

CHANGING ATTITUDES AND INTERESTS OF POGWASH ; WITH
SPECIAL REFERENCE TO THE THIRD WORLD .

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PREFACE

"Pugwash" a short form for "Pugwash Conferences on Science and World Affairs", initially started as a movement of scientists against nuclear proliferation. Originating in the hectic days of the Cold War, when the possibilities of a nuclear catastrophe were 'very real', its immediate goal was to bring the American and Soviet scientists on a common platform so as to reduce the risk of such a catastrophe that may spark off due to some misunderstanding or miscalculation on the part of either side.

But from the very beginning Pugwash had spelt out its ideals and objectives in very comprehensive terms, which were: to promote world peace - by preventing the misuse of science; and help mankind to realize - by the correct use of science - "the way that lies open to a new paradise." Thus, on the one hand its goal has been the achievement of general and complete disarmament, and on the other, the elimination of poverty, want and destitution from the face of the earth by the use of the powerful tools that science and technology is constantly making available. While Pugwash has devoted its whole-hearted attention to the former and also made valuable contributions; in the case of the latter it has shown hesitance and vacillation.

The main thrust of this study is to critically evaluate the role of Pugwash in trying to tackle problems

of development in the Third World or the less developed countries (LDCs).¹ Being the kind of movement that it is, how much can Pugwash do in regard to accelerating development in the Third World? How much has it done? What are the factors which have prevented Pugwash from contributing its optimal in this sphere. How can these be overcome? These are some of the questions that this study tries to answer.

The Introductory Chapter throws light on the genesis of the movement and traces its growth, showing how Pugwash, starting from nuclear disarmament has travelled to Development.² It also shows the changing interests and attitudes of Pugwash.

The Second Chapter discusses the reasons which made Pugwash take Development with growing seriousness and reviews the work of Pugwash in this regard upto the 15th Pugwash Conference held at Addis Ababa.

The Third Chapter reviews the work of Pugwash with regard to Development after Addis Ababa upto the 26th Pugwash Conference held at Muhlhausen, GDR, in August 1976, showing Pugwash's gradual disillusionment with

1 Pugwash refers to the Third World countries as LDCs and/or the developing countries. In this study the terms Third World, LDCs, and Developing Countries are used interchangeably.

2 In this study 'Development' is used to indicate development in the Third World.

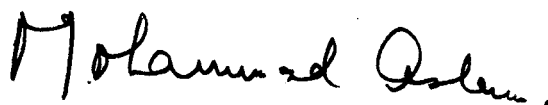
international co-operation in this area and its consequent emphasis on self-reliance as an alternative strategy for Development.

The Fourth and Concluding Chapter, while taking stock of its achievements, examines the reasons why Pugwash has failed to contribute its optimal in the field of Development, and suggests certain measures which must be taken by Pugwash if it is to maximize its contribution in this regard and live up to the ideals for which it was founded.

The study is mainly based on primary sources which include: The Proceedings of the Pugwash Conferences on Science and World Affairs, and the Pugwash Newsletter, issued quarterly by the Pugwash Continuing Committee, containing reports of Pugwash Symposia, Study Groups, and other allied Pugwash activities.

A Questionnaire was also circulated among leading Pugwashites to assess their views on the attitude and response of Pugwash to Third World problems. Of the eighty Pugwashites chosen, only a dozen from six countries responded. Few leading Indian Pugwashites were also interviewed. Most of the answers are reproduced in Appendix III. The Pugwashites have been identified by their countries as a commitment was given that their views would not be reproduced under their names.

I take this opportunity to express my deep sense of gratitude to Professor M. L. Sondhi, who encouraged me to undertake this study and ably guided me at every stage of the work, interaction with him was always stimulating and thought-provoking; to Dr P. J. Lavakare and Mr A. Parathasarathi, for giving me their valuable time and suggestions and keeping me posted with the latest material on Pugwash; to Dr E. D. Nag Chaudhuri, and Professor M. G. K. Menon, for their co-operation and help; to Mr Girja Kumar for obtaining the Proceedings of the Pugwash Conferences for the University Library at my behest; to Santosh Mehrotra for transcribing the interviews from the tape recordings and for reading the proofs.


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CHAPTER I
INTRODUCTION

THE GENESIS OF THE MOVEMENT AND ITS GROWTH :
CHANGING INTERESTS AND ATTITUDES

The relations between science and society have changed over the centuries. When modern science was born during the Renaissance, its first epoch was a fight for its life against an authoritarian and repressive society. After that fight had been won science released creative forces which began to shower innumerable blessings upon mankind. But gradually the negative aspects of science began to reveal themselves - the atomic bomb, the population explosion, the deterioration of the human environment - all these showed that the malfunctioning of the relations between science and society could lead to the very doom of mankind. The growing East-West tensions generated by the cold war leading to the maddening arms race and the proliferation of nuclear weapons portended a grim future.

Bertrand Russell was one of the first to voice concern against this alarming situation. At a peace conference held in London on 9 July 1955, he read out the opening lines of the now famous Russell-Einstein manifesto:¹

In the tragic situation which confronts humanity, we feel that scientists should assemble in conference to appraise the perils that have arisen as a result of the development of weapons of mass destruction...

The manifesto which attracted world attention and touched a sensitive chord in the peoples' mind, further declared:

We are speaking on this occasion not as members of this or that nation, continent or creed, but as human-beings, members of the species, man whose continued existence is in doubt....

Equally significant, perhaps, was the idea that scientists should take an active part in world affairs which the manifesto highlighted.

Russell was anxious that the manifesto be signed by scientists from various countries representing different shades of opinion. One of the first scientists to be approached was Albert Einstein, who signed it two days before his death. Subsequently, nine other leading world dignitaries - mostly nobel prize winners - signed the manifesto.

The prime action-proposal of the Russell-Einstein manifesto was the calling of a conference of world scientists to consider all the matters concerning and allied to nuclear dangers. This seemed to Russell to resonate with the call which Jawaharlal Nehru had given in early 1954 for the setting up of a Committee of Scientists to explain to the world the effect nuclear war would have on humanity. Russell therefore sought Nehru's support for such a conference when they met during the latter's visit to the UK in February 1955. Nehru responded enthusiastically.

cally to the idea and an agreement was reached during the next few months as Russell recalls in his autobiography that "the first conference between western and eastern scientists" would be held in New Delhi in January 1957.² Letters of invitation had actually gone out under Russell's signature to some 20 world-renowned scientists for such a conference. However, the Suez Crisis of October 1956 cropped up unexpectedly and made the logistical problems of holding the Delhi Conference so difficult that it finally had to be abandoned.

After seeking other locations and sources of finance for the conference, Russell accepted the offer from a Canadian financier, Cyrus Eaton, to host the first "Conference on Science and World Affairs" in his home village of Pugwash in Nova Scotia in Canada. It was thus that the Pugwash movement came to be born and to take its name.

The first conference took place in July 1957 at Pugwash, Canada, where 22 scientists from east and west met and talked personally and as individuals, about the problems of world peace and the threat posed to it by the already burgeoning nuclear arms race and particularly the testing of nuclear weapons. Since then some 26 Pugwash conferences and a large number of specialised symposia

² The Autobiography of Bertrand Russell 1944-1967,
(London, 1969), p. 80.

and working group meetings have been held.

What does Pugwash stand for and what has it achieved over the last two decades? At its birth and to some extent even today, Pugwash stands for the bringing about and consolidating of world peace, primarily by examining and highlighting the threats to peace stemming from the perverted use of development in science and technology. However, Pugwash's concern is really of wider scope; it is a movement concerned with all aspects of the interactions between science, technology and society, particularly, as they impinge on international relations.

People who have looked at the movement from a distance feel that Pugwash has been an important force in bringing about better understanding between east and west, particularly, in the 60's, and hence enhancing the maintenance of world peace. The former UN Secretary General, U. Thant, spoke about the careful attention given to Pugwash resolutions at the United Nations and about their influence on decision-making processes by national governments.³

3 For instance in his message to the 17th Pugwash Conference, U. Thant said: "Ten years is a very short period in the history of an international movement. Nevertheless, the Pugwash Conferences have succeeded in establishing themselves as a very important international forum where outstanding scientists who, though holding various ideological, political and religious views, are gathered in the goal to prevent thermonuclear war and to direct the success of science and technology towards peaceful purposes. The opinions expressed and the resolutions

Some people have gone further and attributed to Pugwash the few successes achieved so far in disarmament, such as the partial test ban treaty or the treaties relating to the military uses of outer space and the oceans. The precise magnitude of Pugwash's contribution to these major arms control measures may not be a matter on which there would be unanimity. However, it is well nigh indisputable that the Pugwash movement has stimulated scientists all over the world to think about problems of peace, world security and development, and has endeavoured to rouse the social responsibilities of scientists on these issues. Stemming from its original concern with the nuclear arms race, Pugwash's most sustained area of work has been in the formulation and analysis of the scientific and political aspects of treaties, agreements and other international instrumentalities aimed at bringing about nuclear disarmament. Most notably Pugwash played a key role behind the scenes in the conclusion of the 1963 partial test ban treaty which banned the testing of nuclear weapons in the atmosphere.

adopted at your conference receive the careful attention they deserve at the United Nations, as well as by national governments, and it would be no exaggeration to say that they often influence decision-making processes."

Quoted from Proceedings of the Seventeenth Pugwash Conference on Science and World Affairs, Ronneby, September 3-8, 1967, (London, n.o.), p. 78.

Pugwash also played a qualitatively similar role in the area of controlling the development and use of chemical and biological weapons (CBW),⁴ a problem it started studying in 1959 when no government was prepared to talk about it. A continuing study group on CBW, set up by Pugwash in 1961 has played a major part in analysing many of the complex scientific issues involved in the area and in drafting policy measures and practices for the control and reduction of such weapons.

Furthermore, Pugwash was in the forefront of initiatives to bring about a cessation of the Vietnam war. A. Parthasarathi maintains that for quite some time during the early years of the conflict, Pugwash was among the very few communication channels that existed between the combatants.⁵ Pugwash has also been amongst the very first bodies to draw attention to the horrors which "defoliation" strategies used by the US forces in Vietnam

4 For details see, Proceedings of the Fifth Pugwash Conference on Science and World Affairs, Pugwash, August 24-29, 1959, (London, n. d.). The entire conference was devoted to "Biological and Chemical Warfare." The chronology of the Pugwash Conferences (Appendix II) shows that this subject has been repeatedly discussed by Pugwash.

5 A. Parthasarathi, "'Pugwash' Conference on Science and World Affairs", Indian and Foreign Review, (New Delhi), vol. 13, no. 4, 1 December 1975, p. 18.

The chronology of the Pugwash Conferences (Appendix II) shows that the Vietnam issue has been repeatedly raised at the Pugwash Conferences.

were having on the total ecology of that country and the fact that the USA was using Vietnam as a testing ground for the then embryonic techniques of environmental warfare. This was repeatedly highlighted by Pugwash.

Pugwash has always had a great concern with regional conflicts. On the account of Parthasarathi: "Recognising the especially explosive nature of conflict in west Asia, Pugwash offered the Presidents of Egypt and Israel, after the 1967 war its good offices for informal dialogue among the combatants. Not accepted at that time, the offer was taken up after the October 1973 war. As a result, some five meetings of leading Egyptian and Israeli scientists have taken place in Paris under Pugwash auspices, and the informal, yet confidential atmosphere, has led to a better understanding of their respective position and to formulation of quite a few action proposals for reducing tension and bringing about lasting peace in the area."⁶

Pugwash's basic concern with world peace and maintenance of such peace started understandably with a concern with war and armaments. However, from the mid-sixties, Pugwash has been coming to realise increasingly that north-south tensions in the world were posing an

⁶ Ibid., p. 18.

Other regional conflicts have also received Pugwash's due attention; see Appendix ii, Chronology of the Pugwash Conferences.

equally important threat to world peace. Hence starting from 1964, and particularly the Udaipur Conference held in January of that year, Pugwash has been giving increasing attention to the development process in developing countries and the role of science and technology in that process.

Sustained pressure by developing countries within the Pugwash movement led to the organisation in September 1970 of a symposium on the theme, "What can scientists do for development?" Later that year a continuing study group on science and technology in relation to the development of developing countries was set up. During the last few years, this study group has identified a number of issues in the development area where Pugwash could give the lead.

As a result of a resolution adopted at the 1973 Pugwash Conference, a working group of specialists - technical, economic and legal - was convened in Geneva in April 1974 to draft a code of conduct on the transfer of technology.⁷ Adopted unanimously by the group, the "Pugwash Code" as it is now known, formed an important basis for detailed inter-governmental negotiations in the

7 For details see, Proceedings of the Twenty-Fourth Pugwash Conference on Science and World Affairs, Baden, Austria, 28th August - 2nd September, 1974 (London, n.d.), Draft Code of Conduct on Transfer of Technology, pp. 95-107.

Committee on Transfer of Technology of UNCTAD in July 1974 and April 1975.

Pugwash also organised a symposium on "self-reliance in alternative development strategies",⁸ in Dar-es-Salaam, Tanzania, in June 1975 with a view to exploring the extent to which various developing countries have been able to follow a self-reliant development pattern. Basically the symposium agreed that self-reliance does not mean autarchy or isolationism, that its focus is on building up, in developing countries, the capacity for autonomous decision-making and goal-setting; and, most importantly, perhaps, self-reliance can be a meaningful ingredient of a development strategy only if the primary goal of that strategy is meeting the minimum needs of the entire population in as short a time as possible. The theme of self-reliance was discussed further both at the 25th Pugwash Conference at Madras and the 26th Pugwash Conference at Muhlhausen, where it has also been decided to hold an international workshop on Guidelines for International Scientific Cooperation for Development in India

⁸ For details see, Report on the Dar-es-Salaam Symposium on "The Role of Self-Reliance in Alternative Strategies of Development" by A. Parthasarathi, in "Proceedings of the Twenty-Fifth Pugwash Conference on Science and World Affairs, Madras, India, 13th - 19th January 1976, (London, n.d.), pp. 148-157.

in early 1977.⁹

Thus we find that Pugwash starting from its original thrust against nuclear proliferation has travelled a long-way. It has tried its best to be a movement concerned with all aspects of the interaction between science, technology and society, particularly as they impinge on international relations. Its main themes have been peace, world security, Disarmament, Development and rousing the social responsibilities of scientists. However, Development is an area where Pugwash's attitude is still vacillating. A sizable section of Pugwash scientists, coming from advanced industrial societies, have yet to be fully convinced that under-development in the Third world is as much a threat to world peace as is the proliferation of nuclear and other dangerous weapons. Many who realise this, are not fully decided whether Pugwash is the right forum to tackle this issue. For these reasons, as we shall subsequently see, the efforts as well as the contributions of Pugwash in the field of Development have been sporadic rather than consistent.

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See, Statement of the Council of the Pugwash Conferences on Science and World Affairs on the 26th Pugwash Conference, held in Muhlhausen in the German Democratic Republic, 26-31 August 1976, p. 12.

CHAPTER II

PUGWASH AND THE THIRD WORLD I : ACCEPTANCE OF A REALITY

As mentioned earlier Pugwash initially did not think it necessary to concern itself with problems of the Third world - they appeared to be problems of economics and politics rather than of technology and science. But gradually, about the mid-sixties there was a growing consensus that Pugwash should become more systematically concerned with problems of development, because the gap between the more and the less developed countries - MDC's and LDC's - is as much a threat to peace as is the arms race between the two camps within the MDC's. As Feld rightly points out "the problems of development, resources and world security are of course inextricably intertwined."¹ The same point was made more directly a few years ago by Robert MacNamara when he said "security is development, and without development there can be no security. A developing nation that does not, in fact, develop, simply cannot remain secure for the intractable reason that its own citizenry cannot shed its human nature."² To take the logic further, in the apt words of B.M. Udgaonkar "This organic relationship

1 B.T. Feld, Editorial, "A new Ball Game"? Bulletin of Atomic Scientists (Chicago), March 1976, p. 6.

2 Robert S. MacNamara, Essence of Security (London, 1968), p. 149.

between socio-economic development and security implies that any impediment to the development of a country is perceived by it as a threat to its security and such impediments therefore constitute a potential threat to world security.³ The gradual realization of the complex interrelation between development and security, and the increasing participation of Third world scientists in Pugwash, who impressed on their colleagues the urgency of the problem, made Pugwash increasingly realise, that north-south tensions in the world were posing as important a threat to world peace as the east-west tensions generated by the nuclear arms race. Hence, starting from 1964, and particularly the Udaipur Conference, held in January of that year, Pugwash has been giving increasing attention to the development process in LDCs and the role of science and technology in that process.

Udaipur to Addis Ababa

A glance at the chronology of the Pugwash Conferences (Appendix 11) will show that problems of development in the Third world did figure on its agenda even before the Udaipur

³ B.M. Udagankar, "Development, Resources, World Security and New Directions for International Scientific Co-operation : Implications for a Code of Conduct for Scientists", Background Paper at the 26th Pugwash Conference, Muhlhausen, GDR, 26-31 August 1976.

