT

In view of recent developments we may reconsider the question whether a country like Austria, which by disarming becomes a test case of peaceful co-existence, would achieve gains or losses in its security. We may put the question thus: is it thinkable that Khrushchev, who boldly defied the opposition of giant China to his policy of peaceful co-existence, would permit any of his smaller alies to attack a neutral country that might become the proof and a test-case of the realization of his pet idea? Or would any of Austria's immediate neighbours such as Czechoslovakia, Hungary or Yugoslavia, feel inclined to cause trouble in Europe by a violation of the Austrian frontiers? In the situation that has arisen in 1963, the Moscow line of Marxism-Leninism is immensely more interested in a solid proof of the basic possibility of peaceful co-existence than for instance in the expansion of communism into a small country like Austria that would only serve to turn a peaceful neighbour into an obstinate satellite.

Sceptical opponents of unilateral disarmament argue that the present trend towards co-existence may be a transitory whim of Khrushchev which might soon be swept away, like the spirit of Camp David by the U-2 incident. Therefore, they feel it would be premature to make an irrevocable step like total disarmament today. For it could cost us our freedom and national sovereignty as soon as the drive for communist world domination became more urgent than the will for peaceful co-existence. This argument would be sound if a depreciation of the importance of disarmament like that of other political issues could be expected. As a matter of fact, however, the vital importance of disarmament, far from fading out, will remain permanent for very serious reasons: it can be foreseen very clearly that further technical progress will widen the gap between the means of destruction and defence. Certainly, the military are playing with the idea of an anti-missile missile that would reduce the danger of nuclear annihilation. But this expectation is as naive as Goering's hope in 1939 that his FLAK could effectively prevent enemy planes from bombing German cities. Every sober technical expert will agree that a defence system built for destroying approaching missiles in flight would cost more than the present total annual defence budget, and would succeed only in reducing the damage by a tiny percentage. Therefore, the danger of worldwide annihilation by total war

can be averted only by preventing its outbreak. The menace of nuclear annihilation on the one hand, and the heavy burden of armament expenditure on the other, will therefore never cease to be a strong incentive for disarmament.

Considering all these facts there is good reason to expect that any expert with sufficient insight into the feelings of the people in the European communist states and the intentions of their leaders will agree with my main thesis:

> The desire of the Soviets and their allies to prove the possibility of peaceful co-existence is so much stronger than their actual need of power expansion over small areas that a disarmed European country like Austria will be absolutely secure from interference by its Eastern neighbours.

3. THE COMMUNIST IDEA OF WORLD DOMINATION

My thesis may sound incredible to those numerous people who have failed so far to comprehend clearly enough the basic difference between communist and fascist dictatorship. The communists have never denied their intention to extend their system over the world. But, unlike Hitler's campaigns, this conquest is not meant to be achieved by military operations. For according to Marxist doctrines the exploited proletariat would rise one day and seize power. Marxism-Leninism teaches that such a development is a historical necessity and will occur like any natural event following the eternal laws of nature.

Most of us citizens of Western and also neutral countries do not agree at all with these doctrines. But though disagreeing we should be well aware of this theory in order to understand Khrushchev's and his allies' motives and intentions. Their opposition to the views of the Chinese comrades reveals clearly that they refuse to risk military operations to achieve an aim which they expect to reach sooner or later through assisting a natural development by suitable propaganda.

In a speech made in Vienna on July 2, 1960, Khrushchev declared: "In the same way as we cannot drive men into paradise with cudgels we cannot drive people into communism by war. As soon as people realize clearly the superiority of the communist system they will come by themselves".

Answering a question which I put to him, Khrushchev repeated this thesis in an open letter to me which was broadcast by TASS Agency on December 30, 1961 and subsequently printed in nearly all papers of the European communist states. The same idea of competition without military pressure pervades also the recent "spirit of Moscow" with his success in the test ban negotiations and the failure to come to terms with the Chinese communists on ideological questions. The Moscow test ban agreement is neither a capitulation of communism to capitalism, as Mao may feel, nor a capitulation of the West to the East, as the U. S. Goldwater group will contend, nor is it a reconciliation between the two entirely different economic and political systems. It is rather the first step to a new departure in the continued contest between the two systems, that is competition in a business-like civilian way to demonstrate one's own superiority, instead of the obsolete method of mass murder which is as foolish as a duel but a million times more fateful. According to the 1963 spirit of Moscow, disarmament to secure the removal of the threat of annihilation should precede the final round between the two big systems, while according to Mao the liquidation of capitalism, or according to Goldwater the liquidation of communism, should precede disarmament. It can be foreseen very clearly that the Kennedy-Khrushchev course and not the Mao or Goldwater course will find the full approval of the vast majority of the United Nations.

