

January 1981 Volume 18 No. 3

Pugwash Newsletter

issued quarterly by the Council of the Pugwash Conferences on
Science and World Affairs

FROM BREUKELLEN TO BANFF

The Breukelen Conference reported in our last Newsletter received wide notice in the media of many countries. This was especially true of the special statement on medical consequences of a nuclear war, and the declaration on the danger of an outbreak of nuclear war adopted by the Conference at the closing plenary session. Conveners of national Pugwash groups and individual participants were active in circulating this information to the public media and scientific journals in their respective countries.

Pugwash and the media have too often been mutually exclusive in their relationships, and good steps towards remedying this situation were taken at the workshop on "Averting Nuclear War: the Role of the Media" held in Bad Deutsch-Altenburg, Austria, where a distinguished group of scientists and media representatives met on 11 and 12 October (p.79) A report on the meeting, drawn up by two of the participants, Nigel Calder and Andrew Wilson, provides an excellent idea of the flavour and content of the discussions (p.80). The historic settlement on the Danube, a favourite spot of Marcus Aurelius, provided a perfect background, thanks to the Austrian Pugwash Group and the untiring efforts of its convener, Engelbert Broda. One of the highlights of the meeting was a moving intervention by Abdus Salam regarding the Third World which the meeting asked to be circulated (p. 82).

The Third Workshop on "The Current Crisis of Nuclear Forces Deployment in Europe", as with the first two, was held in Geneva (6 and 7 December). The transition from Carter to Reagan was in mid-stream and no one (including, no doubt, Reagan himself) could predict the negotiating posture on arms control of the new administration. Nevertheless the workshop was useful in exploring various possible solutions to the problem of "modernization" of nuclear weapons in Europe, with Francesco Calogero's thoughtful paper (p. 89) serving to launch the discussion. The free exchange of views and the agreed statement (p. 88) provided the needed momentum for a continuing dialogue between opposing sides which would permit further exploration of the possibilities. The workshop was financed by the Swiss Association of the Friends of Pugwash, recently organized through the energetic initiative of Jean-François Rochette, H. Dudley Wright and Michael Wyler. Workshop participants were dinner guests of the Association at a local golf club where some of the sponsors had their first opportunity to meet eastern Europeans, and to observe that Pugwash reflects a wide spectrum of political and socio-economic views with the common purpose of scientists seeking peaceful rather than military solutions for world problems that bedevil our epoch.

A few days later our 36th Symposium, "New Weapons Systems and Criteria for Evaluating their Dangers", was held in London in the Ciba House where fine hospitality was provided by the Ciba Foundation. The high level of the discussions is reflected in the report (p. 96) kindly prepared by Bill Gutteridge and Trevor Taylor, and the excellent working papers (p. 95) which will eventually be published in book form. The British Pugwash Group were host to the meeting, with Joe Rotblat overseeing the many details of organization including an unusual public session (a full house of some 250 seats) addressed by Field Marshall Lord Carver, Lord Zuckerman, Lord Noel-Baker, Francesco Calogero and Bernie Feld (p.100). The public session was an excellent example of an effort by a national Pugwash group to bring to a wider public expert, though not necessarily uniform, views on vital questions. (Robert Ditchburn's report of this meeting is given on p.101).

Thus ended a busy calendar year of Pugwash activities. The Executive Committee

which met in Geneva at the time of the December workshop mapped out a full schedule for the first half of 1981 (back cover) leading up to the Banff Conference for which preparations are well underway. Warsaw (1982) was also in view for the Executive Committee, and national groups have been asked to consider nominations for the new Council to be elected at that Conference (see below).

Our record of accomplishment has depended and will depend on the devoted efforts of individuals both as active participants in our meetings and in the many arduous auxiliary tasks connected with Pugwash activities, some of which I have mentioned above. These personal sacrifices of time and energy taken from highly taxed reserves, and often involving drab detail, should not be forgotten or taken for granted. As scientists trying to practice "the art of the possible" we should take heed of the observation of William Blake in the 18th century that:

"He who would do good to another must do it in Minute Particulars.....

