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John Maddox

WHAT FUTURE FOR THE CONFERENCE OF EIGHTEEN?

It is now more than two years since the Eighteen-Nation Conference on Disarmament first met at Geneva on March 14th, 1962. By now it has become one of the apparently permanent occupants of space in the Palais des Nations, though its presence at Geneva does not yet rival in length and continuity that of the U.N. Committee on the Test-Ban Treaty, which held 353 sessions in the three and a half years of negotiations which finished in January 1963. It is not a token of discontent with the work of the disarmament conference, but rather the opposite, to suggest - or even hope - that a great many years will go by before the delegations relinquish their bookings in the Geneva hotels, and before the interpreters and other UN functionaries who dance attendance on the work of the conference will have to learn a new vocabulary, and learn to serve some other international gathering.

As yet, however, there is very little to show for all the discussion that has taken place. Towards the end of 1962, it is true, the conference kept the test-ban talks alive when they might otherwise have collapsed. There is also good reason to believe that the agreement for the hot-line between Washington and Moscow would not have come about if it had not been for the initiative and the discussions of the conference. But these are not the world-shaking achievements that were looked for, in some quarters at least, when the first meetings of the conference were convened. The presence of eight non-aligned states at a disarmament conference-table has not, after all, been sufficient to force or to shame the great powers into an agreement with each other.

Indeed, it is true that the conference has so far failed to make good some of the obvious defects in its own constitution. Though it is called the eighteen-nation conference, the representatives of France have not yet put in an appearance at Geneva. Though the question of the representation of China has frequently been raised, and though it is technically possible for this conference to invite representatives of China to Geneva without thereby begging the question of Chinese membership of the United Nations (for the conference is not a UN sub-committee but the result of an agreement between the governments concerned), no serious study of this question has been made. But without France and China, no conference on disarmament can carry real conviction.

None of this, however, has dulled the sense of pragmatic optimism that surrounds the work of the conference, especially in the last few months. The intention is that the conference should present some kind of a report to the Nineteenth UN Assembly in December. Though there is no prospect that this report will demonstrate a solution of the obstacles to the comprehensive disarmament treaties which have been discussed at the conference throughout its life, there does appear to be some hope of progress with some of the collateral measures of arms control which have been conspicuous on the agenda during 1964.

As things are, the conference holds two sessions a week, one of which is concerned with the proposals on

comprehensive disarmament, and the other with the detailed collateral measures. These are two sides of the same coin, but necessarily the discussions have very different flavours. Comprehensive disarmament has been prominent at the conference ever since the Soviet Union tabled a detailed treaty for comprehensive disarmament at the beginning of the conference. This was quickly followed by an American draft treaty, and much of the work of the conference since 1962 has been designed to find some bridge between the two sets of proposals. The course of these negotiations has often been taken up at Pugwash conferences, notably by Professor Blackett at Cambridge in 1962 and by Philip Noel-Baker at Dubrovnik in 1963. There is little doubt that this part of the work of the conference inspired the Soviet proposal, put formally by Mr. Gromyko at the United Nations in 1962, of the minimum deterrent as an intermediate stage in comprehensive disarmament. In this connection, it is noteworthy that there has been a close correspondence between concepts discussed at Pugwash conferences and at the Geneva conference.

In previous years particular measures of arms control, such as the test-ban treaty, have been discussed by sub-committees of the conference. At the beginning of 1964, however, the whole group of seventeen nations was confronted by two sets of proposals on collateral measures of arms control which have since been discussed by the conference as a whole. It is from among these two shopping lists, one from the East and one from the West, that there may soon emerge proposals for further tangible agreements between the major power blocs.

Though some of the proposals made in January 1964 appear on both shopping lists, long-standing political obstacles have impeded progress. Thus an extension of the test-ban treaty to include underground tests was proposed by both sides, yet agreement remains out of reach because of the failure to agree on the necessity or otherwise of inspection as a means of detecting the smaller underground explosions. Given that there has been no dramatic progress in the techniques of seismological detection at a distance since the signing of the partial test-ban treaty in the spring of 1963, it is not perhaps surprising that there should have been no decided shift in the positions taken by the major nuclear powers.

Proposals for freezing the numbers of weapons of particular kinds have met with varying success at Geneva. In January the United States put forward a suggestion of a "verified freeze of the number and characteristics of strategic nuclear offensive and defensive vehicles". The Russian response to this has been lukewarm, to say the least of it, though that is no great surprise. The position is that the Soviet Government has asked for further information of what the Americans have in mind, though there is no question that the United States is asking not merely for a cessation of the deployment of further strategic weapons, including anti-missile missiles. From the Russian point of view, of course, one consequence of this would be to perpetuate what seems to be the present disparity of strategic strength between East and West. Thus the proposal of a freeze is yet another reason for thinking that, in the search for mutually acceptable measures of arms control, package deals involving numbers of separate proposals linked together are likely to be the most successful.

The Gomulka Plan for a freeze on the deployment of nuclear weapons in Europe is in a different category, and it is not

clear to what extent this may or may not have been inspired by the work of the conference at Geneva. Ostensibly the proposal is a further revision of the Rapacki plan. Its political virtues are that it offers to the East some kind of an assurance that West Germany would remain without nuclear weapons, while the military arguments in the West for the deployment of tactical nuclear weapons in Europe have recently been muted. Whatever the origins of the Gomulka proposal, however, its formulation does illustrate how the Geneva Conference now serves as a valuable sounding board for testing the reality of various particular proposals for arms control and disarmament.

Yet another proposal for a freeze - this time of military budgets - has so far met with little response at Geneva. This is a proposal to which the Soviet Union has traditionally given a great deal of attention. At Geneva in the last few months Russian delegates have complained fiercely of the way in which the United Kingdom defence budget was increased in April 1964, thus prejudicing agreement along the lines suggested. So far, however, the West has been flatly unsympathetic to the Russian proposal, chiefly because it argues that there is no basis for comparison between the budgets of the different powers.