4. THE BOGEY IMAGE OF KHRUSHCHEV

On the other hand, there may be some difficulties in achieving whole-hearted Western co-operation in the campaign for peaceful competition along the lines now opened up at Moscow. Zealous anti-communist propaganda has created a bogey image of Khrushchev in the minds of many Western people, and the features of this image have darkened consistently with every setback to peace efforts, like the 1956 events in Hungary, the U-2 incident in 1960 or the Berlin wall in 1961. The result of the widespread aversion against Khrushchev is the attitude of certain journalists who, reporting on the Russian-Chinese ideological strife, almost undisguisedly took sides with Mao, basing their perverse sympathy apparently on the primitive rule: the enemy of my enemy is my friend.

5. THE FALLACY OF A BETTER POST-WAR NEW WORLD

What Khrushchev's enemies fail to understand is the immense catastrophe threatening humanity by the fanatic zeal of extremists on either side who, like Mao and some of his American counterparts, believe that it might be worth the sacrifice of several hundred million people killed in a

thermonuclear war in order to eradicate the other system and to liberate the rest of mankind for building up a better new world. The fatal mistake of this expectation is the illusion that the would-be pioneers of the new world could progress in a similar way as the 17th Century Pilgrim Fathers and their offspring in the virgin land of America. Contrary to the situation of that time, a post-war world of tomorrow, right after the delivery of a bomb load a million times stronger than the sum-total of all explosives used in 1939-1945, would present the survivors with insurmountable difficulties. Just as any single member of our society, exposed in a desert or primeval forest without clothes, food, tools or indeed anything, would perish hopelessly unless he were saved by better equipped human beings - thus in the same way the remains of a civilized nation surviving in an utterly destroyed moonlike landscape, bereft of all necessities of life, like food and water, housing, clothing, heating, lighting, sanitation, medical care, communication, means of transport, tools and machines, could never afford the energy and organization necessary for recovery and reconstruction. The total thermonuclear showdown between communism and capitalism would, therefore, lead to utter destruction of all civilization without leaving means and manpower to build up a new life. Khrushchev is completely right in rejecting Mao's thesis of the inevitability of war, persisting in his own thesis of the necessity of peaceful co-existence, and maintaining bravely his position even at the risk of breaking the communist solidarity and losing the friendship of the big brother. And we on the Western side who care for the survival of our offspring have every reason to support the Kennedy-Khrushchev line instead of following the Goldwater course based on the vain hope that communism would collapse under its internal strife.

6. A UNIQUE OPPORTUNITY AND ITS POSSIBLE USERS

The unprecedented situation of today, in which a militarily powerful state would deliberately avoid making cheap conquests by simply penetrating into a military vacuum, has created the unique opportunity to which I referred at the beginning of this article: certain neutrals can by unilateral disarmament improve their security, alleviate their financial situation, and at the same time, even do a most valuable service to mankind by demonstrating the possibility of peaceful competition. Who will be the first to use this opportunity?

Setting aside a few dwarf states we have five European neutrals: Austria, Finland, Ireland, Sweden and Switzerland. Neither of the two last-named will be the first to disarm because of a serious psychological bias. For the Swiss the idea of being a soldierly nation is a kind of "ersatz" for the missed occasion to have fought glorious wars in the last few centuries

They feel, moreover, that their well trained and expensive army frightened away Hitler and kept him from attacking their country like all his other neighbours. Therefore, national defence is a kind of holy duty in Switzerland, and a heretic like myself who dare to call the Federal Army an obsolete and useless instrument would risk being accused of blasphemy and betrayal of military secrets. The situation is rather similar in Sweden where the psychological bias may gain weight by the financial interest of quite a significant armament industry. In this way, the wealthiest two of the European neutrals will take the position of wait and see, closely observing what happens to the others.