Conference, as for instance the Seventh Conference in Stowe discussed "Assistance to Developing Nations" in Working Group E, and the Tenth Conference in London agreed that "Science in aid of developing countries" would be one of the important themes of future Pugwash activities. Yet it can be safely assumed that Pugwash for the first time seriously devoted its energies to problems of development in LDCs at its Twelfth Conference held in Udaipur, India, from January 27 to February 1, 1964.

Before Udaipur, the deliberations of Pugwash on development were at best peripheral, and consequently its recommendations superficial - they smacked of a benign and paternal attitude. Concern was expressed at the plight of LDCs and scientists as individuals and as a community, as well as the MDCs, were called upon to provide scientific, technological and economic assistance to the LDCs as a matter of duty and necessity. Thus the statement of the Seventh Pugwash Conference runs: "We express our support for greater international co-operation in assistance to developing nations. Such co-operation could help to reduce world tensions, to strengthen peace, and to further disarmament. Disarmament would in turn improve the climate for international co-operation in this and other fields and make available additional funds which could and, we hope, would be used to increase the assistance to developing

nations."⁴ Appeals were also made for both bilateral and multilateral assistance, attention was drawn to the peculiar nature of problems of different developing countries, and scientists from diverse fields were called upon to undertake research exchange programmes to make an indepth study of some of the problems of the LDCs. It was also felt that scientists have a definite role to play in the development of assistance programmes and therefore it was suggested that "we place special emphasis on this subject in one of our subsequent conferences. We believe that this conference should include a large participation of representatives from developing nations."⁵ Thus before Udaipur, a very broad and general sort of a concern was expressed on the sad plight of LDCs and it was realised that Pugwash must in some future time devote more of its energies to discussing concretely the issues involved and suggesting corresponding solutions.

Although the theme of the Udaipur Conference was "Current problems of disarmament and world security" the emphasis was much more on LDCs and on the interrelation between development and security. The number of participants from LDCs was higher than at previous conferences,

4 Statement of the Seventh Pugwash Conference, Stowe, September 5-9, 1961, reproduced by J. Rothblat, Scientists in the Quest for Peace (USA, 1972), Appendix viii, See V, p. 180.

5 Ibid., p. 181.

although not as high as the Committee wished; out of a total of 56 participants 11 came from countries which are usually classified as "developing". Here for the first time it was stated in very clear terms "The two problems facing mankind today are the achievement of disarmament and the elimination of poverty. Both are of special concern to scientists.... Both require for their solution a new sense of international responsibility; members of each nation must acknowledge that their fate is bound up with the security and prosperity of the members of all other nations."⁶ Two of the four working Groups were devoted to discussing problems of the LDCs. In Working Group 3, which discussed the relation between the economic problems of LDCs and world security, it was pointed out that one-fourth or even one-fifth of the MDCs total saving in military expenditure as a consequence of general and complete disarmament could be expected roughly to double the present rate of economic growth of the LDCs. It was however stressed that the promise of more aid at the time of disarmament must not be made an excuse for not giving more aid now. It was also stressed that economic aid should not be linked to military and political conditions.

6 Proceedings of the Twelfth Pugwash Conference on Science and World Affairs, Udaipur, January 27 - February 1, 1964 (London, n.d.), Statement, See B, p. 8.

Advanced nations were called upon to contribute jointly to capital funds and work jointly on major projects (e.g. dams) in the LDCs, and they were also requested to send joint teams of experts.

The trading position of the LDCs was extensively discussed and it was felt that it had suffered gravely from the deterioration in their terms of trade over the past decade. Advanced countries were called upon to help the LDCs through more favourable terms of trade. The forthcoming United Nations Conference on Trade and Development was welcomed and it was asked to allow participation to all nations regardless of their being members of the United Nations.

Working Group 4, discussed in great detail the role of science and technology in developing countries. Some of the principal questions posed were - How to make international investments in development for the creation of a better world? How to produce in poor countries, a sufficient and growing number of well-qualified scientists and technicians? How to organise higher education? How to prevent the loss of scientists from poor countries to rich countries? How to improve agriculture and food production? Grave concern was expressed at the situation where more than half the human race was living in misery and degradation at a time when modern science and technology were transforming the conditions of human life and providing the instruments for ensuring a brilliant future

for all mankind.

Some of the suggestions and recommendations which emerged after intense deliberations were summarised as follows:

1. Irrespective of disarmament each MDC should consider contributing 1% of its gross national product towards the development of LDCs - 5% of which should go to the advancement of science and technology.
2. The scientific societies in the MDCs should set up committees to advise and assist international agencies concerned with aid and development. All countries should seek to encourage a feeling of responsibility amongst their scientists towards the advancement of science in the LDCs.
3. The resources of the UN and its Specialized Agencies should be increased by providing them with direct sources of revenue outside the jurisdiction of national states such as could be derived from taxation on space-traffic and communication, the resources of oceans outside the limits of national jurisdiction, including minerals from the ocean bottom, and from Antarctica.
4. Aid should be removed from the context of cold war, firstly, by international agreements which would ensure that an increasing proportion of aid for development would be given through the multi-lateral agencies of the UN; and secondly by common international enterprises for

LDCs, involving scientists and technicians from East and West, North and South.

5. Education is of supreme importance for LDCs and should be given very high priority. The scientific attitude should pervade the whole of the educational process in the schools and the importance of applied as well as pure science should be stressed.

6. The teaching of science in LDCs could gain much benefit from a study of new methods now being applied in the advanced countries.

7. For the LDCs, their own research is an indispensable instrument for their advancement and no investment of resources is so profitable. It should be increasingly supported on a generous scale, the limitation being only the availability of competent people to do the work.

8. In the early stages, particular attention should be given to researches important for the countries economic development especially those related to its natural resources and their effective exploitation. Basic research not directed to immediate practical ends should also be supported.

9. The programme for research in a LDCs should be under the control of a Research Council or Academy provided with financial resources and largely guided by scientists, engineers and technologists..

10. Much of the research in a country should be conducted within its universities. If specialized institutes are established, they should be located near a university and with close and friendly connections with it; and with a mutual interchange of staff and students for teaching and research.

11. A variety of forms of exchange between staff and research students in universities and other institutions of higher learning in the MDCs and LDCs should be adopted to their mutual advantage.

12. The loss of scientists from LDCs by immigration to the advanced countries should be stopped by reducing the gap in the conditions of work between scientists in rich and poor countries, and by guaranteeing suitable positions to scientists being trained abroad on their return.

13. International co-operation for aid to LDCs could be particularly appropriate and effective in distinguishing and analysing the major problems involved in the development of a country or region. It is suggested that an Institute for Resources Analysis should be set up within the UN family as a semi-autonomous commission or institute. It would be responsible for identifying the major problems, for organising competent groups from universities all over the world to analyse them, and for making recommendations for action.

14. The national commissions for UNESCO should be

strengthened by the inclusion of more natural scientists and engineers than they commonly contain at present.

15. The World Health Research Centre, whose establishment is now under consideration by WHO, should consider undertaking among its other responsibilities research on major health problems of worldwide significance, including the development of methods to obtain reliable information on the extent of disease all over the world, its consequences, and the social and environmental factors involved.

16. The UN and its agencies should develop consulting services, reference collections of technological information, and a central exchange to publicize the needs of LDCs for specific items of knowledge.⁷

The satisfaction of having devoted sufficient amount of its energies to Third world problems at the 12th Conference at Udaipur made Pughwash completely ignore the same at the 13th and 14th conferences, to come back once again to them with a vengeance at the 15th Conference held at Addis Ababa, Ethiopia, from December 29, 1965 to January 3, 1966. As if to compensate for its lapses at the 13th and 14th conference the 15th was totally devoted to discussing the problems of the Third world. There was a larger participation of Third world scientists - over

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Report of Working Group 4, summary of suggestions and recommendations, *ibid.*, pp. 41-43.

25 compared to 11 at Udaipur. Under the theme "Science in Aid of Developing Countries" the conference divided itself into five working Groups to discuss the following topics - education in developing countries; organisation of scientific institutions and research in developing countries; the scientific approach in aid to developing countries; specific problems of developing countries, and problems of security of developing countries.

The tone of the conference was set by Emperor Haile Sellassie's inspiring inaugural address "... In a world made strong and prosperous through the force of man's intellect, it is a further challenge to that intellect that science be charged to solve the unique problems of development; for all mankind must share in the better life which progress has made possible.... It is this challenge which must be the impetus and the inspiration of your deliberations here."⁸

With the greater participation of Third World scientists there was a more thorough discussion of concrete issues and some excellent background papers were presented which helped the various working Groups to study

⁸ Proceedings of the Fifteenth Auewash Conference on Science and World Affairs, Addis Ababa, Ethiopia December 29th, 1965 - January 3rd, 1966 (London, n.d.), Proceedings of the Formal Opening Ceremony, Inaugural Address by His Imperial Majesty, Haile Sellassie I, pp. 71-72. DISS

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many problems facing the developing countries in great detail.

Working Group I dealing with "Education in Developing Countries"⁹ felt that economic development in any country cannot proceed satisfactorily unless education, science and technology are advancing simultaneously. To rectify the chronic shortage of school teachers, the Group recommended a massive programme for the training of science teachers with financial help from developed countries, international organizations and foundations. It was felt that ideally, all local professional and technical personnel should generally be trained in the country or region concerned, so that they should not get out of touch with the environment in which they would be working later. The Group also stressed the need to improve the salaries and conditions of service of teachers. It was felt that provision should be made for a rapid growth of science teaching in schools and efforts should be made to draw a higher proportion of science students. Other suggestions made in this context at Udaipur were reaffirmed. It was also realised that a very important objective of the educational system of a developing country is to in-

9 For details see, report of Working Group I, *ibid.*, pp. 29-34.

culcate a questioning, critical and experimental attitude to all knowledge so as to prevent the unquestioned adoption of existing ideas, and lead to the generation of new ideas vital for the solution of all the novel problems facing a developing country. Since this would largely depend on the teachers, it was suggested that their training should be very carefully planned to foster the spirit of vigorous independent enquiry. It was however cautioned that in this process the universities in LDCs should not become "ivory towers" unresponsive to the needs and conditions of their respective surroundings.

Working Group 2, dealing with "organization of scientific institutions and research in Developing Countries",¹⁰ felt that since the LDCs are at widely differing stages in advancement of science, it was not possible to provide ready made plans which would suit all countries, they would have to be worked out and fought for in the situation prevailing in each country. In considering the planning and coordination of scientific research in LDCs, the Group felt that an advisory body at the highest level of government, was necessary. This body it was suggested, should consist of representatives of government, industry, academies and universities, and research institutes, it should have a high proportion of active natural and social scientists. It was felt that much

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For details see, Report of Working Group 2, *ibid.*, pp. 35-42.

can be gained by the development of a team spirit and a multi-disciplinary approach. It was suggested that in the early stages of development, efforts should commonly be directed towards the solution of urgent national problems, which should be selected only after a realistic appraisal of the resources available for the execution of the work. The Group emphasised the importance of the integration of science and scientists into governments. It was felt that the scientist by his participation, could help in creating a better understanding in high governmental circles of the role of science, help in formulating national plans, and, in addition, acquire some insight into the problems of government.

Working Group 3, dealing with "Scientific Approach in Aid to Developing Countries",¹¹ stressed that all aid should contribute to increasing the self-reliance of the receiving country and its capacity for independent growth. Aid, it was felt, should not involve any interference in the internal affairs of the country. It should not be used for political advantage by the donor nations nor should competition in aid be used as a means of exerting political pressure by the receiving nations. It was felt that aid programmes should be planned to safeguard

¹¹ For details see, report of working Group 3, *ibid.*, pp. 43-48.

the best aspects of the indigenous culture and technology so that a dull standardization of cultural patterns may be avoided. In order to implement these principles, the Group made a number of practical recommendations, including greater support for the work of the UN and its agencies, particularly ECOSOC's Advisory Committee on the Application of Science and Technology in Development; better organization in LDCs for the scientific survey of their needs; and formulation of requests for aid through a national planning authority and a scientific advisory council. The scientific communities of all countries, were called upon to keep aid mechanisms under review, and to assist in finding highly qualified scientists to do this. It was suggested that further discussions of the problems of developmental aid be encouraged through working groups on this topic in forthcoming Pugwash Conferences and through the creation of study groups in this field.

Working Group 4, dealing with "Special Problems of Developing Countries"¹² felt that economic assistance from the developed to the developing countries, however, important, taken alone can have only marginal effect, and that the rate of growth in LDCs will remain largely dependent upon ^{their} own determination and effort. It was therefore suggested that both in planning for economic development and in implementation of the plan, scientists

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For details see, Report of Working Group 4, *ibid.*, pp. 49-58.

should play a far greater role. The Group apprehended a grave danger of the broadening of the gap between the growing population and the production of food in the developing countries, and suggested the harnessing of all modern mechanisms of agricultural production as well as augmenting local supplies by food aid from developed countries which have surplus production of food. Concern was expressed on deficiency of proteins in the diet which causes grave diseases and reduce physical and mental activity. It was suggested that this could be mitigated by increasing the productivity of protein-rich crops, improving the quality of plant proteins by addition of synthetic amino acids, and by cultivation of micro-organisms not only in familiar media but also in petroleum and coal products. It was realised that the development of water resources is important for agricultural and industrial growth and it was therefore suggested that scientists should play an increasing role in the investigation of water supply potentials, and water management. Natural resources, it was felt, must not only be developed but also conserved; it was consequently suggested that scientific research and assistance in preparing and managing conservation programmes should be encouraged.

Working Group 5, dealing with "Security Problems of Developing Countries,"¹³ felt that the security of

¹³ For details see, Report of working Group 5, *ibid.*, pp. 59-66.

LDCs is gravely endangered by acts of interference, covert or overt, in their internal affairs, as well as by any form of colonialism. Many LDCs have frontier problems as a result of the division of tribes by boundaries drawn by the colonial powers. It was suggested that every encouragement should be given to the peaceful settlement of such disputes. Though the appropriate scale of armed forces in a developing country depends upon local circumstances it was felt to be clearly necessary that each country give economic development first priority by limiting armaments to the minimum. Even a small defence expenditure it was felt, is a serious burden to a developing country. It drains financial resources, especially, foreign exchange and makes demands on the limited reservoir of technically trained manpower. Hence it was cautioned that any considerable expenditure on the armed forces is liable to threaten national development plans and bring about a risk of inflation. The group felt that the big powers, acting in concert with LDCs through the UN in conformity with its charter can play a crucial role in helping to resolve disputes, in stopping local conflicts and in reduction of the burden of armaments in LDCs. Though the Group recognized the great value of regional organization for promoting peace, it, however, believed that the UN rather than regional organizations should provide collective security.

Thus we find that at Udaipur and more particularly at Addis Ababa Pugwash addressed itself to the problems of the Third World in real earnest. The range of problems discussed was fairly comprehensive. Whereas at Udaipur, one still notices at times, that, both the perception of problems, and the solutions suggested, appear rather simplistic, taking the essential goodness of human nature too much for granted; at Addis Abba we definitely notice a qualitative change both in the perception of the problems - which are more concretely pin pointed, and the solutions suggested - which for their implementation, though still relying on the cooperation of advanced countries, suggest a lot that the LLCs can themselves do to put their own house in order.

The preceding discussion points to the pragmatic adjustments of the Pugwash movement to the pressing requirements of the Third World societies. As far as it can be inferred from the available evidence this was not a spontaneous development. Scientists from advanced countries tended to induce caution in defining the scope of the creative potential of the world scientific community for transforming the position of the underprivileged section of humanity. To recall the words of J. D. Bernal, "The scientist as citizen is not in the first place a scientist, only in the second. In the course of discussions in these and other movements (including Pugwash)

he becomes aware that it is necessary to have a unitary outlook, that he cannot be torn apart by the contradictions between his science and his duty. He sees a world in which the use of science has become the dominating factor. Mankind cannot progress, cannot even exist today without science. However, far from giving him a sense of power, it emphasises his awareness of his present weakness and futility".¹⁴ The mainstream of enquiry among the Pugwash scientists was oriented towards the problems of security and survival of the advanced countries. The pragmatic adjustments to the requirements of the developing world did not add up to a new range of internalised elite values, as far as the scientists of the advanced countries were concerned. Third world scientists would continue to urge the need for adoption of a new set of goals and functions by the international scientific community. The hierarchical authority within Pugwash would continue to emphasise its commitment to scientific values but take its own time to become acclimated to the shift in the focus of discussion on development problems.

14 J. D. Bernal, "The Social Function of Science : After Twenty-five Years" in M. Goldsmith and A. Mackay (eds.), The Science of Science (Penguin, 1966), p. 285.

CHAPTER III

PUGWASH AND THE THIRD WORLD 2 : ADJUSTING TO THE REALITY

By the time Pugwash reached Addis Ababa it had realised the close interrelation between development and security and hence it chose to make 'science and development' a recurrent theme of its subsequent activities. Not 'always' paying it the attention it deserves the Pugwash conferences after Addis Ababa have nevertheless invariably included some aspects of 'science and development' on its agenda. Attempts have also been made to cover up lapses in this regard by discussing problems of development in the Less Developing Countries (LDCs) in other allied Pugwash forums like the Symposia, Study Groups, and regional Pugwash Conferences.