For Art and Science cannot exist but in minutely organized Particulars."

M. M. Kaplan

PROCEDURE FOR THE ELECTION OF THE NEW PUGWASH COUNCIL IN WARSAW (1982)

(Agreed by Council in Breukelen, Netherlands, August 1980)

1. General principle

The national groups and the present Council will be the organs involved in the preparation of a slate for the new Council to be elected at the quinquennial Conference in Warsaw in 1982.

2. Procedure

National groups will be asked by the Director-General to submit names of individuals to serve on Council. The nominees will be only from the nominating countries. Using the present geographical distribution of Council seats as a rough guide, the Council will decide on a list of names with alternatives.

In addition, Council members can make further nominations of individuals from any country. Out of these nominations Council will select two names to fill the two co-optable places.

In preparing the slate, Council would bear in mind the need for some balance in respect of scientific disciplines, age and sex, as well as the need to rotate the membership.

3. Timetable

Nominations to be submitted before the next meeting of Council in Banff (1981). In the letter to the national groups the D.G. should intimate that, if they wish, national groups may consult with other groups within or outside the present constituencies.

Council will consider the nominations at the Banff meeting and prepare the slate.

The persons nominated should be asked whether they would be willing to stand and to serve actively on Council, if elected.

The slate should be communicated to the national groups to give them an opportunity to make reasoned objections, or to suggest last minute substitutes. Council will consider these matters at its pre-Conference meeting in Warsaw, when the final list will be agreed upon and submitted to the Conference.

Pugwash Workshop on
"AVERTING NUCLEAR WAR : THE ROLE OF THE MEDIA
Bad Deutsch-Altenburg, Austria, 11-12 October 1980

Participants

- Ruth Adams, Editor, Bulletin of Atomic Scientists, 1020 East 58th St., Chicago, Illinois 60637, USA
- Wolf Graf von Baudissin, Director, Inst. f. Friedensforschung u. Sicherheitspolitik, Universität Hamburg, Falkenstein 1, D-2000 Hamburg 55, FRG
- David Boulton, Head of Current Affairs, Granada Television (ITV), Manchester 3, UK
- E. Broda, Professor of Physical Chemistry, Vienna University, Wahringerstr. 42, A-1090 Vienna, Austria
- Nigel Calder, science writer, 8 The Chase, Furnace Green, Crawley, Sussex, UK
- Marian Dobrosielski, Deputy Minister of Foreign Affairs, Ministry of Foreign Affairs, Warsaw, Poland
- André Fontaine, Chief Editor, Le Monde, 5 rue des Italiens, 75427 Paris Cedex 09, France
- Thomas A. Halsted, Public Affairs Adviser, U.S. Arms Control and Disarmament Agency, 320 21st St. N.W., Washington, D.C., USA
- Joseph Handler, science writer, 20 chemin du Boucher, CH-1202 Geneva, Switzerland
- Dorothy Hodgkin, Nobel Laureate in Chemistry, President of Pugwash, Chemical Crystallography, 9 Parks Road, Oxford, UK
- Sergei Kapitza, Professor of Physics, Academy of Science, Inst. for Physical Problems, Vorobevskoye Sh. 2, Moscow B-334, USSR
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- Alfred Kastler, Nobel Laureate in Physics, 1 rue du Val de Grace, F-75005, Paris, France
- Wilhelm Kuntner, Landesverteidigungsakademie, Stiftgasse 2A, A-1070 Vienna, Austria
- Flora Lewis, Foreign Editor, New York Times, 3 rue Scribe, Paris 9e, France
- Maciej Nalecz, physicist, Chairman of the Pugwash Council, Polish Academy of Sciences, Palac Kultury i Nauki, p. 2318, Warsaw, Poland
- Roel Oostra, journalist, Dutch TV, NCRV-TV, Schuttersweg 8, Hilversum, Netherlands
- Lord Ritchie Calder, House of Lords, Philpstoun House, Linlithgow, West Lothian, Scotland
- Joseph Rotblat, Professor of Physics, 8 Asmara Road, London NW2 3ST, UK
- Abdus Salam, Nobel Laureate in Physics, Director, International Centre for Theoretical Physics, Trieste, Italy
- Roberto Savio, Director-General, Inter Press Service, Third World News Agency, Via Panisperna 207, Rome, Italy