In these other three states some remainders of the psychological bias are left too. In Finland many of the generation are still alive who fought the 1939-40 war against Russia; in Ireland some people might believe that unilateral disarmament would become too strong a temptation for England to re-capture Her Majesty's former province, and in Austria many people have still in mind the argument which in 1955 led to the introduction of general conscription: "The expansion of communist rule was stopped in Austria by the presence of the occupation forces. After their withdrawal Austria would share the fate of her communist-turned neighbours unless the occupation forces were replaced by an adequate national army."

Some education and enlightenment will be necessary to explain to the people the basic change in the international situation. We have also to correct the obsolete idea that military strength is a yardstick of manhood and grandeur of a nation. Men walk unarmed in the streets of our cities because the conditions of life of our age superseded their use, and not because our contemporaries have less courage than their armoured forefathers. The same development of cultural progress led to pulling down the fortifications of the city of Vienna a century ago and will in the near future cause voluntary disarmament of those states which can safely do so. Lessons of that kind might be taught more easily to the Austrians who are not frustrated by lack of recent military glory having fought bravely dozens of big battles and lost all wars in the last two and a half centuries.

It seems to be reasonable, therefore, that Austria, along with Finland and Ireland, should examine the correctness of my main thesis and in case of an affirmative result take the necessary steps. Austria in particular might convene a new Vienna Congress, a century and a half after the first historical one which ended Napoleon's era. The six neighbour states, Switzerland, Federal Republic of Germany, Czechoslovakia, Hungary, Yugoslavia, and Italy should be invited to it to give an answer to the question:

what measures can you provide in order to convince the Austrians that a non-aggression treaty with a disarmed neutral state, apart from all moral aspects, would be strictly observed by you from purely realistic considerations of your own national interests?

In other words, it should be proved convincingly that keeping correct relations with a disarmed state is not merely a matter of goodwill in the nuclear age but an obligation of sober prudent statemanship.

Considering the importance and urgency of disarmament it might be expected that Austria's neighbours would give satisfactory answers. The next and final step would then be to make the necessary amendments in the Austrian legislation. Instead of simply abolishing general conscription one could contemplate also the transformation of the armed forces into a labour service. The armed police force of the usual strength, like in other countries, would of course be kept.

One can foresee that Finland and Ireland would soon follow, while Sweden and Switzerland would do so after some period of hesitation. At any rate the success of the experiment which cannot be doubted will help to solve the far greater problem of general disarmament.

B. M. Vul

THE ROLE OF NEUTRALIST COUNTRIES IN THE STRUGGLE FOR PEACE, INTERNATIONAL SECURITY AND DISARMAMENT.

The formation of large groups of neutralist countries, especially in Asia and Africa - is a typical feature of our time, and one of the characteristics of the international situation at the end of the 'fifties and in the early 'sixties.

The international and political significance of the neutralist policy of Afro-Asian countries is growing every year and the number of former colonial countries pursuing such a policy is also increasing. The very concept of neutrality is getting broader and richer and is becoming, under the conditions prevailing in those countries, one of the powerful means in the struggle for peace and peaceful co-existence among states with different social organizations.

Dozens of countries of Asia and Africa, representing a considerable part of mankind, follow the neutralist course in the foreign policy. The neutralist course, pursued more or less sporadically in the early 'fifties, has come to represent the doctrine of the foreign policy of many young sovereign states in the early 'sixties. On the international arena, especially in the United Nations, a group of such countries is formed, which is able and actually does exercise a favourable influence on the work on the United Nations.

Independent Afro-Asian countries are vitally interested in peace. Science and technique have developed the art of warfare to such an extent that a world conflict may inflict upon mankind unheard-of miseries, from which the neutralist countries could hardly be spared. As a consequence of the war, the economic revival - the cherished dream of young sovereign states - will come into danger.

It is peace that gives favourable conditions for the spreading of peoples' liberation movements and the final liquidation of colonialism. The fact is that many colonies have attained national independence in the conditions of peaceful co-existence. This refers primarily to the countries of Africa.

In a stable peaceful world Afro-Asian countries, like all the nations of the world, have wide possibilities to use their economic sources and the aid offered by developed countries, for the sake of doing away not only with the misery and malnutrition, but also to solve, in the forthcoming decade -

if progress in the cause of disarmament and international security is achieved - the problem of a radical reorganization of economic and social life of the population.

As stressed in the economic programme of disarmament, advanced at the initiative of the Soviet Union in the United Nations, the realization of the Soviet plan for a general and total disarmament will help to solve the gigantic task of developing countries, namely, bring these peoples, in the near future, closer to the living standard of highly developed countries of the West.