Having discussed problems of LDCs so extensively at the 15th Conference at Addis Ababa Pugwash chose to take a respite from them at 16th Conference. However, about this time the first regional Pugwash Conference of scientists in South-East Asian countries was held in Melbourne from January 23-27, 1967. It was attended by 26 scientists from nine countries. The theme of the conference was "Scientific, Technical and Industrial Development in South-East Asia",¹ and the programme

1 For details see, statement from the First South-East Asian Regional Conference, held in Melbourne, January 23-27, 1967, reproduced by J. Rothblat, Scientists in the Quest for Peace (USA, 1972), pp. 265-271.

envisaged three main topics for discussion: (a) definition of crucial areas in which the application of science and technology will most rapidly improve living standards and prerequisites in these areas; (b) problems of security and their effect on the development of science and technology; and (c) education and training; role of tertiary institutes; the question of developing a technician force. Food sciences and technology in LDCs was also discussed by one of the working Groups. The main weakness of the conference was the absence of scientists from several countries in the region, particularly China and Vietnam.

The 17th Conference held at Ronneby, Sweden, September 3-8, 1967 discussed the problems of LDCs under the heading "Education, Technology and Development" in Working Group 5.² The main focus of the discussions was on the acute shortage of food in LDCs on the one hand and the rising population on the other, the problem of "Brain Drain" and the ways and means of controlling it, the sad plight of educational systems and research, the need for educational planning and research organisation, and multilateral and bilateral aspects of technical assistance programmes and transfer of technology. Both the

² For details see, Proceedings of the Seventeenth Rönneby Conference on Science and World Affairs, Rönneby, Sweden, September 3-8, 1967 (London, n.d.), Report of Working Group 5, pp. 57-65.

discussion of the problems as well as the suggestions offered were largely repetitions of what had been said earlier at Udaipur and Addis Ababa, and this was soon realised by the Conference but "it was felt to be of great importance to reiterate these proposals and urge continued interest in them."³

The 18th Pugwash Conference was held in Nice, France, from September 11-16, 1968. Working Group 4, discussed the "Scientific and Technological Manpower Problems in Developing Countries."⁴ Among other things it tried to answer the question - what is the best way in which the developing areas of the world can produce rapidly a sufficient and growing number of well-qualified scientists and technologists to meet the demand of development? The Group was of the view that at several Pugwash Conferences in the past, important and useful suggestions had been made in the Working Group dealing with development which unfortunately remained on paper only, thus the Group urged the Continuing Committee to take note of this and set up a Committee which would itemize the recommendations that had been made and would be made in the future and attempt to follow these up with appropriate agencies. The Group also repeatedly emphasized that assistance from the more developed countries (MLCs) to the LDCs has thus far been

³ Ibid., p. 64.

⁴ For details see, Proceedings of the Eighteenth Pugwash Conference on Science and World Affairs, Nice, France, September 11-16, 1968 (London, n.d.), Report of Working Group 4, pp. 22-28.

quite limited and given the present state of international affairs it would be difficult to obtain a substantial increase in this already small effort. "It is thus becoming increasingly clear that the developing nations will, to a great extent, have to depend on their own resources and abilities and will have to lift themselves up through their own efforts."⁵ This, it was felt would also help to build self-confidence and self-esteem in the scientific community of the LDCs. It was suggested that Regional Symposia dealing with specific and concrete problems of a region should be encouraged. The Group emphasized that while there was a great deal of talk about co-operation between the MDCs and LDCs it was perhaps being overlooked that much could be gained by co-operation among the LDCs themselves.

Working Group 5 of the 19th Pugwash Conference discussed "Modern Science and Developing Countries."⁶ Three problems, felt to be of extreme interest for the LDCs were discussed in some detail: inadequate food supplies and malnutrition, population growth; and water

5 Ibid., p. 25.

6 For details see, Proceedings of the Nineteenth Pugwash Conference on Science and World Affairs, Sochi, USSR, October 22-27, 1969 (London, n.d.), Report of Working Group 5, pp. 34-40.

supply, particularly in arid lands. The relative roles of protein and calorie deficiency in the LDCs was discussed and the interdependence and importance of both was recognized. The possibility of irreversible damage to children's mental development caused by protein deficiency in early age, was considered as calling for further study. The favourable result of the introduction of new high-yield strains of cereals was noted, but so were the complex problems that have to be solved to make proper use of the potentialities of these crops, such as fertilizer supply, pest control, marketing distribution, etc. It was pointed out that all these techniques will have to be developed in the country itself and could not be imported. The problems of developing contraceptive methods adequate for use in LDCs were discussed and the need for testing procedures fast enough to permit application in the next decade was stressed. Regarding water supply, one point that was felt to have been overlooked was the need of the LDCs to acquire the technical infrastructure necessary to take utmost advantage of the programmes on development of water resources prepared by the international agencies, and the need of Jugwash playing a role in this field was stressed. With the idea of supporting research by scientists and technologists of LDCs in their own academic institution and laboratories, the working Group suggested the establishment of an International Foundation (or Fund)

for Scientific and Technical Development. This, it was felt would check the "Brain Drain", mobilize the abilities of many scientists and engineers for national development; and improve the quality of scientific and technical education. The Group recommended the holding of Symposium on 'Science and Development' prior to 20th Pugwash Conference as it was felt that Pugwash effort in this area was haphazard and limited merely to discussions in one of the Working Groups at Conferences.

Out of the last suggestion of Working Group 5 of the 19th Conference grew a Symposium on "Science and Development" held at Stanford from September 1-4, 1970. The participants, 30 natural and social scientists from MDCs (18) and LDCs (12), met to consider the possibilities of a systematic activity of Pugwash in this area. Representatives from UNESCO, UNDP, IOAC, and NSF were present and took active part in the discussion. The tentative agenda included - reports on present efforts of scientists from MDCs in the development field; contribution by scientists from LDCs as to what they see as the main problems of development in their own countries, particularly, from the point of view of possible assistance by scientists from MDCs; discussion of new ways in which the international scientific community and the Pugwash movement in particular could contribute to development.

In the first part: present efforts of scientists in development, reports were presented by Centers of Excellence in Research founded under Pugwash auspices and other organizations devoted to the problems of development. Dr Adhiambo presented a report of the history of the International Center for Insect Physiology and Ecology, Nairobi, Kenya. Victor Rabinowitch in his report on the US National Academy of Science Programmes, described its involvement in development programme where Academy - sponsored workshops, symposia, and a number of meetings brought together scientists from the US with those from LDCs enabling major workshops to be held in Brazil, Indonesia, Peru, the Philippines, and Taiwan. Dr Roger Revelle in his report on the International Science Foundation described the purpose of the ISF as one of promoting science research and science education in LDCs. Grants would be awarded to individuals or groups of scientists in LDCs, for research, preferentially of a nature relevant to the economic needs of the area in which it is to take place. (All the three projects discussed above are the result of interaction among scientists at Pugwash Conferences).

Reports of the United Nations Development Programme (UNDP), the Industrial Development Research Center (IDRC), Ottawa, Canada, and Ford and Rockefeller Agricultural Development Programmes, were also presented by their representatives, in which their involvement

with development programmes and the problems they were facing were discussed.

Then several scientists from LDCs presented papers dealing with specific problems hindering development in their own countries as well as general problems encountered in implementing developmental programmes. Ways and means of redressing these problems both with the help of local scientists and international scientific community were also highlighted. A lively general discussion followed the presentation where suggestions like - Pugwash should serve as an international scientific "Lobby" for development; meetings should be arranged between Pugwash - based groups and specialized UN agencies, were made. The importance of social change for technical economic development was emphasized by many participants. It was clearly realised that technological change can substitute for social change only to a limited extent.

It was suggested that Pugwash should: (a) sponsor conferences and symposia, particularly, "travelling symposia" convening in different LDCs to discuss topics of particular importance to an area. (b) Establish institutions, lobbying groups, and clearing houses. (c) Undertake service functions, especially in the field of communications. A specific recommendation of the symposium to the Pugwash Continuing Committee was to establish a Standing Research Group to develop Pugwash

Programme in Science and Development.

Within five days of the Stanford Symposium was held the 20th Pugwash Conference which discussed problems of LDCs in Working Group 4 under the heading "Science, Technology and Development".⁷ Besides discussing the goals and strategy of development, and contributions which science and technology can make to development, where nothing specific or original was said, the Group took stock of the deliberations of the Stanford Symposium and promptly implemented one of its recommendations by setting up a Study Group on Science and Development.

"The task of the Study Group will include preparation of material for discussions at the Annual Conferences, organization of symposia, and setting up of panels to consider specific problems in greater depth than is possible in short conferences."⁸ A list of topics to which the Study Group could turn its early attention were outlined as follows: (a) A panel on ways of increasing the viability of natural product industries likely to be threatened by the development of synthetics; (b) a travelling symposium on the search for new and more

7 For details see, Proceedings of Twentieth Pugwash Conference on Science and World Affairs, Fontana, USA, September 9-15, 1970, (London, n.d.), Report of Working Group 4, pp. 36-42.

8 Ibid., p. 40.

suitable contraceptive procedures for specific developing countries; (c) collaboration with the group engaged in preparing an appeal to scientists to organize an Association of "Scientists for Development".⁹ The Group endorsed in principle the views expressed in the draft of a Manifesto prepared by this group. It felt, however, that references to a specific institution (ISF) and appeals for contributions to it should be omitted. The report of the Symposium on Protein Deficiency, organized by the F.G.S. Pugwash Group was received with great interest and the Continuing Committee was urged to support rapid implementation of its recommendations. Substantial coordination with the forthcoming UN Stockholm Conference on the Human Environment was called, for the subject was felt to be closely interwoven with development.

At the 21st Pugwash Conference working Group 5, discussed "Economic and Technological Co-operation Amongst Nations, in Particular for Development".¹⁰ The crucial importance of economic and technical co-operation among the MDCs and LDCs was stressed and it was felt that such co-operation must not be accompanied by domination or the exertion of pressure by the MDCs. It was suggested

9 For details see, Manifesto - drafted by Buzzati Traverso and Abdus Salam, *ibid.*, pp. 41-42.

10 For details see, Proceedings of the Twenty-First Pugwash Conference on Science and World Affairs, Sibiu, Romania, August 26-31, 1971, (London, n.d.), Report of working Group 5, pp. 57-61.

that steps should be taken to increase the involvement of LDC scientists in the Pugwash movement, including the activation or formation of Pugwash groups in Latin America, Africa and South-East Asia. Once again grave concern was expressed at the rapid increase in the population in the LDCs. It was suggested that biological and medical research on newer contraceptive methods should therefore be intensified in MDCs and LDCs. Since higher apes are the only relevant experimental animals for such work, it was felt that the establishment of an international centre for primate breeding and primate reproductive biology in the Congo should be explored. However, it was felt that with the contraceptive methods now available, a significant decrease in unwanted births can be achieved. Knowledge of these methods should be spread and their use made available without cost. In the meantime it was suggested that abortion should be legalized as an ancillary procedure. The Group felt that the present concern with the quality of the environment could have certain undesirable effect on the LDCs. Some of these effects are likely to be the movement of polluting industries from MDCs to LDCs, the raising of barriers to agricultural and food products of LDCs, the increased cost of production to these countries resulting from efforts to meet environmental standards set by MDCs, the higher capital cost of industrial equipment manufactured in MDCs, and

the diversion of resources from aid to LDCs into expenditure on the environment in the MDCs. It was therefore found desirable to promote the formation of an independent institute, on lines of SIPRI, to carry out objective studies on environmental problems, especially as they impinge on the LDCs. It was also recommended that a study group be appointed to review the continuing effectiveness of established international governmental organizations and agencies dealing with science and technology in development as Pugwash is one of the few forums that could make an independent review of such world problems.

At the 22nd Pugwash Conference two of the eight working Groups were devoted to discussing problems of LDCs. Working Group 4, discussing "Security of Developing Nations"¹¹ felt that the security of LDCs appears to be directly related to the global international situation. The conduct of MDCs pursuing their interests, strategic and economic, in LDCs was found hard to change. But it was felt that only under conditions of mutual respect, and agreement between MDCs and LDCs can development proceed in desirable directions. The expense of buying arms could be then channelled into programmes for

11 For details, see Proceedings of the Twenty-Second Pugwash Conference on Science and World Affairs, Oxford, England, September 7-12, 1972 (London, n.d.), report of Working Group 4, pp. 71-74.

socio-economic development. The Group thus called for a code of conduct in the sale of arms by the producers. It was felt that such arms sales must be open to international scrutiny. Policies of racialism and colonialism in Africa were strongly condemned. The LDCs were called upon to settle these disputes through bilateral negotiations. Concern was expressed at the continuing threats to the security of Latin American countries from the activities of industrial monopolies owned and controlled by external interest. It was agreed that in spite of the lack of effectiveness of the UN in achieving all its purposes, it still remains one of the best channels to settle differences between countries; and that the UN resolutions for peace and world security should be sustained and implemented.

Working Group 5 dealing with "Problems of Developing Nations"¹² discussed barriers to development originating in unfavourable socio-political conditions such as: (a) Lack of understanding, by the political leadership of many LDCs, of the importance of making full use of their existing resources of scientific and technological competence, and the need to foster broader education and training of local scientific and technological cadres; (b) policy of many foreign enterprises of

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For details see, Report of Working Group 5, *ibid.*, pp. 75-80.

importing technology and research capacity, rather than contributing to the technological advancement of the LDC in which they operate; (c) the pursuit by some MDCs of policies which fail to foster, and in some cases even slow down, technical and even economic progress in the recipient country; (d) lack of communication channels among scientists and development specialists in the LDCs which can lead to wasteful duplication of efforts, and a sense of isolation; (e) large LDC expenditures for armaments, reducing resources available for development purposes. It was recommended that greater emphasis should be placed in Pugwash on problems of development and vigorous action taken on such tasks as: (a) critical analysis of the new UN World Plan of Action for the Application of Science and Technology for Development; (b) study of the main economic and socio-political barriers to development and the potential role of science and technology in overcoming these; (c) steps to encourage scientific bodies and individual natural and social scientists and technologists of all countries to devote more efforts to solving the problems of development.

The 23rd Pugwash Conference is significant for its emphasis on self reliance and its deliberations on transfer of technology from the MDCs to the LDCs which subsequently lead to prompt follow up action in the drafting of a Code of Conduct on Transfer of Technology.

Working Group 4, considering the "Social, Economic and Political Barriers to the Application of Science and Technology"¹³ felt that the forms in which technology is introduced into LDCs tends to support primarily the interests of capital and technology suppliers in the MDCs. Its impact upon building up the development potential of the LDCs, particularly in regard to the application of science and technology to development, is often undermined by factors such as the choice of inappropriate technologies, recommendation of capital intensive technologies in countries with unemployment problems, and the tendency of foreign investors and technology suppliers to concentrate all their research and development in their home countries. The financial terms and restrictive clauses imposed by MDC sellers on the LDCs in technology purchase contracts impose a heavy financial burden upon the LDCs. It was stressed by the Group that the scientific and technological community in the MDCs should insist that, at least, the norms applied in the technology trade transactions between MDCs should be enforced in technology trade transactions between the MDCs and LDCs. It was felt

13 For details see, Proceedings of the Twenty-Third Pugwash Conference on Science and World Affairs, Amiano, Finland, 30th August - 4th September, 1973 (London, n.d.), Report of Working Group 4, pp. 47-56.

that, there is an urgent need for a code of conduct to govern international technology transactions which would take into account the legitimate rights of the proprietary technology owners and the needs of LIC technology buyers and would be enforced by all governments. It was further felt that, its elaboration, at international level within the UN family, hitherto opposed by certain key technology producing countries, cannot succeed unless it receives the support of the international scientific community.

To implement this recommendation, a group of fifteen specialists from thirteen countries met in Geneva on 1-5 April 1974. The members of the group with vast experience and knowledge in the field of science and technology and its impact on development acted strictly in their own private capacities; but as they came from both East and West, North and South, they were able to cover a wide spectrum of views on the whole problem of technology transfer.

The Draft Code of Conduct on Transfer of Technology was presented with an introductory statement by the Secretary-General Professor B.T. Feld at the 24th Pugwash Conference,¹⁴ it deals with international technology

14 For details see, Proceedings of the Twenty-Fourth Pugwash Conference on Science and World Affairs, Baden, Austria, 28th August - 2nd September, 1974, (London, n.d.), Draft Code of Conduct on Transfer of Technology, pp. 95-107.

transactions. In the framework of its stated objectives and principles, it defines the obligations of suppliers and receivers of technology, with a deliberate attempt to strengthen the bargaining power of the LDCs, which at present is in a rather weak position as technology recipients. Although, as it stands now, the draft code can be considered to have only moral force, it is hoped that, through appropriate government actions and in functional negotiations, it will eventually become a definite and concrete instrument of action, accepted and respected by all members of the world community. In this context it is encouraging to note that the "Pugwash Code" as it is now known, formed an important basis for detailed inter-governmental negotiations in the Committee on Transfer of Technology of UNCTAD in July 1974 and April 1975.