There does seem, however, to have been a better response to the Russian proposal for a destruction of bombing aircraft even if, as some cynics argue, this is because the major powers now have no further need of the fleets of strategic aircraft created during the fifties. One version of the proposal now being discussed is that B47 and Badger aircraft should each be destroyed, in some verifiable way, at a rate of twenty every month. Among those who try to divine which of the many proposals at Geneva are likely to be agreed upon in the near future, this so-called "bomber bonfire" is considered to be a likely candidate.

Proposals on the siting of control posts in Central Europe also seem to be high on the list of potential agreements at Geneva. Such measures of arms control have, of course, been conspicuous at conferences on disarmament ever since the early fifties. Among Western delegations, at least, doubts centre on the effectiveness of control posts as means of reducing the risks of surprise attack in Central Europe. A fixed post, of the kind now favoured at Geneva, can often be by-passed by a sufficiently energetic and resourceful military force. Yet it seems to be agreed that anything that helps to make Central Europe safer is to be welcomed.

On the control of nuclear weapons, the Geneva conference has had one conspicuous success, and one conspicuous failure, since the beginning of 1964. For it does seem that the unilateral but co-ordinated declaration by the United States and the Soviet Union of the diversion of substantial amounts of nuclear explosives to peaceful uses, was inspired by the discussions at Geneva. On the other hand, the discussions of measures for the inhibition of the spread of nuclear weapons seems now to be held up by the proposal that the West German Government should be invited to join in the work of the NATO mixed-manned multilateral force. This proposal has not yet taken its final form within the NATO community, but already it is clear that it will be a serious impediment to the work of the Geneva conference.

The extent to which disagreement at Geneva on this issue will sour the work of the whole conference is not yet apparent, but at least there is a danger. If it were not for this, there seems no doubt that the conference would, in the next few months, produce some tangible agreements of a very limited character that would nevertheless go some way to maintain the slow progress towards arms control begun by the partial test-ban treaty.

A number of general questions suggested by the work of the Geneva Conference in the last two years remain to be answered. The utilitarian scepticism that leads some to ask what use there can be in such a time-consuming method of arriving at timorous agreements between the great powers is easily answered. The Eighteen-Nation conference has not proved to be the powerful instrument for forcing agreements on the major powers which some of its creators hoped for, but it has turned out to be at once a sensitive sounding board for distinguishing potentially successful proposals on arms control from the great multitude which can be suggested on paper, and a means of educating diplomatic opinion in the practical political difficulties of making any progress towards disarmament. As such, of course, its existence cannot be despised without folly.

One over-riding and absorbing issue is the part which has been played at Geneva by the eight non-aligned nations which are members of the conference. The presence of these was suggested after the collapse of the ten-nation disarmament conference in 1960, and after it began to seem as if the will of the Great Powers to reach some workable agreement among themselves would be strengthened immeasurably if they were to be reminded, by the presence of delegations from "independent" nations, that the world is not just a playground for the great powers. In other words, it was argued that the non-aligned nations at Geneva might shame the Great Powers into agreement by their mere presence, and not only by their greater capacity to see the problems of disarmament from a more objective point of view.

How have these expectations been fulfilled? Here, too, perhaps, the chief benefits are educational. Bravely but reluctantly the non-aligned nations seem to have become reconciled to the practical difficulties of disarmament. Mr. Arthur Lall, the Indian delegate at Geneva for several months, has explained in some detail (Bulletin of the Atomic Scientists, April 1964) how the non-aligned nations at the conference have been obliged by circumstances to match their proposals carefully to the political temper of the dialogue between the Great Powers. Evidently the Eighteen-Nation conference is no place for an over-zealous delegation.

This does not, however, imply that the work of the conference is one long frustration. On the contrary, the conference has a record of modest achievement, and it has grown into a special kind of international forum at which it is possible for Powers, great and otherwise, to hold frank discussions of the difficulties of particular steps towards arms control and disarmament. As such, its value to the world of the sixties is enormous. As yet there is no clear picture of the form in which the Geneva conference will continue after the Nineteenth Assembly of the United Nations, but that it should continue in some form or another is not in question.

B. Landheer

WHAT CAN SOCIAL SCIENTISTS CONTRIBUTE TO PUGWASH?

In order to give an initial simple answer to a complex question, it could be said that it would be the task of social scientists in the Pugwash Movement to formulate as many alternatives for better international co-ordination as seems scientifically possible. The natural scientist may not always be aware of the full range of social alternatives, and in this respect the social scientists can provide additional perspectives which might be of importance.

On the other hand, there would be a considerable difference of opinion among the social scientists themselves in regard to the formulation of possibilities for better international co-ordination, and especially in regard to the road which leads from the reality of the present to projected situations.

The international jurist, for instance, is on the whole committed to the idea of an international legal order as the most desirable solution. The degree of efficacy of international law he is often tempted to leave out of consideration as not being "legal" in nature.

The sociologist, on the other hand, would make his starting point the reality of international society - its "power-structure"; he would analyse the aspects of the formal structure and ask in what way formal and power structures interact. The result is a more complex image than that of the jurist; in addition, while social change is a focal point of sociological analysis it is an aspect which presents great difficulties to the jurist.

The economist operates more upon a general value-system than the sociologist. The underlying philosophy of the economist is that an equitable distribution of the world's wealth and the utilization of the world's resources by modern technology would create a functioning world-society. Although this may sound plausible to many, it is a theoretical assumption which also suffers from the fact that the situation of the past fifty years or so shows increasing rather than diminishing differentiation. In addition, there is no convincing evidence that economic affluence can be a lasting condition for the majority of mankind, nor that such a condition would put an end to social conflicts. On the contrary, the analysis of wars has shown that wars are waged by wealthy nations rather than by poor ones.

The psychologist and psychoanalyst take their starting point in the individual. They often agree that only if the complex and interlinked system of human drives finds a controlled and fairly adequate outlet can there be the question of a reasonably "peaceful" individual. The necessary conditions which they envisage are, however, far more complex than those which prevail in economic thinking, where factors like sexual frustration, innate aggressiveness, status frustration, lack of emotional and psychic balance, frustration of the imagination, lack of natural rhythm play a much smaller role.