The economic programme of disarmament providing for a conversion of the means and financial resources, released as a consequence of disarmament, to peaceful purposes, would encounter strong approval in the young sovereign states. Thus the delegate of Ceylon, at the 17th Session of the United Nations General Assembly, stated that the proposal of the Soviet Union "has not only a great power of attraction for the suppressed masses of the world, but also relieves the fears of millions of workers employed in the military and civil industries whose lives are so closely linked with the productive forces of the world which are fortunately too closely bound with weapons for annihilation at present."

The release of one part of the means, as a consequence of the realization of the disarmament agreement, for the needs of the economic advance of underdeveloped countries, together with their growing internal efforts and their own increasing reserves, will enable millions of people in young sovereign states to improve, in the lifetime of the present generations, their own living standard, especially through the development of new centres of power and other industries. Diverting financial resources, at present used for military purposes, to peaceful aims will result in an improvement of economic and social conditions in developing countries. In the early years of a general and total disarmament a certain part of these means could be used for most urgent economic measures mentioned in the already existing plans of economic development of Afro-Asian countries. This would obviously considerably reduce the terms of the realization of national plans. Another part of the means could be used for the preparation and implementation of major projects such as, plans for the regulation of the waters and water power of the rivers Mekong or Inge (Congo) with the participation of many states directly interested in the realization of these or other projects mentioned in the economic programme of disarmament.

The question of the liquidation of the armament race is of huge importance for the peoples of the entire world. Economically underdeveloped countries of Asia and Africa, which are promoting peace and are against the outbreak of a new world war, are directly interested in disarmament. "Disarmament - this is the only means to eliminate the fear of war" - Premier Nehru declared in the Lower Chamber of the Indian Parliament on May 2nd, 1962, - "disarmament is vitally important and must be realized."*

"General and complete disarmament - as Sekou Toure, President of the Republic of Guinea, declared - is a policy which fully corresponds to the countries of Africa. The possibility of sparing the financial means and human life which would come as a consequence of general disarmament, would considerably assist the progress of African countries, and would satisfy the aspirations of the peoples".**

Every new step of peaceful forces towards the prevention of world war and the realization of an agreement on general disarmament is in the interest of young sovereign states. At the present time, when the world is still under the impact of such a significant international event as the Moscow Agreement on the cessation of nuclear tests in the air, outer space and under water, when our efforts are aimed at the fullest implementation of those measures, and when we strive to advance further forward, without stopping half way, we may express our conviction that the young states will firmly and decisively advance towards this goal. It is absolutely evident that the implementation and further development of new initiatives largely depends on their support and persistence. Every new step towards general and complete disarmament contributes not only to the creation of a more favourable climate for the realization of the agreement on even broader measures of disarmament, it also offers a possibility to relieve the economic burden, even before the conclusion of an agreement on general and total disarmament. For instance, the creation of an atom-free zone in Africa would bring, together with political advantages, certain economic benefits, for it would make it possible to devote to peaceful purposes the financial and technical resources at present allotted by some countries for nuclear weapons.

In their practical struggle for the stabilization of peace and security, for the application of measures contributing to general and complete disarmament, young countries of Africa and Asia make their own contribution to the United Nations Organization. Thus, at the initiative of ten African countries - Ghana, Guinea, Congo (Leopoldville), Mali, Morocco, Nigeria, U. A. R., Sudan, Sierra Leone and Ethiopia - the United Nations General

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* "Pravda", June 4, 1962.

** "Mezdunarodnaya Zyzn", 1960, No. 12, p. 81

Assembly on November 24, 1961 discussed a resolution on the transformation of the entire African continent into an atom-free zone. This resolution was adopted by a majority of 55 votes.

The conference of heads of states and governments of African countries, held at Addis Ababa in May 1963, adopted a special resolution on general and total disarmament. It included an appeal for the prohibition of the nuclear production and tests, the destruction of the existing stocks and the liquidation of the military bases on the territory of Africa. The conference unanimously called upon big states to undertake measures for the reduction of stock-piling of conventional armament, to halt the armaments race and to sign an agreement on general and complete disarmament under strict and efficient international control.