The importance of the theme of self-reliance as an alternative strategy for development had been constantly growing in Pugwash deliberations and it was particularly emphasized at the 23rd Conference where it was also stressed that a symposium on this theme be organized inviting leading natural and social scientists from MDCs and LDCs, to analyse the directions and patterns of development which the poor countries should follow, on the premise that not only would rapidly diminishing amounts of 'aid' be available from the rich countries in

the coming years, but also that an integral and essential element of genuine development was economic, social, and cultural policies and programmes to be fashioned in accordance with the needs, aspirations and world views of the developing country/region concerned. In response to this call/ was held the 24th Pugwash Symposium on "The Role of Self-Reliance in Alternative Strategies for Development" at Dar-es-Salaam, Tanzania, between June 2-6, 1975.¹⁵ Basically the symposium agreed that self-reliance does not mean autarchy or isolationism, that its focus is on building up in LDCs the capacity for autonomous decision-making and goal setting; and, most importantly, perhaps, self-reliance can be a meaningful ingredient of a development strategy only if the primary goal of that strategy is meeting the minimum needs of the entire population in as short a time as possible. The symposium recognised that the decision by a number of developing countries to follow a self-reliant path towards a 'New Development', would constitute a major change in the course of world events. It was apprehended that there is an 'international power structure' that will resist moves in

15 For details see, Report on the Dar-es-Salaam Symposium on "The Role of Self-Reliance in Alternative Strategies of Development" by A. Parthasarathi, Proceedings of the Twenty-Fifth Pugwash Conference on Science and World Affairs, Madras, India, 13th - 19th January 1976, (London, n.d.), pp. 142-157.

this direction. It was therefore felt to be of great importance, that, a body of opinion actively supporting the self-reliant development of the LDCs is created, both within those countries themselves as also in the MDCs and that Pugwash should be in the forefront to build that body of opinion, sustain it and place the standing and prestige of the Movement behind it.

The deliberations and recommendations of the Dar-es-Salaam symposium were taken up in real earnest at the 25th Pugwash Conference held at Madras, India from January 13-19, 1976. After Addis Ababa, Madras was the second instance when a whole conference was devoted patently to discussing everything, with special reference to development. Working Group 1, discussing "Alternative Development Strategies for Developing Countries"¹⁶ felt that the development strategies followed in many LDCs during the last few decades have not fulfilled expectations for the satisfaction of the needs of the majority who are still in great poverty. It was stressed that the failure to achieve some important goals of the LDCs lies with the fact that the development process was not accompanied with an appropriate socio-economic restruc-

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For details see, Proceedings of the Twenty-Fifth Pugwash Conference on Science and World Affairs, Madras, India, 13th-19th January, 1976 (London, n.d.) Report of Working Group 1, pp. 24-27.

turing. It was generally accepted that the developmental goals of a country must comply with its specific features and its own system of values. At the same time it was made clear that the strategy of development of all countries must be oriented towards the basic needs of the masses of the people, and not towards the satisfaction of the needs of a dominating class or elite. It was felt that a self-reliant, environmentally sound approach, aimed at meeting the basic needs of the entire population, would best serve this end. Self-reliance was thus understood to imply - the autonomy to set one's own goals and realize them through one's own efforts using one's own resources. In order to develop greater parity in the international commercial exchanges between LDCs and MDCs it was felt necessary to establish sovereign control over national resources. The implementation of such policies, it was recognised, would require the development of adequate institutional, scientific and technological structures by the LDCs.

Working Group 2 discussed the "Social and Professional Responsibilities of Scientists and Technologists in Relation to Development".¹⁷ For long Pugwash has

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For details see, Report of Working Group 2, *ibid.*, pp. 28-32.

talked of the moral responsibility of the scientist to prevent the use of science for the development of weapons of mass destruction. The Group felt the need to expand this concept to include subjects involving the use, abuse and non-use of science in relation to development. Scientists everywhere, and particularly, in the MDCs, were called upon, to promote actively, within and outside their scientific communities, the advancement of self-reliance in the LDCs. It was felt to be the social and professional responsibility of LDC scientists to see to it that their own research work is directed towards the provision of basic human needs and is indigenously utilized. Regarding international co-operation in science and technology for development it was felt to be the responsibility of both MDC and LDC scientists to ensure that (a) co-operative programmes must be directed toward the need of the LDCs as perceived by them; (b) if a collaborative programme starts as an unequal partnership, it must have built-in man-power training components, so that indigenous capabilities are developed as an integral part of the programme; (c) no collaborative programme should involve any element, apparent or real, of secrecy. When the results of collaborative research can be commercially exploited, the right of the LDC concerned, to utilize them first, must be ensured; collaborative agreements should be designed to require the presence of foreign

experts only for a minimal period; (e) exchange of experience and co-operative projects between and among LDCs should be encouraged and fostered, with a view to building up collective self-reliance.

Working Group 3 discussing "The Evolving International System and Its Implications for the Development and Security of the Developing Countries"¹⁸ felt that in recent years various new economic, social and political factors including the end of the Vietnam war and the successful conclusion of the European Security Conference have contributed to changing the scene, bringing some degree of detente and creating conditions for strengthening international security. The greater weight of the LDCs in the international scene as witnessed by their role in the UN and in particular the impact of the OPEC countries on the world economy facilitates the LDCs demand for a change in the world economic system to achieve more favourable conditions for their development. This new international system, it was suggested, should (a) be universal in scope and nature; (b) be based on respect for independence, equity and cooperation among countries

18 For details see, Report of Working Group 3, *ibid.*, pp. 33-40.

and nations; (c) narrow the gaps that exist currently between HDCs and LICs; (d) be developed through a set of coherent, integrated and planned measures; and (e) be implemented with the assistance of an adequate international machinery.

Working Group 4, discussed "Current Issues of Nuclear Arms Control and Non-Proliferation with Special Reference to Problems of Developing Countries",¹⁹ while Working Group 5, discussed, "Current Issues of Conventional Arms Control (including CBW) with Special Reference to Developing Countries."²⁰

The Working Groups highlighted the grim fact that world expenditures for military forces continues at a high level and there is a continuing development of increasingly more sophisticated, deadly and expensive weapons. The rapidly increasing inflow of arms into the developing nations, especially oil producing states, was felt to be of particular concern, in the context of tensions in various regions and its adverse effect on development and security. The SALT negotiations were felt to be a step

19 For details see, Report of Working Group 4, *ibid.*, pp. 41-47.

20 For details see, Report of Working Group 5, *ibid.*, pp. 48-51.

in the right direction but their progress was felt to be too slow. It was suggested that strong pressure should be mobilized by the international scientific community against any forms of further nuclear testing. The idea of nuclear-free zones was viewed as a measure of importance to security of the member states of the zone, and worthy of encouragement. As regards the transfer of peaceful nuclear technology, it was suggested that no technology should be denied to some nations if it was not denied to all, but the supplier states have an overriding duty to ensure that transfer of peaceful nuclear technology should not facilitate the spread of nuclear weapons. An analysis of peaceful nuclear explosions indicated that estimates of their utility were inconclusive at the present time. The stockpiling of conventional armaments was equally disastrous for LDCs, diverting revenues from pressing development programmes to wasteful channels. Political, economic and technological factors all help to sustain rising arms levels, for which purchasers as well as suppliers were felt to be responsible. It was suggested to explore (a) the feasibility and desirability of establishing a UN arms accounting system covering all aspects of arms acquisition and stockpiling; (b) the possibility of devising an international code of conduct on the transfer of

military equipment and devices; (c) the investigation of the economic and social effects of new weapon systems.

Many of the issues discussed at Madras have been reiterated at the 26th Pugwash Conference recently held in Muhihausen, GDR, from August 26-31, 1976. Working Group 4, discussing "Development and Security" felt that while economic growth is a fundamental requirement for development the real objectives are the eradication of poverty, access of all to adequate means of existence and work, and the improvement of nutrition, health and education. The group noted that in the context of development, security constitutes freedom from political, economic, military and other threats, actual or potential, to independent, self-reliant national development. National liberation was recognized as a pre-requisite to development and hence the repressive measures adopted in South Africa, Namibia, and Rhodesia were strongly condemned and MDCs were called upon to stop selling weapons to these oppressive regimes. The concept of using food as a political weapon (TRIAGE) was felt to be morally repugnant and was utterly condemned. The vulnerability of LDCs to multi-national corporations was realized as another non-military threat to their security. Counter measures to this were again felt to reside in implementation of self-reliance. In order to prevent misuse of international scientific cooperation it was decided to hold an international workshop on Guidelines for Inter-

national Scientific Cooperation for Development in India in early 1977.

A number of motives were operating among the Pugwash delegates at Madras and this brief recapitulation shows that Pugwash had strengthened its sense of a new international identity. In place of a somewhat patronisingly compulsive pursuit of the development problems of the Third world, the participatory motivations of Third world scientists had in some degree succeeded in modifying Pugwash policies and guidelines to overcome the outmoded organisational arrangements inherited from the Cold War days. This is not to say that the Madras Conference necessarily optimised the ^{goal values of the Third World scientific community.} A new instrumental and goal-structuring scheme was attempted on a significant scale to make the Madras Pugwash a challenging focal point. A long term perspective on trends in the Third world had clearly emerged and it would exercise a meaning and influence on Pugwash perceptions and patterns of behaviour, with consequences both for its institutional functioning and social consequences in the Third world.

CHAPTER IV

CONCLUSION

PUGWASH AT THE CROSSROADS : TRADITION Vs. CHANGE

The question as to how much time and energy Pugwash should devote to problems of development in the LLCs has been and continues to be quite a controversial one within the Pugwash community. The traditional Pugwashites, who form a fairly sizable section, still feel that Pugwash would be much better off if it stuck to its original theme of disarmament. It is argued that Pugwash being basically an organization of scientists, is much better equipped to tackle problems of disarmament, be it nuclear, biological, chemical or environmental. The exponents of this view also feel that the threat of nuclear, chemical, biological, and environmental warfare constitutes the main threat to world security and as such Pugwash must not divert its attention from these issues. Underdevelopment in the LLCs is seen as a more complex problem, which, it is felt, demands greater attention of the politicians, economists, and sociologists. Besides, it is also argued that other international forums are already trying to tackle this problem and consequently it would be superfluous for Pugwash to waste its time in sheer duplication.

Opposed to this view is the growing lobby of Third world scientists including a sizable section of scientists from advanced countries, who feel that the prime concern that brings Pugwashites together is the concern for peace, and, as an Indian scientist aptly puts it, "continued poverty, or non-fulfilment of even the basic human needs of food, shelter, clothing, education, health and work, either internationally or within a nation is not only a threat to peace in the sense of possible revolts and conflagrations that may arise as a result of it. But more than that, at a deeper ethical level of consideration, it represents a violence to the human condition that can no longer be justified or tolerated, in view of the powerful tools placed in the hands of man by recent developments in science and technology. As such, it is but proper that the conscience of the scientific community, as typified by the Pugwash movement, should be directed to these problems of development or of the amelioration of the human condition."¹ The exponents of this view, have proved fairly

1 E.M. Dagaonkar, "Basic human needs and the Professional Responsibility of Scientists", in Proceedings of the Twenty-fifth Pugwash Conference on Science and World Affairs, Madras, India, 13th - 19th January 1976 (London, n.s.), p. 433.

influential as is apparent by the fact that Pugwash has in the recent years consistently addressed itself to the problems of development in the LDCs, and accepted the position, in theory at least, that underdevelopment is as much a threat to world security as is the proliferation of nuclear and other dangerous weapons.

However, as Feld points out, "of all the issues to which Pugwash has devoted its attention in the past, those concerned with development have proved to be the most intractable and in a sense, the most frustrating".² This he rightly feels is not surprising, considering that "bridging the gap" between the industrialized and the developing portions of the world has resisted the most concentrated efforts of official and unofficial international organizations, agencies, conferences, study groups, and all the rest of the paraphernalia that the community of nations and its organs have devised in over two decades of concentrated efforts.

In this regard, considering that development has generally not been the central Pugwash concern, its record nevertheless contains some positive achievements. The Pugwash Code of Conduct on the transfer of technology

² A note from the Secretary-General, (E. T. Feld), "Pugwash and Development", Pugwash News Letter (London), Vol. 12, no. 3, January 1975, p. 97.

has served as the focus for deliberations of various governmental, inter-governmental and United Nations bodies on these issues. And the level and quality of the feedback received, shows that the document is being taken seriously. On the conceptual side, the Pugwash approach to the global population problem - with its emphasis on regarding population growth as but one aspect within the socio-economic context of providing for a satisfactory quality of life for all people - has been echoed in the World Population Plan of Action adopted by the United Nations World Population Conference held in Bucharest in August 1974, and it must be added that, the practical measures for immediate action, proposed in the Pugwash statement were much more to the point than the grudging recommendations made at Bucharest.

Similarly, the Pugwash discussions on the importance of national and regional "self-reliance" in the approach to development, as expounded at the Dar-es-Salaam Symposium and further elaborated at Madras, have certainly introduced some fruitful new ideas. These, as well as the Pugwash recognition of the directly detrimental impacts on development of the historical patterns of selfish exploitation and wasteful consumption of the world's resources by the industrialized nations, have emerged as the recurrent themes of such recent international meetings as the United Nations World Food

Conference held in Rome in November 1974, and the UNEP/UNCTAD Symposium on "Patterns of Resource Use, Environment and Development Strategies" held in Cocoyoc, Mexico in October 1974.

Pugwash can also take legitimate pride in the establishment of living institutions, aimed directly at the practical solution of immediate problems as well as at the creation of patterns for the long term development of indigenous capabilities for scientific problems - solving in the LDCs, as for instance, the establishment in Nairobi of the International Centre for Insect Physiology and Ecology (ICIP²) to study the problems of insects and pests which affect the health of both animals and humans in Central Africa. The exhaustive discussions in regard to health, nutrition, family planning etc. in the LDCs at Pugwash forums has contributed considerably in bringing to the fore the invaluable importance of biological scientists and the contribution they can, and must make, in solving these problems in the LDCs.

Pugwash has also been instrumental in the formation of institutions like the International Science Foundation (ISF) at Stockholm whose purpose is to promote science research and science education in LDCs. There is provision for grants to be made available to individuals or groups of scientists in LDCs for applied research preferentially of a nature relevant to the economic needs

of the area in which it is to take place.

Thus no impartial observer would deny, that considering the fact, that Development has not been Pugwash's central concern, and that a sizable section of its membership has not been too enthusiastic about problems of development in LDCs, its attempts in this direction have nevertheless produced some positive results. But these results fruitful though they are, do not flatter a movement of the dimension of Pugwash which, with all its international prestige and standing could, and certainly should, do a lot more.

What are the factors which prevent Pugwash from contributing its optimal in the field of Development? There are certain obvious limitations, as for instance, Pugwash is not in a position to take direct action, it can only discuss, suggest, recommend and persuade. However, Pugwash cannot and must not take too much shelter behind this limitation. By the quality of its membership Pugwash is in a position to act as a powerful international scientific lobby for Development, and when it has acted thus, it has not failed to contribute substantially in some way or the other, as in the case of drafting the Pugwash Code on transfer of technology or in the founding of institutions like ICIPB and ISF as already mentioned.

Another problem is that Development, in the broader sense is definitely a more complex problem than,

say, the problem of nuclear threat, for the developmental problem involves economic, social, political, cultural and ideological issues, and Pugwash being essentially a movement of scientists may not feel itself as capable of tackling the latter as it can the former. While this premise is true, and Pugwash has been fully aware of it, it is also true, that, over the years Pugwash has considerably broadened its base to include eminent social scientists as well, who could help in understanding Development in its wider perspective. Besides Pugwash's deliberations and recommendations regarding the concept of self-reliance as an alternative strategy for Development, show that Pugwash is definitely capable of arriving at a mature understanding of Development in its wider perspective.

However, the main obstacle in the way of Pugwash achieving its optimum in the field of Development has clearly been the diffidence of Pugwashites to express their wholehearted 'will' to discuss the issue. To many, the problem of Development, on its face value, does not appear to be of the nature of 'life and death' like the subject of disarmament and as a result it continues to get much less attention than it deserves. An Indian Pugwashite who attended the Pugwash Conference at Oxford in 1972, revealed in the course of an interview, that there was a heated discussion as to whether Pugwash was

doing right in enlarging its area from the original area of disarmament to the more general area of development. And though he feels that a conscious decision was taken to go ahead in this direction there is every reason to believe that an explicit controversy continued as late as April 1975. This is evident from the observation of E. E. Galal according to whom the divergence in point of view about the role of Pugwash in Development, were settled after full and frank discussions by the Continuing Committee in Budapest in April 1975, where it was stated: "A high priority should be devoted to the relationship in the longer term of scientific and technical co-operation among all nations on one hand and to world peace on the other; in other words to the links between peace, disarmament and development."³ However, even after the formal termination of this explicit controversy there is every reason to believe that Pugwash has yet to give its wholehearted support to development.