Finally, one should mention the most modern sciences like behaviourism, the theory of international relations, irenology, polemology, conflictology, etc., all represented nowadays in numerous

publications and many periodicals. A number of sub-divisions of these sciences, like those dealing with disarmament and arms-control, could also be referred to.

In view of this brief inventory of some of the social sciences, the question arises whether they may not add to the prevailing confusion in our thinking rather than reduce it.

This possibility is indeed not imaginary, as the law of increasing numbers undoubtedly operates in the social sciences, and not with exclusively positive results, though this may seem to be the case if one applies only a quantitative yardstick. There are, however, some points on which the thinking of the social sciences shows important deviations from the more general modes of thought of modern society.

As examples of such points one could mention: the matter of the relative centralization and decentralization of a functioning world-society; the levels of social control in world-society and their interrelations; the necessary means of physical coercion at various social levels; and finally, the structural changes in world-society and their impact on its organizational structure.

A few remarks will be made on each of these points, obviously without the pretence of summarizing the findings of the social sciences in a few sentences, but more as a way of illustrating where useful contributions of the social sciences might lie, and in what way they might indicate preferential alternatives.

The subject of the relative centralization and decentralization is of considerable interest. From the nineteenth century we inherited the idea that social order is dependent upon a centralized control mechanism, operating with means of physical coercion. This theory seemed to be confirmed by the operation of the dominant social group, viz. the state, and in analogy it was applied to world-society. There are essential differences, however, between the national state and world-society, and, consequently, also in the control mechanisms which they need.

The state has a twofold function: inner order and outer defence, while world-society has only one: inner order. The twofold function of the state has led to a centralization of power and to the building up of centralized military systems in order to safeguard and protect state stability. As the latter factor seemed to increase with state capability, centralization appeared as the most effective means of building up state power, in the twofold aspect of centralized administrative control as well as centralized military power.

Modern technology and modern industry also profit, up to a certain limit at least, from centralization. As a result, politico-military and economic-industrial centralization have had a cumulative effect on one another, and this has often led to the uncritical assumption that centralization is a positive goal in itself.

In regard to world society, however, this assumption has to be critically re-examined. World-society consists of social groups which have grown from certain focal points. The present processes of social growth operate in such a way that the more complex industrial societies show a predominantly vertical social growth, while horizontal expansion in terms of conquest and

domination involves increasing risks with the growing complexity of modern society. Nevertheless, modern industrial society shows a number of definite focal points, and even with the spreading across the globe of this type of society, it must be assumed that the result will be a highly differentiated society, in terms of concretely stated factors like territory, size of population, resources, technological level, social and political structure, cultural value-system, etc.

It would be illogical to assume that such a complex and differentiated world-society could operate under a centralized control mechanism, comparable to that of the much simpler national states of the nineteenth century, functioning predominantly by means of physical coercion.

This idea not only contradicts the emerging structures of world-society, but it is also in conflict with the inner structure of the most complex industrial societies which operate more by compromise and by complex give-and-take mechanisms. Such a society would be severely disrupted by the use of exclusively physical coercion, and those methods do not belong to the control mechanism of modern society.

This argument is valid a fortiori for world-society. As a result, the question of essential control mechanisms for world-society should be posed as a new question and not as one that can be solved by analogy with the national state. The question is rather what control mechanisms are essential at the global, regional, national and sub-national levels, and what physical means of coercion are operationally essential at these various levels. The problem can only be stated in relation to the possession of the various physical means of coercion at the various social levels. The question whether or not they will be used is a non-scientific question, since the use depends upon challenges which are not predictable or foreseeable in a scientific manner.

Man, as a tool-using animal, makes tools with a specific use in view. If he does not anticipate the use, he should not make the tools.

This reduces the problem to the question what social control mechanisms are functionally essential at the various social levels, and in how far and to what extent do they need means of physical coercion in order to fulfil their function. As Man lives in territorial social groups, it seems a foregone conclusion that for a long time to come the state will remain the most important social level from the functional point of view. The state controls the family, the social mechanism of Man's propagation; the state controls the economy, the mechanism of Man's need-fulfillment; the state controls education as the adjustment-process of Man to society; the state controls the uses to which Man puts his intellectural and imaginative capabilities. If the state aims at co-ordination with other states, because expansion by physical means of violence has become dysfunctional, this does not mean that the only solution lies in transferring dominant military power to an international organization.

The problem has much deeper roots, and centres on the question what functions must be transferred to the global levels in order to make the state functional in its relation to world-society. Among such functions social scientists have mentioned the problems of world-population,

world-resources, and world health for which international organizations already exist or have been suggested (cp. the Proceedings of the Twelfth Pugwash Conference). There is also agreement about improvement in the global terms of trade, as well as about the necessity of a United Nations Military Force, not as the dominant global military establishment, but as a mechanism of adjustment and isolation of opposing forces in conflict areas.

What seems less clear is the relational aspect of those matters. If global military forces are created in addition to, rather instead of, national forces, there is no real improvement in the total situation. If national military expenditures are reduced by X million dollars and a global force is created at the cost of Y million dollars, the situation becomes only more positive if Y is considerably smaller than X, provided at least that we agree that there is a situation of an extreme hypertrophy of the physical means of coercion. In relation to the world as a whole, there is reduction in some, but increase in many other cases.

Relationally and structurally speaking, the problem becomes a quantitative one: how many physical means of coercion and of what types are essential at the various social levels. The answer must be related to the significance of the social control levels as a whole. The use of physical means of coercion cannot be isolated from the total function of a social control-level. More concretely, this question could be asked in relation to the global level, to regional organizations, to the national state, and to sub-state groups.