True, we should mention that although the representatives of neutralist countries in the United Nations and the Committee of 18 in warm and sincere terms advocated disarmament and insurance of security, they often lacked the necessary will and patience in the struggle for the fulfilment of this important task. This regrettable situation is being utilized by open enemies of disarmament and of measures of security for their selfish aims. The least show of passivity, the delay in the study of actual conditions of the implementation of this or that measure, (as was, for instance, the case with the series of African states, in answering the inquiry of the Secretary-General U Thant relating to the conditions under which countries are ready to renounce the production and the stationing of nuclear weapons on their territories), all this gave immediately rise to malevolent comments, especially on the part of the West German opponents to the nuclear-free zones, giving a distorted picture of the actual situation and of the real disposition of African peoples to the disarmament problem.

Wide circles of public opinion in young sovereign states greeted with approval the idea of atom-free zones. They accepted with approbation the proposal of the Soviet Union of May 20, 1963 on the proclamation of the Mediterranean region a zone free of nuclear weapons and rockets. The setting up of atom-free zones at the present time represents one of the urgent problems.

One of the following measures which, in our opinion, would contribute to the stabilization of international security would be the conclusion of a non-aggression pact between two basic military groups - the NATO and the countries of the Warsaw Pact. This would undoubtedly correspond to the interests of the states which are not included in military blocs.

At the present time, among the existing military and political groupings of the West (NATO, SEATO, CENTO, ANZUS - SAD, New Zealand, Australia), the Atlantic Pact represents the most important organization opposed to the Warsaw Pact organization. Naturally, the most radical measure would be the liquidation of these two military groupings, as repeatedly proposed by the Soviet Union. The formation of the Warsaw Pact organization (May 1955), as is well known, came as a necessary reaction on the part of socialist countries to the formation of NATO (April 1949), and to its increasingly aggressive activity, especially after the incorporation of Western Germany into that Organization (May 1955).

The chief NATO countries, however, do not want to envisage the liquidation of their military organization, they do not want to disband other military blocs, e. g. those in South-Eastern and Central Asia which depend on them. The existence of these blocs, however, and the attempts to draw more and more new countries into them create a direct threat for the countries following a neutralist course. At the present moment countries such as Turkey, Iran, Pakistan, Thailand, Philippines, are directly included into the system of western blocs in Asia and in the region of the Pacific. They also include Australia and New Zealand with a total of over 200 million people, covering an area of about 12 million square kilometres.

The vast majority of the countries of Asia and Africa, however, including young sovereign states, remain outside military blocs. Most of them strive to persist in their policy of non-participation in the military blocs. For instance, about one billion inhabitants of the countries of Asia and Africa, which are pursuing a neutralist course, are outside any military blocs. They represent a considerable power. All these countries have an underdeveloped economy and need unselfish help.

The conclusion of a non-aggression pact between the NATO and the countries of the Warsaw Pact, being an entirely realistic measure, is a task of first-rate importance for peaceful forces in the world, as indicated by N. S. Khrushchev in his speech of July this year. * The fulfilment of this task, contributing to international security and to the confirmation of confidence, also represents a definite step forward on the path to disarmament. This measure would serve as an important stimulus for the liquidation of military blocs, and the settlement of other tasks connected with the lessening of international tension (for instance the freezing of military budgets) which would undoubtedly add to the cause of freedom and independence of neutralist countries of Asia and Africa. This would enhance the prospects of the economic growth of these countries.

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*Address of N. S. Khrushchev to the meeting with the delegation of the Hungarian government - "Pravda", July 20, 1963.

There can be no doubt that the conclusion of a non-aggression pact, the setting up of atom-free zones, as well as the implementation of other measures for the safeguard of international security, would contribute to the principle of neutrality and non-alignment which forms the basis of the course of the foreign policy of many liberated countries of Asia and Africa.

In the growing struggle for the maintenance and consolidation of peace,for the triumph of the principle of peaceful co-existence, for general and complete disarmament, young sovereign states of Asia and Africa, adhering to their neutralist course in foreign policy, will make an adequate contribution to the solution of the destiny of mankind. This will confirm the deep truth, stressed by the leader of the Soviet state N. S. Khrushchev, namely, that "those countries in their majority are by no means neutral when the vital question of the present world - the question of war and peace - is at stake. They are always for peace and against war." *

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* N. S. Khrushchev. Report of the Central Committee of the Communist Party of the Soviet Union to the XXII Congress of the Party - Moscow 1961, p. 32