This is not surprising considering that the large majority of Pugwashites still come from advanced countries whose lack of exposure to problems like acute poverty and

3 Quoted by E. E. Galal, "Comment on a Note from the Secretary-General: Pugwash and Development", Pugwash News Letter, Vol. 13, no. 1, July 1975, p. 2.

hunger, and all the inhumanity that goes with it, make them view these problems with greater equanimity. There is a great difference in seeing these problems from a distance and seeing them from close quarters and confronting them every day as the Third World scientists do. It is therefore natural that the latter will react much more strongly than the former and demand greater urgency for ameliorating the inhuman situation. Hence statements like: "Now war - even conventional war - is evil, war is cruel, war is inhuman. But to my mind, still more evil, still more cruel, still more inhuman is the slow death of daily hunger,"⁴ and "...I shudder to project to a future when the hungry of the world get really desperate."⁵ There were the poignant feelings and fears expressed by A. Salaam more than a decade ago, when he had also predicted (wishing that he would be proved wrong), that two decades hence the state of things in regard to Development would take a turn for the worse at the rate of neglect and apathy that was being exhibited in regard to them.

As things are going we seem to be moving towards the unfortunate truth. In spite of the fact that the expenditure on research and development (R&D) has grown

4 A. Salaam, "Relation Between the Economic Problems of Developing Nations and World Security", in Proceedings to the Twelfth Ruzwash Conference on Science and World Affairs, Udaipur, January 27-February 1, 1964, p. 114.

5 Ibid., p. 116.

exponentially during the post-war period, and the availability of tools by which poverty, ignorance and destitution could be banished from the surface of the earth, the number of people below the poverty line and the number of illit^erates shows no signs of decrease over vast areas of the globe, and the gap between the poorer and richer countries is increasing every year.

Such a situation is not only inhuman but fraught with grave danger for it must be kept in mind that during the period of thirty years since the Second World War, scores of wars have been fought on the soil of the LDCs, killing millions of its people. These wars have been fuelled by armaments from the industrialized countries, and have been aided and abetted by them in their efforts to maintain their spheres of influence, control over natural resources and markets of the poor countries in particular. Thus we notice, that existence of underdevelopment and super power conflicts for hegemony go together. Consequently, General and Complete Disarmament which is the goal of Pugwash, cannot be realized unless the LDCs are helped and allowed to get rapidly out of their present status of poverty and dependence and a radically modified world order is established, whether or not one may like the expression New International Economic Order. The same point was stressed by Prime

Minister, Mrs Indira Gandhi, in her address to the 25th Pugwash Conference.⁶

However, as rightly observed by E.M. Udgaonkar,⁷ the security dimension of development should not be considered as the only or even the most important reason why Pugwashites should worry about development. The Pugwash movement, as he rightly reminds us, derives its *raison-d'etre* from the moral and the ethical; ever since the days

6 25th Pugwash Conference, n. 1, pp. 86-89.
 "But can countries, particularly developing ones, succeed without a concomitant change in the nature of international relationships? There is some grouping toward a new international economic order, especially after the fuel crisis. But major interest groups in the industrialised world seem reluctant to accept the implications of such change. Can it be evolved when powerful nations refuse to reduce their military budgets and their patterns of consumption? Can the small rich segment of the world's population claim four-fifths of the world's resources? Of course, I must admit that this happened within countries also and it has happened in our own country. Some groups already feel threatened and advance preposterous solutions like the Triage theory. Every nation has an allotted place on this planet. How will some countries be disposed of or segregated? Ultimately, neither pollution nor disease can be confined by national boundaries. That is why we reiterate that peace and progress are indivisible. Why are some countries poor? Is it not because of colonialism and present policies of grab as grab can? I hope that Pugwash, with its scientific outlook reinforced by sympathetic humanism, will take unequivocal positions on such propositions."

7 For details see, E.M. Udgaonkar, "Development, Resources, World Security and New Directions for International Cooperation: Implications for a Code of Conduct for Scientists", Paper presented at the 26th Pugwash Conference, Muhlhausen, GDR, 26-31 August 1976.

of its founding fathers, who made the profoundly moving plea "Remember humanity and forget the rest." According to Udgsonkar, the two foremost issues of concern to the scientific community, and to Pugwashites in particular outside their immediate research interests; are, or should be (a) how to ensure that mankind does not destroy itself by the powerful armoury of weapons - nuclear, chemical and biological - at his disposal; and (b) how to ensure that the powerful tools now available to man, through science and technology, are actually utilized for eliminating poverty, want and destitution from the face of the earth, and more generally for the improvement of the quality of life. In this light the controversy of disarmament versus development appears not only erroneous but dangerously misleading. There is no question of choices. Disarmament and Development have become too closely interlinked and the sooner Pugwash realizes this the better.

How long, one would like to ask, can Pugwash tolerate the criminally shameful situation where half of the world's scientific and technological man-power and one third of the world revenue, are mopped up by military R&D efforts, while developmental problems for two thirds of humanity are crying for action? while scientists agree at the intellectual level that research and action relating to the challenge of Development, are important,

in practice, efforts in this area have not enjoyed the same prestige as fundamental research or even military research. It is tragic that special efforts are needed to persuade individuals and societies to act on problems which should be of utmost concern to humanity. Udgauker rightly feels that "It would therefore be in the fitness of things, if Pugwash, with its tradition of scientific humanism, takes a more unequivocal stand on the role of the international scientific community vis-a-vis development, in the same way that it has done so far with regard to nuclear weapon and (CBW). Pugwash must ungrudgingly stand for the broader concept of security, which includes Development, and do all it can to ensure such security everywhere."⁸

In order to achieve this end, and to ensure that Pugwash is able to contribute its optimal and in the field of Development there are certain measures which Pugwash must take with a certain urgency, since delay in this regard will only make the problem more unmanageable.

To begin with it is absolutely imperative that the numerical strength of Third world scientists participating in Pugwash Conferences be immediately increased, and efforts are made to ensure that they are chosen on the basis of their intellectual quality. Over the years

the number of scientists in the Third world has grown and there should be no reason why reasonably competent scientists cannot be found if a sincere effort is made. The ratio of 16-6 within the Pugwash Council between the scientists of the West and LDCs must also be made more proportionate to reflect the changed orientation.

Having accepted the fact that Development is a complex problem involving social, economic, political, ideological and other issues besides science and technology, efforts should be made to involve eminent social scientists from various disciplines in the Pugwash movement so as to be able to view Development in its wider perspective. However, Pugwash must retain its essential character of being a movement of scientists.

On the basis of the answers received in response to a questionnaire that was circulated (see Appendix iii) it appears that some Third World scientists apprehend a large scale infiltration of the agents of the Super Powers and commercial vested interests into the Pugwash movement in recent years. This tendency must be checked immediately and to restore confidence and increase efficiency, efforts should be made to draw the most eminent scientists whose intellectual calibre and integrity are above reproach. Participation of younger scientists should be encouraged. This would help in generating more enthusiasm and genuine idealism as also help in the grooming of future Pugwashites

which will ensure the continuity of the movement.

There is clearly a strong case for encouraging more Regional Conferences to discuss certain issues specific to a region, as also for organising more Symposia to make an indepth study of certain developmental issues which cannot be discussed comprehensively at the annual conferences. The Study Group on Development should be activated to do a more thorough job and draw up a list of such issues.

Pugwash must continue its extremely valuable and fruitful role in fostering the creation of institutions like the ICIPE at Nairobi and the ISF at Stockholm. Experiments of this kind need to be multiplied, and if Pugwash has been able to accomplish this in the past there is no reason why it cannot do so in the future.

P. J. Lavakare's suggestion⁹ that the forthcoming 1979 UN Conference on Science and Technology should be provided with major inputs from Pugwash studies is a valuable one and must be followed up, specially as Pugwash has always maintained that collaboration with the UN on such matters could be useful. As he rightly points out

9 For details see, P. J. Lavakare, "Development Through a United Nations Conference", Paper presented at the 26th Pugwash Conference, Muhlhausen, GDR, 26-31 August 1976.

sufficient background preparations should be undertaken during the 1977 and 1978 Pugwash Conferences if this is to be made meaningful.

There is great need for follow up action on Pugwash suggestions and recommendations which need early action and can be implemented, if the right people exercise the right influence in the right place. As for instance, there is much in the Pugwash deliberations and recommendations on science education and training in LDCs, which needs early implementation if the LDCs are to produce scientists of the right orientation to handle indigenous problems in the near future. In such a case National Pugwash Groups in LDCs if composed of eminent scientists can definitely influence their governments to take action in this regard. Thus while Pugwash as a whole cannot be blamed for the non-implementation of many of its concrete and implementable recommendations, it is difficult to absolve Pugwashites of LDCs who inspite of their influential positions in the governments of their country have not used their influence in this direction. There is clearly great need of activating national Pugwash Groups in the LDCs where they exist, and creating them where they don't, for it is ultimately through them that most of the valuable ideas would filter into the LDCs and it is they who would have to instrumentalize their implementation.

In the context of the cold war, in which the Pugwash movement originated, and the sensitive nature of the problem it was addressing, there was a certain need for secrecy, but over the years the atmosphere has considerably changed and one can no longer see the justification why eminent scientists and scholars should not openly say aloud what they feel is right. Discussion of certain hot political issues may still call for closed meetings but more general discussions on both Disarmament and Development can, and must be held in an open atmosphere and the Press is allowed to report them to the general public. It is unfortunate that even intellectuals and academicians, by and large, are almost unaware of the Pugwash movement and are either totally ignorant or grossly misinformed of its activities. No wonder some refer to it as a 'masonic lodge'.

This is particularly unfortunate because the issues - Disarmament and Development - which Pugwash is addressing itself to, are those on which the future of humanity rests. These issues are also being tackled by other national and international forums, and while Pugwash in its own quiet way might often have contributed more meaningfully in this direction the matter must be open to intellectual scrutiny. Both Pugwash and the cause it is trying to serve stand to benefit by this. For while publicity often creates controversy and hinders concrete achievement, it more often helps in the positive direction,

in the final analysis. The role of public opinion must never be underestimated, specially in the long run. Pugwash can, and by the intellectual quality of its membership, is, well equipped to fight against misplaced controversy, beside it may benefit substantially from honest intellectual criticism. Therefore, it is essential that Pugwash should begin to address a wider audience without in any way neglecting its traditional method of addressing decision-makers in government and feeding inputs into various national and international decision implementing bodies.

Ideally, one would like to think of Pugwash, as perhaps, the only international forum where scientists and scholars of the highest intellectual calibre and integrity meet unofficially, and on their own accord, out of a genuine concern for promoting peace in the world. One would also like to imagine, that, here are men, representing no one but themselves, not bound by any narrow national, racial or ideological motives, equipped with a scientific temper to look at problems dispassionately - yet not lacking in compassion; reason objectively - yet not lacking in feeling; and speak what they feel is right without concern of fear or favour; and that such men have joined together to save mankind from the perils that arise from the misuse of science, and help it to realize - by the correct use of science - "the way that lies open to a new paradise."

Such is the picture that one would like to have of Pugwash and Pugwashites - at least such is the picture that the Russel-Einstein Manifesto would ideally like us to have. But this is the 'ideal'. At times it is very ennobling and edifying to think of the 'ideal' even though one knows that in real life 'ideals' are never, and can never, be fully achieved. And yet, occasionally one must resurrect them to gauge as to how much of a 'striving' there is to reach the 'ideal'. For, when this 'striving' begins to dwindle, so does the movement. While 'reason' may be the best tool for discussing human problems and finding their solutions, the driving force must be 'passion' - passion which comes from the 'striving' for the 'ideal'. It was this 'passion' which gave the Pugwash movement in the initial years, its zest and vigour, and consequently, success and prestige. It is this 'passion' which seems to be lacking today, and making it lose its sense of direction. To resurrect this 'passion' Pugwashites must constantly remind themselves of the forceful and moving plea of the founding fathers as expressed in the Russel-Einstein Manifesto:

There lies before us, if we choose, continual progress in happiness, knowledge, and wisdom. Shall we, instead, choose death, because we cannot forget our quarrels? We appeal, as human beings, to human beings: remember your humanity, and forget the rest. If you can do so, the way lies open to a new paradise; if you cannot, there lies before you the risk of universal death.

Pugwash must ask itself: Can we realize "the way that lies open to a new paradise" when millions of people in the LDCs starve, and are naked and homeless? If not then Pugwash must gear itself to fight these indignities by the powerful tools, that science and technology have made possible. It must give its wholehearted support to Development, in the future, as it gave to Disarmament in the past. And, as we have seen, one cannot be achieved without the other.

APPENDIX I

THE RUSSELL-EINSTEIN MANIFESTO

In the tragic situation which confronts humanity, we feel that scientists should assemble in conference to appraise the perils that have arisen as a result of the development of weapons of mass destruction, and to discuss a resolution in the spirit of the appended draft.

We are speaking on this occasion, not as members of this or that nation, continent, or creed, but as human beings, members of the species Man, whose continued existence is in doubt. The world is full of conflicts; and, over-shadowing all minor conflicts, the titanic struggle between Communism and anti-Communism.

Almost everybody who is politically conscious has strong feelings about one or more of these issues; but we want you, if you can, to set aside such feelings and consider yourselves only as members of a biological species which has had a remarkable history, and whose disappearance none of us can desire.

We shall try to say no single word which should appeal to one group rather than to another. All, equally, are in peril, and, if the peril is understood, there is hope that they may collectively avert it.

We have to learn to think in a new way. We have to learn to ask ourselves, not what steps can be taken to give military victory to whatever group we prefer, for there no longer are such steps; the question we have to ask ourselves is: what steps can be taken to prevent a military contest of which the issue must be disastrous to all parties?

The general public, and even many men in position of authority, have not realized what would be involved in a war with nuclear bombs. The general public still thinks in terms of the obliteration of cities. It is understood that the new bombs are more powerful than the old, and that, while one A-bomb could obliterate Hiroshima, one H-bomb could obliterate the largest cities, such as London, New York, and Moscow.

No doubt in an H-bomb war great cities would be obliterated. But this is one of the minor disasters that would have to be faced. If everybody in London, New York, and Moscow were exterminated, the world might, in the

course of a few centuries, recover from the blow. But we now know, especially since the Bikini test, that nuclear bombs can gradually spread destruction over a very much wider area than had been supposed.

It is stated on very good authority that a bomb can now be manufactured which will be 2,500 times as powerful as that which destroyed Hiroshima. Such a bomb, if exploded near the ground or under water, sends radioactive particles into the upper air. They sink gradually and reach the surface of the earth in the form of a deadly dust or rain. It was this dust which infected the Japanese fishermen and their catch of fish.

No one knows how widely such lethal radio-active particles might be diffused, but the best authorities are unanxious in saying that a war with H-bombs might quite possibly put an end to the human race. It is feared that if many H-bombs are used there will be universal death -- sudden only for a minority, but for the majority a slow torture of disease and disintegration.

Many warnings have been uttered by eminent men of science and by authorities in military strategy. None of them will say that the worst results are certain. What they do say is that these results are possible, and no one can be sure that they will not be realized. We have not yet found that the views of experts on this question depend in any degree upon their politics or prejudices. They depend only, so far as our researches have revealed, upon the extent of the particular expert's knowledge. We have found that the men who know most are the most gloomy.

Here, then, is the problem which we present to you, stark and dreadful and inescapable: Shall we put an end to the human race; or shall mankind renounce war? * People will not face this alternative because it is so difficult to abolish war.

The abolition of war will demand distasteful limitations of national sovereignty. ** But what perhaps

*Professor Joliot-Curie wishes to add the words: "as a means of settling differences between States."

**Professor Joliot-Curie wishes to add that these limitations are to be agreed by all and in the interests of all.

impedes understanding of the situation more than anything else is that the term "mankind" feels vague and abstract. People scarcely realize in imagination that the danger is to themselves and their children and their grandchildren, and not only to a dimly apprehended humanity. They can scarcely bring themselves to grasp that they, individually, and those whom they love are in imminent danger of perishing agonizingly. And so they hope that perhaps war may be allowed to continue provided modern weapons are prohibited.

This hope is illusory. Whatever agreements not to use H-bombs had been reached in time of peace, they would no longer be considered binding in time of war, and both sides would set to work to manufacture H-bombs as soon as war broke out, for, if one side manufactured the bombs and the other did not, the side that manufactured them would inevitably be victorious.

Although an agreement to renounce nuclear weapons as part of a general reduction of armaments* would not afford an ultimate solution, it would serve certain important purposes. First: any agreement between East and West is to the good insofar as it tends to diminish tension. Second: the abolition of thermo-nuclear weapons, if each side believed that the other had carried it out sincerely, would lessen the fear of a sudden attack in the style of Pearl Harbour, which at present keeps both sides in a state of nervous apprehension. We should, therefore, welcome such an agreement, though only as a first step.