It is obviously quite impossible to enter into the substance of this problem, but it is intended to point out that the relational perspective of the social scientist might lead to the formulation of meaningful questions which do not of necessity lead to the same answers that are given in the political realm. In fact, by making the question conform to the complexity of modern society, it might be possible to arrive at the formulation of useful alternatives.

The same relational structure has been pointed out in relation to military expenditures and the amounts available for international aid. If the first ones can be reduced and the second increased, there is real improvement. If both are increased, it is possible that tensions increase rather than decrease.

In this respect also the social sciences could make a very significant contribution, as it is possible to present those relationships in mathematical models which carry a high degree of conviction for the contemporary world. Also noteworthy is the idea that development aid and military expenditures could be made relational, in terms of the donor as well as the recipient, or in regard to both. In this way, decrease of political tensions and increase in economic development could be achieved simultaneously. The overall expansion-rate of the donor-country would be less, however, than in the case of military expenditures plus development aid, and this may be one of the reasons why the idea mentioned does not enjoy great popularity, nor receive much publicity.

Finally, a few words may be said about the factor "social change" in terms of the contemporary social sciences.

Neither political, nor legal thinking give much room to the factor of social change, as they both regard the state as a given, and more or less, absolute entity. By doing this, they lack a perspective on the more distant future, as the position of the state in relation to the economic system, in relation to international agencies and, last but not least, in relation to the individual, is definitely undergoing change while, obviously, the interstate structure is also subject to changes which often manifest themselves at a much later date if they are kept out of more conscious forms of thinking.

The apparent hardheaded realism of political thinking can for this reason be very misleading, because it ignores the changing position of the state in relation to other social groups, as well as the factors of natural growth which do not immediately manifest themselves in the power structure, because the power structure operates in terms of the outer manifestations of state-power rather than in terms of latent capability. As all states consist of territorial social groups which are constant neither numerically, nor in regard to their capability, the creation of a functioning world-society depends upon our ability to foresee natural developments and in adjustment to them. The prevailing opinion that power depends exclusively upon human volition is philosophically untenable as well as politically dangerous.

Even within the rigidly controlled national states, governments cannot prevent shifting relationships between social sub-groups, like classes or social pressure groups. In world-society, the shifting relationship between the sub-groups, i. e. national states, must be not only foreseen, but given expression in the formal structure of world-society, if this superstructure is to gain a more acceptable degree of function.

If one accepts the idea that the industrial society is the guiding image of the modern world, this would mean that we must examine the innate attributes of this society and the conditions for its realization, not purely as a matter of human volition, but in terms of given natural facts. The spreading of this society across the globe will redefine the functions of the political society which can never remain the traditional ones. Resistance against these natural processes of social evolution will create increasingly dangerous tensions if we do not seek to become aware of the natural aspects of this evolution which encompasses all of Mankind.

The industrial society must be seen as a social system in terms of the component individuals, but not as a techno-political system which is linked to outdated political forms.

The industrial society has not reached as yet the state of a functioning and permanent social system because it is interpreted from the economic and technical angle rather than from the human one. In this way, it is prevented from becoming functional because it cannot follow its own innate trends, and because it cannot develop its own control mechanism, aimed at ultimate permanence and stability. The stability of the dominant industrial societies is the condition sine qua non for a stable and permanent world-society.

The social sciences, and particu-

larly sociology and social philosophy, can render a great service, by creating a scientifically reliable image of the world-evolution towards an industrial society, and by emphasizing the diminishing and changing function of the political institutions of the past. The components of world-society are the individual countries, and there can be no stability and permanence in world-society unless those concepts become the goal of national societies within a reasonable interpretation and acceptance of their normal capabilities.

It should be added, however, that it is necessary for the social sciences to free themselves from national and civilizational biases, if they want to make an important contribution to the future of Mankind. In this way, they can only profit from the example of the exact sciences, and the interaction between the two within the framework of the Pugwash Movement is of the greatest significance.

PUGWASH EVENTS

CONTINUING COMMITTEE

Acad. V. A. Kirillin has resigned from the Committee, owing to pressure of work. His place on the Committee has been taken by Acad. M. D. Millionshchikov who has also been elected Chairman of the Soviet Pugwash Group.

Acad. Millionshchikov attended the 12th Pugwash Conference at Udaipur and, more recently, led the Soviet team in the Joint U. S. /U. S. S. R. Study Group on Disarmament (see below).

MEETING OF EUROPEAN PUGWASH GROUPS

A meeting of European Pugwash representatives was held in Geneva on 4th and 5th April, 1964. The purpose of the meeting was to discuss the preparation of papers for the 13th Pugwash Conference in Karlovy Vary, and to nominate conveners from European countries for that Conference.

The meeting was attended by Mr. T. Nemec (Czechoslovakia), M. Jules Moch (France), Mr. H. Afheldt (Western Germany), Dr. G. Jona-Lasinio (Italy), Prof. B. V. A. Röling (Netherlands), Prof. J. Galtung (Norway), Prof. L. Infeld (Poland), Prof. A. Engström (Sweden) and Dr. V. Knapp (Yugoslavia). The Central Office was represented by Dr. P. J. Lindop and Prof. J. Rotblat. Dr. Martin Kaplan

and Mr. James Wise were hosts.

M. Jules Moch presented a draft of a paper on "Measures for Reducing Tensions and Dangers of War especially in Central Europe." There was a considerable discussion on this paper and it was agreed that a revised version would be circulated by M. Moch to all other members of the group before the final version was prepared for the Conference. Prof. Infeld undertook to write a paper on "The Berlin Problem."

Other papers to be prepared were:

a. On Technical Aspects of Underground Tests and the Prevention of Spread of Nuclear Weapons and Weapons Technology (by the Swedish Group).

b. On Mutual Inspection Systems for Bacteriological Weapons in Europe (by a number of people with Martin Kaplan as co-ordinator).

c. On Bilateral Contacts between Small Nations of the East/West bloc (by Prof. J. Galtung).

KARLOVY VARY CONFERENCE

The following were nominated conveners of the Working Groups for the 13th Pugwash Conference.