Most of us are not neutral in feeling, but as human beings, we have to remember that, if the issues between East and West are to be decided in any manner that can give any possible satisfaction to anybody, whether Communist or anti-Communist, whether Asian or European or American, whether white or Black, then these issues must not be decided by war. We should wish this to be understood, both in the East and in the West.

There lies before us, if we choose, continual progress in happiness, knowledge, and wisdom. Shall we, instead, choose death, because we cannot forget our

*Professor Muller makes the reservation that this be taken to mean "a concomitant balanced reduction of all armaments."

quarrels? We appeal, as human beings, to human beings: remember your humanity, and forget the rest. If you can do so, the way lies open to a new Paradise; if you cannot, there lies before you the risk of universal death.

Resolution

We invite this Congress, and through it the scientists of the world and the general public, to subscribe to the following resolution:

"In view of the fact that in any future world war nuclear weapons will certainly be employed, and that such weapons threaten the continued existence of mankind, we urge the Governments of the world to realize, and to acknowledge publicly, that their purpose cannot be furthered by a world war, and we urge them, consequently, to find peaceful means for the settlement of all matters of dispute between them."

Professor Max Born (Professor of Theoretical Physics at Berlin, Frankfurt, and Göttingen, and of Natural Philosophy, Edinburgh; Nobel Prize in physics).

Professor P. W. Bridgman (Professor of Physics, Harvard University; Nobel Prize in physics).

Professor Albert Einstein.

Professor L. Infeld (Professor of Theoretical Physics, University of Warsaw).

Professor J. P. Joliot-Curie (Professor of Physics at the Collège de France; Nobel Prize in chemistry).

Professor H. J. Muller (Professor of Zoology at University of Indiana; Nobel Prize in physiology and medicine).

Professor Linus Pauling (Professor of Chemistry, California Institute of Technology; Nobel Prize in chemistry).

Professor C. P. Powell (Professor of Physics, Bristol University; nobel Prize in physics).

Professor J. Rotblat (Professor of Physics, University of London; Medical College of St. Bartholomew's Hospital).

Bertrand Russell.

Professor Hideki Yukawa (Professor of Theoretical Physics, Kyoto University; nobel Prize in physics).

Note: The Manifesto was read by Russell at a Press Conference, held in London on July 9, 1955.

APPENDIX II

CHRONOLOGY OF PUGWASH CONFERENCES ON SCIENCE AND WORLD AFFAIRS

1ST CONFERENCE

- Place and date - Pugwash, Canada, July 7-10, 1957.
- Theme - "Science and World Affairs".
- Total no. of participants - 22 from 10 countries.
- no. of LDC participants - 1 from China.
- Main topics discussed - Hazards arising from the use of atomic energy in peace and war; control of nuclear weapons; the social responsibility of scientists.

2ND CONFERENCE

- Place and date - Lac Beauport, Canada, March 13 - April 11, 1958.
- Theme - "The dangers of the present situation and the ways and means of diminishing them."
- Total no. of participants - 22 from 8 countries.
- no. of LDC participants - 1 from China.
- Main topics discussed - Banning of nuclear weapons tests; technical problems of inspection; biological hazards of radiation; exchange of students and scientists; population explosion and its consequences.

3RD CONFERENCE

- Place and date - Kitzbuhel and Vienna, Austria, September 14-20, 1958.

Theme	-	"Dangers of the Atomic Age and what Scientists can do about them".
Total no. of participants	-	Approximately 70 from 21 countries.
no. of LDC participants	-	3 from India.
Main topics discussed	-	The consequences of nuclear war; technological and political aspects of disarmament; international co-operation and the responsibilities of scientists; <u>potential contribution of science and technology to Development</u> - culminated in the 'Vienna Declaration' which spoke of: (1) necessity to end wars; (2) Requirements for ending the arms race; (3) what war would mean?; (4) Hazards of bomb tests; (5) Science and international co-operation; (6) Technology in the service of peace; (7) The responsibility of scientists.

4TH CONFERENCE

Place and date	-	Baden, Austria, June 25-July 4, 1959.
Theme	-	"Arms Control and world Security".
Total No. of participants	-	25 from 7 countries.
no. of LDC participants	-	1 from China.
Main topics discussed	-	Security problems and surprise attack; prevention of the spread of nuclear weapons; control of missiles and satellites; psychological aspects of the arms race; and the Geneva negotiations on Test Ban Treaty.

Note: Topics pertaining to Development in LDCs are underlined.

5TH CONFERENCE

- Place and date - Augwash, Canada, August 24-29, 1959.
- Theme - "Biological and Chemical Warfare"(BCW)
- Total no. of participants - 26 from 6 countries.
- No. of LDC participants - 1 from China.
- Main topics discussed - A comprehensive discussion of BCW, its spread, consequences, problems of control, and destructive power of CBW and nuclear warfare.

6TH CONFERENCE

- Place and date - Moscow, USSR, November 27 - December 5, 1960.
- Theme - "Disarmament and World Security".
- Total no. of participants - 75 from 15 countries.
- No. of LDC participants - 4 from China.
- Main topics discussed - Dangers of continued arms race; current stages of negotiations on the banning of nuclear tests; plans for comprehensive disarmament; political, economic and technical problems of arms limitation and disarmament; creation of a suitable climate of opinion; and the role and responsibilities of scientists.

7TH CONFERENCE

- Place and date - Stowe, USA, September 5-9, 1961.
- Theme - "International Co-operation in Pure and Applied Sciences".

Total no. of participants - 41 from 12 countries.

no. of LDC participants - 1 from Brazil.

Main topics discussed - Earth Sciences, Space research; Life Sciences; Physical Sciences; Assistance to LDCs; and Exchange of Scientists and Scientific information.

8TH CONFERENCE

Place and date - Stowe, USA, September 11-16, 1961.

Theme - "Disarmament and World Security".

Total no. of participants - 43 from 11 countries.

no. of LDC participants - nil.

Main topics discussed - The subjects discussed related in one way or another to attaining stable peace, world security, and general and complete disarmament.

9TH CONFERENCE

Place and date - Cambridge, UK, August 26-30, 1962.

Theme - "Problems of Disarmament and World Security".

Total no. of participants - 67 from 19 countries and 18 observers.

no. of LDC participants - 3 from 3 countries.

Main topics discussed - Problems of reduction and elimination under international control of weapons of mass destruction and of their means of delivery; problems of balanced reduction and elimination of conventional armaments;

political and technical measures contributing to the lessening of international tensions (including the nuclear test-ban and consideration of activities in space; problems of security in a disarmed world; economic aspects of disarmaments.

10TH CONFERENCE

Place and date	-	London, UK, September 3-7, 1962.
Theme	-	"Scientists and World Affairs".
Total no. of participants	-	175 from 36 countries.
No. of LDC participants	-	9 from 8 countries.
Main topics discussed	-	The position of the scientist the community; science and world security; international scientific collaboration; <u>science in aid of developing nations</u> ; and science and education.

11TH CONFERENCE

Place and date	-	Ljubrovnik, Yugoslavia, September 20-25, 1963.
Theme	-	"Current Problems of Disarmament and World Security".
Total no. of participants	-	64 from 24 countries - 13 observers.
No. of LDC participants	-	3 from 3 countries.
Main topics discussed	-	Problems of abolition of delivery systems; inspection and control in the first stage of disarmament; surprise attack; the need to control the transfer of fissile material

through the International Atomic Energy Agency; the need for extension of the Test Ban Treaty with a suggestion for joint seismological studies; nuclear guarantees; and the ban on the use of outer space for military purposes.

12TH CONFERENCE

Place and date	-	Udaipur, India, January 27-February 1, 1964.
Theme	-	"Current Problems of Disarmament and World Security".
Total no. of participants	-	56 from 24 countries, 7 observers.
no. of LDC participants	-	11 from 6 countries.
Main topics discussed	-	Organisation for collective security; implications for disarmament and world security of a wider dispersal of military powers; <u>the relations between the economic problems of developing nations and world security; and priorities for science and technology in developing countries.</u>

13TH CONFERENCE

Place and date	-	Karlovy Vary, Czechoslovakia, September 13-19, 1964.
Theme	-	"Disarmament and Peaceful Collaboration Among Nations".
Total no. of participants	-	86 from 19 countries.
no. of LDC participants	-	1 from India.

- Main topics discussed - Measures for reducing tensions and dangers of war, especially in Central Europe; measures to prevent the further use of nuclear weapons; progress towards comprehensive disarmament; problems of collective security; arms control and peaceful collaboration among nations.

14TH CONFERENCE

- Place and date - Venice, Italy, April 11-16, 1966.
- Theme - "International Co-operation for Science and Disarmament".
- Total No. of participants - 77 from 20 countries.
- No. of LDC participants - 4 from 3 countries.
- Main topics discussed - National, regional and international institutes and their implications; problems of international co-operation in science; international co-operation in science and education; current problems of arms control; problems of general and complete disarmament. The Vietnam issue was discussed and members were asked to convey the different views expressed to their governments. Appeal to honour UN resolutions was made.

15TH CONFERENCE

- Place and date - Addis Ababa, Ethiopia, December 29, 1965-January 3, 1966.
- Theme - "Science in Aid of Developing Countries".
- Total No. of participants - 63 from 31 countries, 23 observers.

- no. of LDC participants - 27 from 17 countries.
- Main topics discussed - Education in developing countries; organisation of scientific institutions and research in developing countries; scientific approach in aid of developing countries; special problems of developing countries; security problems of developing countries. The situation in Vietnam and Rhodesia was also discussed.

16TH CONFERENCE

- Place and date - Sopot, Poland, September 11-16, 1966.
- Theme - "Disarmament and World Security Especially in Europe".
- Total no. of participants - 69 from 22 countries.
9 observers.
- no. of LDC participants - 3 from 2 countries.
- Main topics discussed - Disarmament in Europe; reduction of tensions and political settlements in Europe; main problems of progress towards general and complete disarmament; desire to bring China back to disarmament negotiations was expressed; US bombing and use of chemical weapons in Vietnam was exposed and condemned.

17TH CONFERENCE

- Place and date - Ronneby, Sweden, September 3-8, 1967.
- Theme - "Scientists and World Affairs".
- Total no. of participants - 180 from 44 countries,
14 observers.

- No. of LDC participants - 20 from 16 countries.
- Main topics discussed - Arms control and disarmament; peace keeping and security; new approaches in disarmament; international programmes in science; education technology and development; special responsibilities of scientists; and current conflicts and their resolution which included Vietnam, Middle East, Nigeria and South Africa. Appeal to honour UN resolutions was made. The idea of organising Symposia was born.

18TH CONFERENCE

- Place and date - Nice, France, September 11-16, 1968.
- Theme - "Current Problems of Peace, Security and Development".
- Total No. of participants - 81 from 28 countries, 12 observers.
- No. of LDC participants - 11 from 8 countries.
- Main topics discussed - Arms control and disarmament, regional arms control, current problems; scientific and technological manpower problems in developing countries. The situation in Vietnam, the Middle East, Nigeria and Czechoslovakia were raised and discussed.

19TH CONFERENCE

- Place and date - Sochi, USSR, October 22-27, 1969.
- Theme - "World Security, Disarmament and Development."
- Total No. of participants - 101 from 29 countries, 10 observers.

No. of LDC participants - 10 from 6 countries.

Main topics discussed - Measures for terminating current military conflicts and keeping the peace, this included Vietnam, the Middle East, and Nigeria; European security; reduction and elimination of nuclear weapons and delivery systems; disarmament in the non-nuclear field - which included exhaustive discussion on the means of eliminating chemical and biological weapons; and modern science and developing countries.

20TH CONFERENCE

Place and date - Fontana, USA, September 9-15, 1970.

Theme - "Peace and International Co-operation : A Programme of the Seventies".

Total no. of participants - 109 from 31 countries, 5 observers.

No. of LDC participants - 12 from 8 countries.

Main topics discussed - International security problems; European security arrangements; disarmament and arms limitation; international co-operation in science and technology; and science technology and development. A proposal for a Special Study Group on Development was made which was subsequently accepted. There was also a discussion on the Nuclear Test Ban Treaty and CBW.

21ST CONFERENCE

Place and date - Sinaia, Romania, August 26-31, 1971.

Theme - "Problems of World Security, Environment and Development".

- Total No. of participants - 97 from 31 countries, 9 observers.
- No. of LDC participants - 9 from 7 countries.
- Main topics discussed - European security problems; improved international mechanism for resolution of local conflicts and for peace keeping (here the situation in Vietnam, the Middle East and South Korea was discussed); international security and further steps towards disarmament; international aspects of environmental problems; economic and technological co-operation among nations, in particular for development. The problem of East Pakistani refugees was also discussed.

22ND CONFERENCE

- Place and date - Oxford, UK, September 7-12, 1972.
- Theme - "Scientists and World Affairs".
- Total No. of participants - 210 from 44 countries including observers and students.
- No. of LDC participants - 24 from 17 countries.
- Main topics discussed - Disarmament programme for the near future; disarmament in Europe; European security and co-operation; security of developing nations; international aspects of environmental problems; problems of developing nations; world resources and population problems; and scientists and society.

23RD CONFERENCE

- Place and date - Juvankko, Finland, August 30-September 4, 1973.

Theme - "European Security, Disarmament and Other Problems".

Total no. of participants - 108 from 29 countries and 6 international organizations.

No. of LDC participants - 10 from 6 countries.

Main topics discussed - Disarmament and strategic arms limitation; disarmament in Europe; European security and co-operation; social, economic and political barriers to the application of science and technology to Development; and radioactive pollution of the environment in the context of the energy problem.

24TH CONFERENCE

Place and date - Baden, Austria, August 28 - September 2, 1974.

Theme - "Disarmament, Energy Problems and International Collaboration".

Total no. of participants - 120 from 31 countries, 15 observers.

no. of LDC participants - 11 from 6 countries.

Main topics discussed - Current problems of arms control and disarmament; European security and force reductions; peace and security in the Middle East; security and arms problems in other areas; different approaches to international co-operation in science and technology; and the energy problem.

25TH CONFERENCE

Place and date - Madras, India, 13-19 January 1976.

Theme - "Development Resources and World Security".

Total No. of participants - 78 from 34 countries, 10 observers.

No. of LDC participants - 27 from 13 countries.

Main topics discussed - Alternative development strategies for developing countries; social and professional responsibilities of scientists in relation to Development; the evolving international system and its implications for developing countries; Security of developing countries; current issues of nuclear arms control and non-proliferation with special reference to problems of developing countries; and current issues of conventional arms control, including CBA, with special reference to problems of developing countries.

26TH CONFERENCE

Place and date - Muhlhausen, GDR, August 26-31, 1976.

Theme - "Disarmament, Security and Development".

Total No. of participants - 27 from 28 countries, 6 observers.

No. of LDC participants - 6 from 3 countries.

Main topics discussed - Problems of limiting and reducing strategic nuclear armaments and other weapons of mass destruction; controlling the spread of nuclear weapons; European security and co-operation; Development and Security. Racism and colonialism in Rhodesia and South Africa were also discussed and condemned.

APPENDIX III

The following Appendix contains the Questionnaire and the answers of nine Pugwashites from six countries. The last three Indian Pugwashites were interviewed and the same questions were put to them. The Pugwashites are identified by their countries as a commitment was given that their views would not be reproduced under their names.

QUESTIONNAIRE

1. Third world Priorities

To what extent has the Pugwash movement seriously accepted the aim of finding a solution to the problems of the Third world countries? What is the degree of priority given to Third world problems vis-a-vis the Bipolar Soviet-American problems?

2. The Information Challenge

Does the Pugwash tradition relate itself more easily to a mass of data which is not directly relevant to Third world problems? To what extent has the Pugwash Secretariat obtained information about conditions in the Third world?

3. Pugwash Capabilities

What are the factors which help Pugwash to influence Third world developments? How can Pugwash capabilities be improved in this regard?

4. Pugwash Concepts

Do the concepts used in Pugwash activities obstruct direct and sympathetic comprehension of Third world problems?

5. Feedback Problems

Does Pugwash succeed in getting an adequate "feedback" on its actions in the Third world context?

6. Super Power Motivations

Are Pugwash prescriptions primarily from the perspective of Super Power management of the global environment?

7. Stimulating Change

How do Third world scientists stimulate changes in the Pugwash movement?

8. Channels of Communications

How effectively do channels of communication operate between Third world scientists? Does Pugwash do anything in this regard.

9. Public Opinion and Government Opinion

How effective are Third World scientists in changing the climate of public opinion/governmental opinion in their countries?

10 Pugwash Performance

- (a) Has Pugwash done anything concrete in the way of making scientific skills more accessible to Third world countries.
- (b) Inequity in trade, in sharing of resources, in transfer of technology etc. continue to flourish despite all 'codes' prescribed at various forums. Has Pugwash done anything to pin-point the guilty in this regard?

11 Third world Integration

Should there be a separate Third world Pugwash movement?

A PUGWASHITE FROM USA

1 Pugwash is divided on this issue. A minority believes Pugwash should give the problems of the Third World as much emphasis as the problem of arms. A strong majority is concerned about arms problems in the Third World.

2 (a) No, but participants from Third World, those interested in its problems, seem very poorly informed compared to those concerned about nuclear arms.

(b) Secretariat does not concern itself with such questions.

3 Has virtually no influence regarding such questions (not much in any other area either). Influence depends on individuals. Would have more influence if participants were more knowledgeable, if specialized symposia resulted in monographs or other publications of high quality.

4 No, but they do not facilitate it either because many participants are poorly informed, and the papers presented relating to Third World problems are usually poor in quality.

5 Not to my knowledge.

6 No.

7 They do not.

8 (a) Do not know.

(b) not much.

9 Do not know.

10 (a) Yes.

(b) Do not know.

11 It would probably be better to treat problems of arms, war and peace in the Third World in the Pugwash meetings, and if people want to discuss development problems, to do that in other fora, including possibly a "separate Third World Pugwash".

A PUGWASHITE FROM ENGLAND

1 Its prime concern is still the threat of war with mass-destruction weapons. This threat remains too serious to lose first priority. War threats involve the whole world, not just the super-powers. Pugwash techniques of factual analysis can be helpfully applied to some non-military questions affecting the quality of Peace. Currently, Pugwash meetings devote similar amounts of time to military and non-military (mainly "third world") matters.

2 The very small hard-working Pugwash Secretariat could not possibly act as a Third world Data-bank.

3 It has developed a technique of scientifically based discussion for finding areas of basic fact which all can agree upon.

4 No.

5 Probably not: that is up to the Pugwash participants, wherever they come from.

6 no.

7 Usefully, proposing questions for which they think the Pugwash technique of analysis may be beneficial.

8 Only in that its meetings may bring them together, which I believe to be a significant contribution.

9 I don't know.

10 (a) Only be feeding guidance to United Nations organizations.

(b) Pugwash seeks to define the good: "pinpointing the guilty" is not its method.

11 If its aims are those of Pugwash, why separate? If they are not, why call it "Pugwash"?

A PUGWASHITE FROM FRANCE

1 The Pugwash movement had not to accept the aim of finding a solution to the problems of the Third world countries. Long time ago the Addis-Ababa Conference was devoted to this problem. The principal object of Pugwash, at least for me, is the problem of peace and war and of disarmament : the Third world problems are in relation with them and to often the expression of conflicts between the rich countries.

2 The Pugwash tradition and the obtained informations are what they can be : they depend very much on the profession and nationality of the participants. The number of Pugwashite coming from the Third world is speedly growing and it's a good thing.

3 The question of the influence of Pugwash cannot be answered neither for the developing nor for the developed countries. All of us try to amplify this influence but sometimes the result of the work comes out five or six years after the action took place.

In the Third world, as alas in many other parts of the world, the freedom of expression is not always assured nor the stability of governments. Everywhere the influence of Pugwash depends on the political weight of the scientists of each country on its government.

4 I don't understand this question.

5 It's very difficult to be sure of a relation of causality between what Pugwash tries to do and the political decision of governments. The Third world is complex and contains extremely different countries with their own contradictions, just as the developed countries are profoundly divided. All what we can say is that we try : have we results? We don't know.

6 Definitely no.

7 They bring new questions, new solutions and much energy : they shake the Pugwash establishment and it's good.

8 The South-South relations are a constant preoccupation.

9 It's depend completely on the political structures of each country.

10 (a) Emphasis on the necessity of a transfer of technology to the Third world country has been a constant preoccupation (Russell-Einstein Manifesto, declaration on transfer of technology, press conference after the meetings).

(b) Yes, it did.

The word "guilty" is very apparent today, it wasn't in the nineteenth century when the colonial empires have been grounded.

11 It would be, for me, a new segregation but mostly it's a question for the scientists of the Third world.

A PUGWASHITE FROM ISRAEL

1 Third world is now second priority of Pugwash. The first is still Nuclear Arms Control.

2 Pugwash is not a data collecting organisation - it has no data bank and no organised system of data collection and retrieval.

3 Very little capabilities. It is mostly a process of learning and self-education - which might lead to some new ideas or influences on the scientific community.

4 No.

5 No.

6 I do not know - I do not think.

7 By presenting in a very forceful way their point of view, and sometimes convincing the others to change their attitude.

8 It helps - if and when you meet at the Pugwash meetings.

9 This differs from country to country and from time to time. Mostly they have very little influence on government or public opinion.

10 (a) I do not know.

(b) The idea of a code of conduct for transfer of technology started at Pugwash. The first symposium on "Self-reliance" was organised by Pugwash. The only serious platform dealing with problem of cooperation between Scientists from developed and developing countries occurs in Pugwash.

11 It would defie the purpose of Pugwash and would be quiet useless.

A PUGWASHIVE FROM PAKISTAN

Thank you for your letter. Instead of replying to your questions separately let me make the following statement.

As you are aware when Pugwash started they were not terribly interested in the Third world problems and their main concern was towards the resolution of East/West conflict. Over the years the movement has begun to interest itself in the Third world problems and this interest is continually growing, although I would say that the first priority is still devoted to disarmament. Since Pugwash is not an organised movement in the normal sense but a collection of like-feeling individuals it is only by persuasion that one can hope to turn its energies towards the Third world problems. The movement cannot do anything concrete; it can only advise, provided there is someone who is willing to listen to this advice. Since the scientific community as a whole has become less influential than it has been in the past, there are very few people in the Government and business who will listen to the scientist and this makes the problems facing Pugwash even harder.

One can think of starting a Third World Pugwash movement; in fact the Club of Rome is already doing quite a lot in this respect and quite effectively, although this Club does not consist only of scientists. It has economists and business administrators also among its members. As you are aware they have held several meetings on the International Economic Order.

I hope this answers some of your questions.

A PUGWASHITE FROM INDIA

1 Whereas it is true that the Pugwash movement as a whole is very much concerned about the third-world countries and as a body attempts to find solutions to the problems of the third-world countries, there are intrinsic problems on this question which amount to a statistical bias arising out of various individual biases. A very large number of participants in the Pugwash movement come from developed countries. The solutions to problems of developing countries suggested by them in most cases arise out of either their inability to appreciate the real problems of developing countries consequent upon their lack of exposure to them or because many of the participants in the Pugwash movement are 'implanted people' in the sense that they are people on whom the various defence departments in the developed countries depend upon for either getting information or alternatively to implant ideas in the Pugwash movement which is favourable to the super-powers in particular or the developed countries in general. In view of this, the third world problems and their solutions are viewed as the developed countries would like to see them. The biases may be intentional or unintentional. The net result is that the Pugwash as a whole tends to see the third world problems and their solutions from the first-world or the second-world perspective. Therefore, it is not only the degree of priority given to the third world problems vis-a-vis the bipolar Soviet American problems which count, but also the biases given to the third world problems themselves. Taking both the effects, the third world countries get a treatment less than what they would perhaps deserve.

2 The Pugwash tradition is built over available information and the priorities to various questions are somewhat in proportion to the information available on various problems. There is plenty of information on problems related to the developed countries, whereas there is relatively less information on third-world problems. Consequently, the proportion of treatment of third-world problems relative to other problems is in the same proportion as the ready availability of respective information about them. The Pugwash Secretariat is doing a very passive job vis-a-vis the collection of information and as such could not help being swamped by the ready sources of western information.

3 As the Pugwash is an intrinsically biased organization, it does not have the correct perspective regarding the third-world problems. This is so partly because, there are no commensurate participation from the developing countries compared to that from developed countries. To improve the capabilities in this regard, the Pugwash membership and Pugwash attendance should be made in proportion to the population of various regions/countries/groups of the world.

4 Cannot give specific answer.

5 When we say Pugwash should get a feedback on its action in the third world context, one would wonder from whom the feedback is sought and to whom the feedback goes. The Pugwash is an abstract entity except for a small passive secretariat which is too small and inadequate to sustain the Pugwash as a continuous activity. Therefore, the Pugwash operates on the basis of annual 'Thanasha', more or less like our Indian Science Congress. Therefore, the feedback to the Pugwash secretariat will not bring in any useful results. The feedback should come from the developing countries and sympathetic scientists in developed countries. It is very doubtful whether the feedback will really have the desired effect because, most of the members as described above are, 'implanted members'.

6 It is definitely true that the Pugwash prescriptions are distinctly coloured by the tints painted by the super powers and their agents within the Pugwash movement. During the initial stages of the Pugwash movement, it constituted mainly of sincere, dedicated and honest scientists. Because of this, the Pugwash movement during the first decade did produce marvellous results in the larger interests of the world. Then the super powers found that the Pugwash was succeeding and was showing results of world-wide repercussions, they felt that it would not be in their interest to let the movement go entirely on objective lines. The modus operandi they adopted was to infiltrate their agents who will safeguard their interest from within the movement. After all, it is not difficult to find a couple of wolves in sheep's skin. This infiltration has gone on so steadily that off late, according to my personal estimate, the agents of the super powers are more than 50 percent of the total participation, of scientists from developed countries during each meeting.

7 The third world scientists who are relatively in a minority in the Pugwash movement, it is doubtful whether they would stimulate changes unless the composition of membership substantially changes. I have a prescription for this. Under the Group of 77, a parallel

Pugwash movement should be started analogous to the News Pool Concept.

8 After every Pugwash meeting and exchange of platitudes and nice words during the meetings, the third world scientists go into dormancy until the next Pugwash meeting! Even the local Pugwash branches like the Indian Pugwash Society are basically passive clicks with not much continuity in the activities.

9 The third world countries are somewhat ineffective in changing the public opinion or government opinion in their countries because, their credibility is suspected because they have not produced socially relevant contributions themselves.

10 (a) A long time ago, the Pugwash did wonderful things, that is, before the super powers started infiltrating their wolves. Until the Pugwash movement is cleansed off these elements and their agents, the Pugwash will remain just one more forum for pressure group politics.

(b) When the advance of science removed the love of god and the fear of the devil, the only 'Code' left is the law of the jungle. The so called codes of conduct are often part of a stalling game or a guilty bluff. Even if the Pugwash does anything to pin point the guilty or expose the designs, it is ineffective to mobilise public opinion for the simple reason that the movement itself is fast losing its credibility.

11 I firmly believe that there should be a parallel Pugwash movement uncontaminated by super powers and their agents and the vested interests of the developed countries. My prescription is that this should be taken as part of the programme of the Group of 77 somewhat on the lines of News Pool Concept. However, whereas the participation from the countries of the Group 77 will be by nomination, the participation should be by invitation after carefully screening the credibility of scientists.

In a nut-shell, my opinion is that the Pugwash movement started very well, achieved very much, but of late is getting corrupted increasingly by the infiltration of the agents of the super powers and commercial vested interests. Cleansing the Pugwash movement off these infiltrated elements being a far cry, the only alternative is to start a parallel Pugwash movement under the control of the Group of 77.

A PUGWASHITE FROM INDIA
(INTERVIEWED)

1 The basic concern of the Pugwash movement has been bringing about the maintenance of world peace. The greatest threat to peace has been from nuclear armaments. The Pugwash movement has been involved with other issues only to the extent that they affect world peace. The Pugwash movement has been particularly involved with disarmament in the Third World because most of the conventional weapons built up in the world today is in the Third World. However, starting around 1962, and especially during the Pugwash Conference of 1964, the Pugwash movement recognised that the North-South gap, the gap in terms of wealth, was also a danger to peace. Many of the concerns relating to the keenness of the Third World countries to acquire weapons and devote increasing proportions of their resources to armaments were due to tensions in various parts of the world, which were, in turn, related to major power rivalries. Thus, the Pugwash movement has been concerned with 2 broad categories of problems of the Third World: the military-security problems and the development problems. Both these problems, are, of course, inter-related.

As regards the degree of priority given to purely developmental problems vis-a-vis disarmament problems, I have already mentioned that one should not think of Third World problems as problems of development alone. The problems of military conflict and political tensions, especially between neighbouring countries, are as much there in all the 3 developing continents. The interest of the Pugwash movement has of course been in these problems. The issue has been as to what extent the Pugwash should be involved with general developmental problems, e.g. problems of food production, or energy supply, or nutrition level, or control of communicable disease - problems which are central to the process of development and which involve science and technology. Now, in this connection one must not forget that the Pugwash movement is only a short form for the Pugwash Conferences on Science and World Affairs. Therefore, all issues inter-relating science and world affairs fall within the purview of the Pugwash movement.

2 No answer.

3 I presume what you have in mind in the first part of the question is: what are the ways in which the Pugwash movement has in its activities upto now influenced developments relating to the Third World - that is, improvement of the development and security positions of

the Third world countries. As I have already said, Pugwash activities stand on 2 legs: military-security problems and social-economic developmental problems. As regards military-security problems, one contribution of the Pugwash movement has been in regard to clarification of the potentialities and dangers of atomic energy, especially in the case of nuclear reactors, which have not only produced extremely useful electrical energy, but also such toxic elements as plutonium. And since Third world countries have been expanding their nuclear programmes in the last few years, by virtue of the fact that they are late comers to this field, they stand to gain from the research carried out by the Pugwash scientists in this field. Another contribution of the Pugwash movement has been the pioneering work done in connection with chemical and biological weapons. It is feared that chemical and biological weapons are more likely to be used than nuclear weapons because (a) they are cheaper; (b) their effects can be localised; and (c) they are understood in military doctrine as tactical weapons, not like nuclear armaments, which are strategic weapons and involve attacking cities and populations. The great work done by the international Working Group of Pugwash on Chemical and Biological weapons, starting round 1965, culminated in the bringing out by SIPRI of several volumes on chemical and biological weapons. This has shown the great dangers involved in accumulating chemical and biological agents and deploying them in the field. It has also brought a considerable degree of public awareness, which has served as a deterrent on governments to make investments in such programmes. Another area of Pugwash activities which have direct implications to the Third world, and which has both a security and developmental dimension, is the emerging area of environment regulation. And, there is considerable scientific debate as to whether such phenomena as cyclones, hurricanes, tornadoes can be manipulated by a hostile power to be directed against towns and cities, or to increase the precipitation of rainfall in a given area or to reduce it. These areas may appear to be esoteric and futuristic. But here in India, our dependence on the monsoon is so fundamental that any possibility of tinkering with it, might have consequences of enormous significance. In the socio-economic field, two activities of the Pugwash movement deserve mention. Firstly, an international working group of economists and technologists was set up by Pugwashites in April 1974 to formulate a code of conduct for transfer of technology. The UNCTAD has also taken up this issue. But the Pugwash Movement took an initiative in this matter when the western countries were taking a position that there will be no code for technology transfer. The Pugwashites moved very rapidly in this rather important area by making it clear to both

developed countries and LDCs, that what is involved here is political will, and not technical or economic problems. That document has now become the basis of further negotiations. The other activity of the Pugwash movement having a socio-economic dimension was the symposia on self-reliance organised at Dar-es-Salaam in 1975 for the developing countries and LDCs. The question of self-reliance is a very controversial one. The Western countries are very touchy about it, without fully understanding what the LDCs mean by self-reliance. Under the auspices of Pugwash, national and social scientists of the North and South have assembled together to formulate dispassionately and in clearcut terms what the concept means, how it would be applied in practice, and with what effect. That is, how different mechanisms of developmental co-operation and aid between industrialised and less developed countries would be affected, and what would be the impact of a self-reliant strategy on the UN system. The Pugwash movement has thus diffused a potential focal point of conflict and has built a basis of understanding, thus proving that it's not the bogey that people might think it to be. Yet another example of Pugwash activity is the attempt to formulate a code of conduct for transnational corporations.

4 I don't quite know what you mean by 'concepts' here. But I do think that one can say, that although it was a universal movement, the weight of participation and the weight of formulation of problems of interest and the approaches followed in addressing oneself to these problems reveals that the industrialised world, both the capitalist bloc and the socialist bloc, have exercised an overwhelmingly dominant say. Thus, the 3 continents of Asia, Africa and Latin America have barely 6 places in the Pugwash Council, while North America, Europe and the Soviet Union have as many as 16 places. This, of course, is part of a historical legacy. For the Pugwash movement started as a concern of 2 Europeans with the problems of peace in North America and Europe and the basic area of concern was Europe, where there existed the fear of another world war on account of super power rivalry. It is only in the last 5-6 years that LDCs have come into the Pugwash movement in an active way. India, of course, has had a very special place in the Pugwash movement, by being the first developing country to be on the Pugwash Council right from the beginning. Ehabha, Sarabhai and other Indian scientists were stalwarts of the Pugwash movement. India's special place was largely because we have the largest number of scientists in the developing world and also because of their much closer interaction with Western scientists. Again, our government and our country by virtue of their policy and size and resources have been much more involved in international affairs. Therefore, one must make an

allowance for the historical perspective. But having made that allowance it is still there to say that the quantitative ratio of 16:6 within the Council between scientists of the West and the LDCs is a reflection of the balance of orientation of Pugwashites on problems of science in world affairs. Of course, there are individual scientists who are sympathetic to Third World problems, and who have considerable insight and understanding. But in terms of cumulative weight of opinion, it will take time before the quantitative ratio changes in favour of the Third World. The immediate need, therefore, is to increase the numerical strength and improve the intellectual quality of Third World scientists participating in Pugwash Conferences.