Working Group 1 - Measures for reducing tensions and the dangers of war, especially in Central Europe.

Prof. B. Glass
Prof. W. S. Emelyanov
M. Jules Moch

Working Group 2 - Current status of proposals for arms limitation.

Acad. L. A. Artsimovitch
Prof. A. Engström
Prof. B. T. Feld

Working Group 3 - Progress towards comprehensive disarmament.

Prof. B. H. Flowers
Prof. F. A. Long
Prof. N. A. Talensky

Working Group 4 - Problems of collective security

Prof. V. M. Khvostov
Prof. R. E. Peierls
Prof. J. B. Wiesner

Working Group 5 - Aims and methods for peaceful collaboration among nations.

Acad. I. Malek
Prof. C. F. Powell
Prof. E. Rabinowitch
Prof. M. Rubinstein

14TH PUGWASH CONFERENCE

The 14th Conference, which is to be held in April 1965, will take place in Isola S. Giorgio, Venice. The Conference will be sponsored by the Accademia dei Lincei and Fondazione Cini.

JOINT U.S./U.S.S.R. STUDY GROUP ON DISARMAMENT

The first meeting of the Study Group on Disarmament and Arms Control, consisting of Soviet and American scholars and held under the sponsorship of the American Academy of Arts and Sciences, took place from 8th to 19th June, 1964. Meetings were held first at Endicott House, Dedham, and then at Holyoke Centre, Harvard University. Arrangements for the conference were worked out by the Academy's Committee on International Studies of Arms Control, supported by a grant from the Ford Foundation.

The Soviet participants were Acads. M.D. Millionshchikov, V.A. Emelyanov and L.I. Sedov, Prof. M.A. Talensky and Mr. V.P. Pavlichenko. The American participants were Prof. Paul Doty, Dr. D. Brennan, Profs. D. Frisch, M. Shulman, L. Sohn, H. Kissinger, G. Kistiakowsky, C. Kaysen and Mrs. B. Lall. Five other participants (F. Long, J. Wiesner, F. Fletcher, I Rabi and J. Ruina) attended for shorter periods.

The meeting provided an opportunity for an intensive examination of problems primarily of a technological nature.

The co-chairmen of the meetings were Acad. M.D. Millionshchikov, Vice President of the Academy of Sciences of Moscow, and Prof. Paul Doty of Harvard University. They expressed their satisfaction with the accomplishment of the meeting, stressing that a much better understanding had been reached on a number of issues and that some promising areas for further study had been agreed upon.

The conference itself was private but the occasion provided an opportunity for the Soviet participants to meet with colleagues in the Boston area as well as in New York and Washington.

PUGWASH GROUP IN POLAND

A Polish Pugwash Group was set up at an inaugural meeting which was held in Warsaw on 27th June, 1964, and which was attended by the Secretary-General. The meeting was organized under the auspices of the Polish Academy of Sciences and those present included Heads of Universities and other leaders of Polish science. Prof. L. Infeld was elected Honorary President of the Group. The Chairman of the Group is Prof. I. Malecki, Assistant Secretary of the Polish Academy of Sciences. The Secretary is Prof. Karol Lapter.

One of the main tasks of the Group will be the organization of a Pugwash Conference which will probably be held in Poland in 1965 or 1966.

LEO SZILARD
(1898 - 1964)

It was with profound sadness and regret that we learned of the death of Leo Szilard on May 30th, 1964. He died at the age of sixty-six from a heart attack which came on during his sleep. This marked the end of a career which has had a profound effect both in the world of science and the world of human relations. Leo Szilard was very well known among the participants of Pugwash Meetings, since he attended most of these Conferences. He was one of the few men whose actions have earned him the distinction of being known as a man of wisdom both among scientists and in the public at large.

Szilard was born in Budapest in 1898 and after first studying engineering, he shifted later to theoretical physics. He received a Ph. D. degree from the University of Berlin in 1922, and remained associated with the University and the Kaiser Wilhelm Institute for the next ten years. During this period, Szilard was regarded as a very whimsical and imaginative young man. He lived very much on his wit. As one friend has said, "When Szilard found that his income was inadequate, he simply turned his mind to making a new invention and selling it, so that he could continue his research work." During this period, Szilard worked on the statistical behaviour of physical systems and the utilization of information. Much of his work is of fundamental importance in the later development of cybernetics.

In 1933 when Hitler came into power, Szilard accurately foresaw the nature of the Nazi government and left Germany first for Vienna and, later that year, for London. He started work in nuclear physics in 1934 at St. Bartholomew's Hospital Medical College and there he evolved a new principle of isotope separation of artificial radioactive elements. He continued this work at the Clarendon Laboratories at Oxford University and finally in 1938 he left for the United States where he became a citizen. In 1939, working at Columbia University, he performed some of the first experiments which indicated that neutrons are emitted in the fission of uranium. After watching the fluorescent screen for flashes of light which signified the success of the experiment, Szilard wrote, "We turned the switch, we saw the flashes and we watched them for about ten minutes, and then we switched everything off and went home. That night, I knew the world was headed for sorrow." In that same year, Szilard was instrumental in drafting a letter which Einstein signed and sent to President Roosevelt, urging research on the development of the atomic bomb. Late in 1942, Szilard and Enrico Fermi performed the famous experiments which led to the development of man's first sustained nuclear chain reaction.

When the development of the atomic bomb was largely completed, Szilard turned in his activities from seeking ways to develop the weapon to an attempt to control it. He tried unsuccessfully to prevent the use of the atomic bombs on Japan at the end of World War II. At that time, he was instrumental in organizing the Emergency Committee of the Atomic Scientists who tried to create a system for the international control of atomic energy. The most striking characteristic of Szilard's activities was the fact that he could see well in advance of most of his contemporaries the major problems which society would face with the development

of nuclear weapons and with the eventual formation of the great powers stalemate. He was very active in organizing efforts which were directed toward educating the public regarding the nature of atomic weapons and the effect that they have on relations between nations and, most of all, the absolute necessity for effective international control over them. He founded the Council for a Livable World, an organization designed to operate in the American political system for the express purpose of educating and influencing members of Congress about the importance of nuclear weapons and disarmament.