5 I have already spoken about the initiatives that the Pugwash movement has taken on the socio-economic development dimension when I spoke about the seminar on self-reliance and the code of conduct for transnational corporations and technology transfer. These have led to considerable feedback, both on the national and the international level. The codes of conduct on transnational corporations and transfer of technology have given rise to considerable controversy, because of their very definite character of enshrining and protecting the interests of the Third World. There has also been a feedback from the transnationals and the governments of western countries. And the level and quality of the feedback shows that the document is being taken seriously. The seminar on self-reliance also aroused a fair amount of reaction. A detailed report has appeared in a leading journal, "World Development". It has also been privately circulated in various UN meetings and has generally tended to cause some feedback again, both of a positive and a negative character. The fundamental objective of Pugwash was to stimulate debate on these subjects and to help the Third World to approach these problems with a clear mind about their basic character. Another initiative of Pugwash includes a proposed workshop which will be organised in mid-1977 in India and which will be run by the Indian Pugwash Society. The workshop will be on the formulation of code of character on international scientific co-operation. This workshop will be along the lines of the code on technology transfer which is international in character. The need for such a workshop arose because it was felt that scientific co-operation programmes on some occasions are not being used in the interests of the developing countries and are even at times turning out to be inimical to Third World interests. If this is so, the question is: how does one avoid it? If this is not avoided, scientific co-operation itself will be jeopardised, and we will have a

complete cessation of international scientific exchange and interchange. This issue was taken up at the Madras Conference at the instance of our Prime Minister, Mrs Gandhi, reports have been prepared, and articles written on it, not by Third World scientists, but by scientists from industrialised countries, expressing concern about the need to regulate and facilitate scientific co-operation between nations.

6 This is a rather interesting question in many respects. Basically, I feel that there is really no cause for concern in this regard. But at the same time one must recognise that Pugwash is only one of the international scientific movements among many which is responding to the prevailing international environment. And there is much evidence to show that the evolving international order is one in which a detente has come about between the super powers, and Pugwash has made several notable contributions to this process of detente.

7 As you know, Pugwash is an international conference of scientists, not a conference of Third World scientists. Therefore, it's not the primary objective of the Pugwash movement to improve communication channels between Third World scientists as such. But I have personally found and this is my personal stake in the Pugwash movement that it does provide an opportunity for informal and unofficial meetings between Third World scientists, and provides a forum for such scientists, who come to Pugwash because they share some of the concerns and interests of Pugwashites, eg. their concern in international issues which have a scientific and technological content, their interest in the policy aspects of science and technology. This is, therefore, a fall out effect of the Pugwash movement. There are an increasing number of other organisations which are more directly concerned with problems of scientific co-operation, e.g. in the non-aligned conference. What is important, however, is that Pugwash activities in this field have considerable importance by virtue of its standing in the Western world, and the role it has played in the West in connection with military weapons. Third World scientists can, therefore, use the forum of Pugwash conferences to direct attention to Third World problems because of the prestige that the Pugwash movement enjoys in the scientific world, the diplomatic world, and the United Nations system.

8. No answer.

9. No answer

10. A major objective of Pugwash is to try and move away from the standard view of the north or the industrialised part of the world being a reservoir of technical and scientific know-how and the South or the underdeveloped countries as the recipients. This is an unsatisfactory conceptual framework. Such a structure of relationship, that is, a scientific and technological relationship, has a dampening effect on the will to self-reliance. Meanwhile, within the prevailing paradigm of scientific co-operation between the two worlds, Pugwash can boast of 2 major accomplishments: (1) bringing into being a major centre for research in tropical Africa, called the International Centre for Insect physiology and Ecology in Nairobi. This institution grew out of discussions in Pugwash Conferences. The idea was mooted in 1968 at a conference held in Sweden, where the question arose: how to build a centre of excellence and relevance, of scientific research and application in a underdeveloped country with the participation of scientists from industrialised countries. The result was that 14 scientific academics of industrialised countries and underdeveloped countries have formed a formal association to provide scientific resources to an international centre to work on problems of insects and pests, especially those which affect the health of animals and humans in Central Africa eg. the tsetse fly which attacks cattle, and other insects which cause what is called "river blindness". We know very little about the basic physiology and ecology of these insects - and unless we get to know more, nothing can be done to control them. Pugwashites have been involved in preparing research programs and canvassing for it with UNDP. This has meant the training of a body of biological scientists. This marks a clear break from research structure in which physical scientists had dominated the scene. As we now know from our experience with food production and family planning that biological scientists are extremely important. And this is something which came out of discussion at Pugwash.

(2) Formation of an International Foundation for Science at Stockholm, concerned with providing research grants to individual scientists in less developed countries, to do research in problems connected with development. The grants are meant to be only for applied research, not esoteric research. This financing agency is a product of discussions at the Pugwash Conference in 1971.

11 As you know, the Pugwash movement is meant to be an international conference of scientists. Scientists of the Third world and the West have some distinctive interests as well as some shared objectives. Not all of them can be realised by the Pugwash movement. Therefore, I certainly see no conflict in setting up a separate body of Third World scientists.

However, I also believe that changes in the attitudes and the orientation of the more liberal scientists from industrialised countries can be effected only by staying within the existing Pugwash movement. If the Third World were to withdraw from the Pugwash movement, all we would do is to strengthen the hands of the hardliners in the industrialised world, and there are many, e.g. those who advocate using food as a weapon.

A PUGWASHITE FROM INDIA
(INTERVIEWED)

1 One has to look into the history of the Pugwash movement which started as a non-official effort of American and Soviet scientists to start a dialogue with the objective of trying to avert a nuclear crisis. Therefore, initially, Third world problems were not in the minds of the scientists who started the Pugwash movement. Later, as Third World involvement became important, because the LDCs could play a go between role between the super powers, it became worthwhile for the Pugwash movement to bring Third world scientists into the movement. After Third World scientists began to play a role in the Pugwash movement, it became apparent that some attention must be given to Third World problems, to enable the movement to get some support from the Third World. If we take an interest in your problems, you must take an interest in our problems - it was on the basis of this principle of reciprocity that the whole thing evolved.

2 The Pugwash movement has been more concerned with issues rather than data. The discussions have been on issues where scientific problems relate to society and nations. The Pugwash Secretariat was never required to obtain economic or social data in any large measure. They did, however, try to obtain information in relation to particular issues that Pugwash was at any time discussing.

3 There were 2 factors which created influence of the Third world in the Pugwash movement, first, their ability to communicate with both sides of the bipolar Soviet-American

relationship; second, their ability to bring in new concepts with regard to some of the bipolar confrontations that were taking place. However, by this very factor of Third World interest, Pugwash had to take interest in Third World problems. And the major issue in the Third World has been and will be the problem of development. Thus, the Pugwash movement gradually became involved in problems of development. Though some of the western scientists felt they were spending too much time on developmental problems, and not giving enough attention to disarmament and the nuclear threat.

4 In a sense yes! As the majority of scientists come from the West, they would like to give more emphasis to disarmament than to development.

5 The Third World scientists who come to Pugwash do bring in certain amount of feedback, but this feedback is not in terms of hard facts, rather its more in terms of perceptions of scientists and the countries to which they belong.

6 Pugwash has not really tried to prescribe; but it has tried rather to persuade that certain steps such as disarmament are to be done bilaterally and that it means gains for all nations that participate in the process. These kind of perceptions have been discussed and made known to the Government's concerned. However, there is a problem: the persuasions which are most material are addressed to the super powers, and to the extent that super powers are influenced by their participating scientists in the Pugwash, the persuasions have some value. All this depends on their ability to persuade govts. to act in a certain direction. But this has been a limitation of the Pugwash. For example, Soviet scientists, by and large, are from the Soviet Academy of Sciences and are fully conversant with Soviet policies and very often have been briefed by the Soviet Government. American scientists have no such briefs and no such knowledge of government policies and perceptions - or rather, they are not officially informed. This allowed more freedom for Americans, but less conviction.

7 I have already mentioned one major change that was stimulated by Third World scientists, and that was in regard to development. This has been their most important contribution: their ability to connect the problem of disarmament with the problem of development, which is as much a threat to world peace.

8 I am afraid that channels of communication between Third World scientists are very poor. Of course,

Pugwash bulletins are available to all participating countries. But Pugwash does not do very much for the circulation of information between Third world scientists.

9 Third world scientists do have some influence in changing governmental opinion, but this is only peripheral, because of the individual or personal influence of these scientists with their governments. As for public opinion, Third world scientists have not done very much to mobilise public opinion in any particular direction.

10 (a) I am afraid not so far, though it has made benign noises in this regard.

(b) I do not think Pugwash ever discussed questions of guilt with regard to inequity of trade or transfer of technology. However, it has made some study of transfer of technology and brought out a small tract on transnational corporations, and the adverse effects of technology transfer. But I don't think it has gone very much beyond these kinds of documents, which were really put together on the basis of existing information for the benefit of members of Pugwash Conferences.

11 I don't quite see a Third world Pugwash movement emerging because Pugwash had clear objectives when it started and whether those objectives had any relevance for Third world scientists is a question. However, it's very important to my mind that scientists of the Third world come together by themselves and not under the benign or otherwise influence of the developed world scientists. This, I'm afraid, has not happened. There has been talk of a meeting of scientists of the non-aligned world. In fact, there was a meeting in Sri Lanka on non-aligned scientists preparatory to the Non-Aligned Summit.

But that has not gone very far. That meeting merely discussed issues which relate to science and technology which may be considered at the Summit Conference and prepared a paper to this effect. But nothing very much seems to be happening which would enable Third world scientists to come together and act in a co-operative and positive manner.

A PUGWASHITE FROM INDIA
(INTERVIEWED)

1 One has to recognize the fact that Pugwash came into being because of a feeling among scientists, especially

nuclear scientists, about the serious danger resulting from a build-up of nuclear stockpiles, stockpiles representing weapons of increased striking capability, and increased security and which are difficult in any way to counter. It was felt by scientists that this represented a grave problem to mankind as a whole, because any mishap or wrong decision could have triggered off a situation where human society as a whole could have been wiped out. The real philosophy of the Pugwash meeting has been well expressed in the Russell-Einstein Manifesto. To me, however, the Pugwash meeting has meant what I would regard as the social conscience of mankind. In a sense, many scientists did feel that what was already seen in Hiroshima and Nagasaki and what could certainly be predictable with the build-up of nuclear stockpiles, must be avoided. Once you say that science had developed a social conscience, and scientists were concerned about the implications of science for society, the concept could be enlarged to cover other areas. If we look at science in an earlier period, it was largely concerned with erudite, academic pursuits, and on the other hand, with various techniques and technology of industrial development. It's round the time of the Second World War that science and technology became integrated with each other. Today, scientists recognise that their purely scientific pursuits do not remain a separate entity; they have implications, very often directly, immediately. In the course of time, scientists have to realise the overall problems of mankind, and particularly the peculiar problems of the Third world. I think there is an increasing appreciation that only science and technology cannot solve the problem of development in the Third world; but rather, the solution lies in a sum total package, relating to values, social, political and cultural, with which science and technology can be integrated. The feeling of euphoria which had existed during the 1950s and the 60's that science and technology would ensure economic growth and economic growth was all that mattered and it would solve all problems has given way to more generalised considerations regarding quality of life as a whole, limiting one's necessities and one's demands, so that one does not build up a consumer society. The Pugwash movement has discussed this question from the time of the Addis-Ababa Conference and also a succession of conferences which followed, as also during the Madras Conference. At the Pugwash Conference at Oxford in 1972, there was a heated discussion as to whether Pugwash was doing right in enlarging its area from the original area of disarmament to the more general area of development. And there was a conscious decision that Pugwash would go ahead with the desire of its members to consider questions of development. Though, I must say, that the application of science and technology

to society, is a very much more complex problem than the problem of nuclear threat, for the developmental problem involves social, political and ideological issues. The discussion of nuclear weapons, their control and the reduction of stockpiles, monitoring and detecting weapons systems - these are wholly technical problems. And scientists felt themselves much more capable of dealing with these questions. There is a clear difference in the two areas: the area of nuclear weapons has in it the elements of hard, physical science. But the application of science and technology to the problems of development is a much more complex area, and still a soft science, and therefore, scientists feel diffident in dealing with these questions.

2 The Pugwash Secretariat really does not obtain information as such. The Secretariat is a part-time institution; its hands are tied by activities such as publication of the Pugwash news letters, arranging meetings, bringing out documents. The information content of Pugwash arises out of these meetings which are held regularly and the seminars on specific subjects such as transfer of technology, nuclear weapons, chemical and biological weapons.

3 Pugwash has not really influenced too much Third World developments. But it has played a role in sharpening many definitions through its work on the code of conduct and its work on self-reliance. The main factors which help Pugwash activity is the quality of Third World scientists who participate in the Pugwash meeting and there I do feel that one has not come up with the capabilities that are required. As you know, Pugwash started with the concern about an East-West confrontation. Third World scientists entered the movement quite late. Pugwash groups in Third World countries are very small and have not dug their roots even into the existing scientific community, which is, in any case, very small in many parts of the Third World. Pugwash groups have therefore yet to make an impact on the scientific community as a whole in the Third World.

4 I would say that there are no concepts as such. I have met a large number of very distinguished Pugwashites and my overall impression has been that they are all imbued with a very deep feeling that instead of allowing it to go down the slippery slope of destruction, scientists must try to make this world a happier place to live in. You may, if you want, accept the idea of Pugwash as the social conscience of mankind as a concept. But as you know, there are scientists who are very compassionate, broad-minded and wise, and there are others, who, though very distinguished, are very narrowly confined in their attitudes.

The greatest participation in the Pugwash conferences has been from the advanced countries of the world, and only a small fraction of scientists coming from those countries have any appreciation of Third World problems. Very many of them have extremely naive ideas about what development means. The Pugwash movement can therefore be treated as part of an educational process for them. There are some scientists who are intrinsically honest and trilly concerned about the problems of the Third World. They can be helped to understand better the character of the problems of development. In this sense, Pugwash is a useful platform for Third World scientists.

5 I am not sure that there is really too much of a feedback. Pugwash does not discuss any actions, a forum of discussion and for sharpening one's concepts. What happens, as far as feedback is concerned, that these discussions, e.g. on technology transfer, etc., help in a better appreciation of problems. And these sharpened concepts evolved in the Pugwash find their way to other bodies e.g. the question of the code of conduct was raised at the UNCTAD Conference.

6 It's difficult really to be categorical on this. It's true that most Pugwashites come from the developed part of the world, and look at Pugwash from the United angle of their own countries. Some have quite a bit of experience of the Third World and therefore have a more realistic view. One of the tasks of Third World scientists participating in the Pugwash conferences is to ensure a proper understanding of what development means so that scientists begin to realise the significance of development from a total global perspective and not merely the perspective of the Third World.

7 This aspect, I think, has already been covered in the answers to the earlier questions. Third World scientists, if they are able to educate, convey the new perspective of Third World scientists, to scientists coming from developed countries, a great deal would have been achieved.

8 There are certain channels of communication among Third World scientists, but there is no equivalent here of the Group of 77. Most of the contact between Third World scientists is at the meetings itself. At these meetings, Third World scientists can come together; along with the scientists of the developed world.

9 It's difficult to answer this question on a general basis, because the fact of the matter is that it would depend on Third World scientists themselves. There

are, as you know scientists having enormous influence with their governments. Very few scientists have made much of an impact on public opinion, for the simple reason that scientists are just not the kind of people who would give popular opinion on problems of astro-physics, or nuclear energy and so on. In any case, scientists have not done very much about communicating their ideas about the role of science in society to the public. As far as India is concerned, many of the ideas which emerged at the discussion have been fed back to the governments. Very much more important that Indian scientists have been able to sharpen and enlarge their own perspective which enable them to function more effectively.

10 (a) I would not say that Pugwash has made an effort in this regard. For as I have said earlier, it's not an action body. It does, eg. none of the functions of UNESCO or UNIDO, or ILO, its main job is to produce interaction between scientists in order to arrive at a better understanding of each other's view. Thus, Pugwash started initially with the objective of removing Soviet fears of American intentions and vice versa, fears which were born out of a absence of knowledge, or lack of understanding about each other's perspectives.

(b) Pugwash has no claims of sitting as a court in judgement and trying to arrive at a decision regarding guilt, as you try to pronounce judgement, you destroy the very basis of discussion. It is true that during the Vietnam war, Pugwash conferences passed resolutions criticising American action. But there has been considerable debate in Pugwash as to how useful this is. For originally Pugwash had no idea of issuing statements, etc.; the objective was primarily to meet and discuss.

11 I would not be in favour of a separate Third World Pugwash Conference for one is never sure about how much one can achieve. There are any number of forums which exist today, where we can discuss these problems. To have yet another movement serves no purposes.

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