During the last twenty years, Szilard's scientific efforts were concerned almost entirely with the newly developing field of molecular biology. He made substantial contributions especially in his discussions of various types of feedback mechanisms responsible for regulating cellular metabolism. At the time of his death he was actively engaged in developing a new theory of the biochemical basis of learning and memory.

In 1959, Szilard was stricken with cancer and he went through a long and trying process before it became apparent that the cancer had been controlled by radiation therapy. Nonetheless it was characteristic of him that his spirits remained high and his productivity was unaffected. During this period, he published "The Voice of the Dolphins", a political and philosophical book which used science fiction as a vehicle for ideas.

Szilard was one of the rare scientists who had close contacts with high governmental officials of both the East and the West. When Premier Khrushchev visited New York, Szilard spoke with him and again visited him and many other high officials in Moscow in 1960. During the past three years Szilard lived largely in Washington and was a frequent visitor to many high officials in the United States administration. In all these contacts, Szilard was continuously attempting to generate new ideas and to explain clearly to governmental officials the consequences of various courses of action. He remained a tireless campaigner in his attempts to create a stable system of international order.

Szilard's activities at the Pugwash Conferences were very well known. At these meetings, he provided a mixture of logic and good humour which did a great deal to enliven the discussions and to point out to the participants various facets of their deliberations. At these conferences, Szilard was listened to carefully by participants from all countries since it was clear to everyone that his efforts were directed towards the benefit of humanity in general.

Szilard's impact was on a much wider circle than the scientific community alone. On his death, the New York Times wrote an editorial about him in which they pointed out that he has "dedicated his great heart and brilliant mind to seeing to it that no community ever suffers the fate that destroyed Hiroshima and Nagasaki". Life magazine published a warm account of Szilard and his efforts on behalf of peace. On the floor of the United States Senate two senators placed very glowing tributes to Szilard in the Congressional Record pointing out his considerable contributions and his unfailing advocacy of complete disarmament under world law.

Thus it is that Leo Szilard's passing leaves us all saddened considerably. The scientific community and the world at large mourn his passing.

Alex Rich.

REPORTS FROM NATIONAL GROUPS

AUSTRALIAN PUGWASH ACTIVITIES

The first Pugwash Conference was attended by the world-renowned nuclear physicist, Professor Sir Mark Oliphant, of the Research School of Physical Sciences of the Australian National University, Canberra. Since this time Sir Mark has acted as patron for Pugwash activities in Australia. These activities have taken, in the main, a twofold form:

(a) attendance and reporting back on international conferences,

(b) formation of Pugwash Groups amongst social and natural scientists.

In addition to the initial conference, Sir Mark has attended the second, third, eighth, ninth and tenth, as well as the recent 12th conference in India. Dr. J. Burton of Canberra attended the 6th, 10th and 11th, Dr. W. Boas of Melbourne attended the Oslo conference convened by Linus Pauling and Sir John Crawford of Canberra attended the seventh congress. Australia was not represented at the fourth and fifth conferences.

Pugwash Groups are active in Sydney, Canberra, Melbourne and Adelaide and contact has been maintained with interested people in Brisbane and Newcastle, and recently with New Zealand.

Initially the activity of the Groups centred mainly around regular meetings with symposia and discussions on subjects associated with Pugwash ideals and aims. Recently, in Sydney and Melbourne, activity has tended to centre around study groups. The Sydney Group has prepared a report on the present state of detection of underground tests, which it is hoped will be published. An active Melbourne group has been studying "Attitudes to War". In addition the Melbourne group, which has 80 formal members (subscription 10/- per annum), is publishing a newsletter.

Meetings of students have been addressed in Sydney and Melbourne, by invitation, and the ideals of Pugwash have been received enthusiastically.

Activities in Canberra have tended to centre around meetings on special topics and seminars have been based on studies of aid to underdeveloped countries. Aid to underdeveloped countries is the subject of active research in the School of Pacific Studies of the Australian National University, under its Director, Sir John Crawford. The group has also had the co-operation of the Department of International Relations, headed by Professor J. D. B. Miller.

At a meeting of 30 members of Australian Pugwash Groups held in January in conjunction with the Australian and New Zealand Science Congress (A. N. Z. A. A. S.) in Canberra, it was decided to set up an Australasian Committee made up of the Chairmen of the Australian Groups, with a Secretariat of three Canberra members. The Secretariat is now taking active steps to initiate the activity of the Australasian Committee.

J. H. Dickins.

THE CZECHOSLOVAK PUGWASH COMMITTEE

The Czechoslovak Pugwash Committee consists at present of 19 members. The Chairman is Academician F. Sorm, Chairman of the Academy of Sciences. The Secretary is Mr. T. Nemec. The Pugwash Committee is closely linked with the Czechoslovak Academy of Sciences and funds for the activities of the Pugwash Committee are provided by the Academy. The Pugwash Committee has its own office in the centre of Prague.

Since the 11th Pugwash Conference, two public meetings have been held in Prague during which Czechoslovak scientists were informed of the results of the Dubrovnik and Udaipur Conferences. The Statement and the Report of the 4th Working Group of the 12th Conference were printed and 2,000 copies were distributed to individual scientists, scientific institutes, universities and libraries.

Both the 11th and 12th Pugwash Conferences were fully reported in the Bulletin of the Czechoslovak Academy of Sciences and nine articles dealing with these two Conferences appeared in scientific and other journals. Four articles were published explaining the aims of the Pugwash Movement as a preparation for the 13th Conference.

A great deal of work is now directed towards the organization of the next Conference, which is to be held in Prague and Karlovy Vary in September. The first formal step was a Press Conference held on 18th May under the Chairmanship of Academician F. Sorm. Some 80 leading journalists, foreign and Czechoslovakian, participated and all main Czechoslovak daily papers carried favourable articles, and Prague radio and television also commented on the Conference.

Several study groups have been set up within the Pugwash Committee to prepare papers for the 13th Conference.

T. Nemec.

Academician F. Sorm
Chairman, Czechoslovak Pugwash Committee

IN THERMIS CAROLI IV

The venue of the 13th Pugwash Conference, to be held in September 1964, will be Karlovy Vary, Czechoslovakia. Its name is well known in different parts of the world as a spa. Yet at a time when civilization was still deprived of the blessings of modern publicity Bohuslav Hasistejnsky of Lobkovic (1460-1510) a man of letters and a poet of renown, wrote an ode to Karlovy Vary which was translated into 28 languages! He wrote that perhaps the healing warmth of the spa's sources was due to the flames of volvanoes, perhaps to Lucifer himself, but its effect was such that nothing could compare .

In a way the poet has, unknowingly of course, traced the geological history of the Karlovy Vary hot springs and their volcanic nature. Their history goes back to the Tertiary. At that time, some 15 million years ago, the earth's crust broke and the hot salty geysers gushed out from a depth of some 2,000 meters. And here we find them even today.

As early as in the Thirteenth Century the spot was known as Vary, i.e. the hot springs. Romantic legend attributes the name "Karlovy" to Charles the Great, whose troops passed through the area in 805 in their march to the east against the Slavs. The records, however, show that Vary was founded as a city by Charles IV, Holy Roman Emperor and King of Bohemia, the son of Jan Luxembourg and Eliska Premyslovna. In 1385 he had a hunting lodge built here. Its walls still form a part of the walls of the tower on Crown Hill. Charles granted the town a coat of arms depicting the two-tailed lion that is Czechoslovakia's national emblem even today, and three wavelets to symbolize the three streams flowing in the locality - the Tepla, the Ohre and Vridlo. Undoubtedly it is in this period that Karlovy Vary began to develop as a city and as a spa. Yet legend tells us that the springs were discovered by Charles (in one version Charles the Great, in another Charles IV), when he was hunting deer and his favourite hunting dog fell into a pool of hot spring water.
It is at any rate an historical fact that Charles IV made frequent use of the beneficial sources and sought treatment here against rheumatism and the wounds he suffered at the battle of Crecy.

To recount the other crowned heads who followed the founder of the spa and visited them for a cure of different ills might tell us something of the glitter and festivity of the Karlovy Vary season, but would be of little historical or cultural interest. Yet it might be well in this context to recall the visits of Peter the Great, who even here showed that boundless energy recorded for us by the annalists who tell of his ride on a saddle-less horse right to the peak of the Deer's Jump; of the incident when he took up trowel and spade and joined the masons building the "Peacock's House"; or of the interest he took in the medical and technical aspects of the waters, knowledge which he used well on returning to Russia. Otherwise there are but rare instances of the stay of prominent personalities in the spa that had any political import. And those that had are not remembered for what they did for the renown of the spa, or for the common weal, but rather for their evil deeds. Thus Albrecht of Waldstein, a condottiere in the Thirty Years' War, who stayed here four years before he was assassinated in nearby Cheb, entered the annals of history for the rule of spoil and robbery that he set up in the three provinces of the area to keep himself and his vast retinue in luxury and pleasure during their stay to "take the cure". The conference held in Karlovy Vary in 1819 under Metternich is known for the rigid and reactionary instructions issued by him in order to suppress the ferment of national and political awakening that marked this period of Czech history. And the "Karlovy Vary Demands" issued here at a time when the menace of annexation was already hanging over its people, were the first clear signals of Nazi aggression against democratic Czechoslovakia.

Of much greater value for cultural

history are the names of those who won renown in the arts and sciences, than those who acted in politics. There is nothing to remind visitors of the gestures or words of the rulers of state or of the men of war. Yet on the House of the Golden Key we will find a tablet that tells us that Karl Marx lived there from 1874 to 1876 writing the second part of "Das Kapital". The stories and anecdotes about Goethe's visits to Karlovy Vary and his own bon mots, are legion. Here Schiller drew inspiration for a series of dramas centring around Waldstein. In different places we will find reminders of Adam Mickiewicz, who influenced George Sand to write her novels about Czech history "Jean Hus" and 'Jean Zizka". Dvorak's "Symphony of the New World" was played for the first time in Europe in 1894 in the Courtyard of the Post-House. Cultural historians often have found facets of the works of the Great Masters that had the pleasant beauty of Karlovy Vary as a source of inspiration. This is true not only of Czech authors and artists but of Bach, Beethoven, Brahms, Gogol, Grieg, Chopin, Liszt, Paganini, Turgenyev, Wagner and others, including those of our own times.

Architecturally, we may also say that the spa was fashioned by masters, even if the pattern of spa lay-out characterizing the turn of the century predominates. Thus it is well worth viewing the Church of St. Mary Magdalen, built in 1732-36 by the architect of Prague Baroque, Diezenhofer. Josef Zitek, the creator of the Prague National Theatre also built the Mill Colonade. The Panel overhanging the Mill Spring, with the words of Lobkovic's ode "In Thermis Caroli IV" engraved, comes from the studio of Vaclav Prachner. The Chateau Colonade was built by the architect Ohmann. Similarly the buildings and lay-out of Spa I, covering an area of 4, 000 square meters and the Karl Marx Sanatorium on Crown Hill, are worthy of note. Of the hotels, the Imperial, on the hill, the Richmond enclosed by gardens, and the largest Moskva-Pupp with its 320 rooms and apartments, are worth looking at. They are the work of architects Fellner and Helmer, who also built the City Theatre in 1886. The Post-House Courtyard, built in the 18th Century, has been witness to many moments of great music in Karlovy Vary. Behind it there is a vast modern summer cinema with a seating capacity of 3, 500. The Karlovy Vary Museum and Picture Gallery surpass the confines of local interest. The Orthodox Church is architecturally interesting in the same way as the Anglican Church of St. Lucas. St. Andrews, a small church, used to have a cemetery, where David Becher, the first to determine the physical and chemical qualities of the Karlovy Vary waters, lies buried, Jean de Carro, the builder Gigly, the son of Wolfgang Amadeus Mozart, etc.

Of the sculptures commemorating important guests, reference should be made to Otakar Svec's plastic of Charles IV in the Fucik Park, the memorial to Beethoven by Hugon Uher near the Richmond Hotel and viz a viz to it Wagner's sculpture of Bedrich Smetena, that of Schiller in Pushkin's alley, which also is lined by panels in which patients express their gratitude for having regained their health. Not far from Spa IV the visitor will find Bretislav Werner's statue of Adam Mickiewicz and a memorial to the Red Army by Abis Sopr in front of the post-office.

A torso of Karl Marx by Karel Kunes is placed in the small park near the Vridlo spring.

Of quite another architectural genre is Dorothea's Pavilion, built to honour the beauty of Dorothy Kuronska, the mother of "My Lady" in the great Czech classic work by Bozena Nemcova. The tin statue of the chamois standing on top of the rock of the Deer's Jump has in a way become the town's emblem.

Karlovy Vary is also known for its industries. Millions of bottles are annually filled from the Mill Spring and are exported to different parts of the world, in the same way as the salts from the hot springs. Natural carbonic oxide is put into containers and used industrially. Aragonite that is found in the area of the geysers is cut and polished and fashioned into keep-sakes. The minerals from the springs are also used for sintering. The Karlovy Vary Wafers and a liqueur made there of herbs called "Becherovka" are exported to many countries.

But what has made Karlovy Vary known in the business world is its porcelaine and crystal glass. At the International Congress in Copenhagen in 1924 the clay from Karlovy Vary was declared the purest in the world, thus giving due merit to a tradition of more than 150 years' manufacture. The porcelaine Museum in Klasterec on the Ohre displays the best of Karlovy Vary porcelaine made in the past as well as in the last few years. Its glass is known by the Moser Trade Mark, established a hundred years ago. It is manufactured in Karlovy Vary-Dvory. The Moser glass is Bohemian crystal, cut, engraved, painted and gilded. By adding rare clays the glass achieves the appearance of being two-coloured, with very fine shadings and nuances of colour and tone, possible only with high-quality glass. The Dvorska plant also has a permanent exhibit of its products.

In Western Bohemia there are several other spas - Marianske Lazne, Frantiskovy Lazne, Teplice and Jachymov- among which Karlovy Vary has its own special place. It lies in the valley of the Tepla River, at an altitude of 380 meters with a mild and pleasant climate.

Today the spa has 12 active thermal alcalic-salanic-muriatic springs (another 14 "see the light of day" in different cellars of the city). Chemically speaking, in addition to minerals, notably sodium, calcium and magnesium, ions of carbonic, sulphuric and chloric acid predominate. The Vridlo spring is the warmest and has the greatest water supply, since 2,000 litres of water at a temperature of 72 degrees centigrade gush out to a height of 12 meters above the surface per minute. The Mill, Rock, Knight Vaclav's and the Garden Springs are also strong ones.

The spas, i.e. all springs and balneological sources were nationalized in 1948. They are considered a natural and essential factor of prophylaxy and treatment. The former hotels, catering for those who made it a habit not to miss the season, have become specialized treatment units. A complex system of spa treatment, based on first-class scientific standards, has been introduced for every patient. Pavlov's teachings have introduced many new elements to this complex approach. The Karlovy Vary City National Committee is directly responsible to the Government. In providing treatment, recreation and culture and every possible modern comfort of a spa stay, no dis-

tinction is made between Czech, Slovak, and foreign visitors.

The mineral waters are used for treatment both orally and in baths. The spring waters are used for maladies of the intestines, for under-water massage for many disorders, and for massages of the gums in the treatment of paradentosis. Depending on the diagnosis, patients are prescribed carbonic, oxygen, radon, mud baths or diathermy. The People's state devotes maximum care to the standards of spa treatment, the qualification of the scientific personnel and all staff, the equipment of the sanatoria and laboratories, etc. The Karlovy Vary treatment is indicated primarily for gastric diseases, gastric and duodenal ulcers, post-operative complications, notably resections, disturbances of gastric secretion and acidity, intestinal diseases, notably colitis and enteritis, spastic constipation, affections of the gall bladder and ducts, stones and follow-up treatment after surgery, liver affections, neuroses, disorders due to jaundice, diseases of pancreas, metabolic disorders, diabetes, gout and obesity.

At the present time there are 7 hotels, 80 pensions and sanatoria available to guests, 2 recreation centres, a tourist hostel and some 300 beds that can be rented in private homes. The capacity is about 6,000 beds. In four balneotherapeutic institutes and other smaller centres, 1,180 baths and 1,690 other treatment procedures are provided daily. In the last pre-war year some 40,000 guests sought treatment in Karlovy Vary and there were another 29,000 visitors. This figure dropped to 3,900 in the first post-war year, but in 1957 it had risen to almost 50,000 patients and to more than 100,000 additional guests from 54 countries, and this figure has gone on increasing.

This has naturally an effect on the social life in the spa. An important event in this respect over the past few years have been the Karlovy Vary International Film Festivals, which differ from other festivals in particular in that their juries do not only judge the films shown in the light of their artistic value, but also, and even primarily, from their social content and purpose, their contribution to human progress and peaceful co-operation among nations.

These ideas have also inspired the important international conferences that have been held here. We welcome for this reason also the choice of Karlovy Vary as the venue of the Thirteenth Pugwash Conference. These new sources that serve to create a special climate, perhaps for the treatment of other diseases of mankind than those provided by the hot springs have created a tradition which we hope will be further promoted by our Meeting. It is in this spirit that we welcome you to Karlovy Vary, that we wish every possible success to the 13th Pugwash Conference and to your noble mission, as well as a very pleasant stay in this beautiful spot of Western Bohemia.

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