Herbert Scoville Jr., President, Arms Control Assoc., 6400 Georgetown Pike, McLean, Va. 22101, USA

Victor F. Weisskopf, Professor of Physics, MIT 6-308, Cambridge, Mass. 02139, USA

Carl F. von Weizsacker, physicist, Max-Planck-Inst., Riemerschmidstrasse 7, D-8130 Starnberg, FRG

Andrew Wilson, Foreign Editor, The Observer, 8 St. Andrew's Hall, London EC4, UK

Adam Witold Wysocki, Deputy Editor, "Zycie Warszawy", Marszalkowska 3/5, Warsaw, Poland

V. Zagladin, Deputy Director, Dept. for International Affairs, Central Committee, CPSU, Moscow, USSR

The Workshop

If experts and the mass media keep harping on the undoubted risk of nuclear war and its consequent horrors, do they induce a sense of familiarity or fatalism in the general public? If so, might that response heighten the risk of nuclear war by lessening public resistance? This aspect of social psychology was one theme in an unusual workshop that brought a typical Pugwash group of scientists and military-political analysts into free-ranging discussions with newspaper editors and television journalists.

Opinion polls had revealed a widespread and increasing expectation of nuclear war, notably among citizens of Western Europe. On the other hand, this fear often expressed itself in exaggerated attention to the 'numbers game' in the arms race and to the lesser problems associated with civilian nuclear power programmes. The consensus in the workshop was that honest fears about nuclear war should be candidly reported and that readers and viewers ought to be reminded from time to time of the horrors in store for them, and their families and neighbours, should nuclear war break out. But there was an important rider: hope must not be extinguished and the media should pay due attention to practical proposals for reducing the risk of nuclear war.

Some consequences of the deployment of missiles of high accuracy were salient among the substantive problems reviewed. In particular the workshop considered the renewed arms race in Europe, the rise of theories about fighting and 'winning' limited nuclear wars, and the advice (often tendentious) given by governments about civil defence in nuclear war. Official East-West talks about "Euromissiles" were welcomed, but there was general doubt about the ability of formal negotiations on the lines of SALT to keep pace with the technology. Alternative possibilities included (1) 'reciprocal unilateralism' (in which arms reductions were made spontaneously by either side in the expectation of similar reductions by the other); (2) a possible declaration of 'no first use' of nuclear weapons by all parties; and (3) the designation of 'intervention-free zones' in the wider world, where the superpowers would keep out of local conflicts. Several participants thought the way to substantial agreements on arms control lay through confidence-building measures in other areas; but it was also argued that, if the arms race continued, such measures were bound to lose conviction in the long run.

More generally, the media representatives contrasted their approach with that of

scientific and military analysts. While the latter had greater familiarity with weapons systems and the technicalities of arms control and verification methods, the press claimed a greater awareness of the complexities of political life and international relations, and of human factors such as hope and fear, pride and deceit, which were at least as important determinants of arms races and wars as the technical factors. "All governments lie", one participant remarked, "and the greater the country the greater the lies."

The limited scope of attention among political leaders, the media and the public was also a cause for concern. The 'serious' media had a good record of anticipating global problems and threats to peace, but such articles and television programmes were usually ignored until a problem became a crisis. The far-reaching, interconnected complexities of the globe were not matched by the very restricted agenda at the highest levels of government, nor by the necessarily simple ideas communicable to the public. The modern world was seen to be lurching from crisis to crisis, with little success in solving festering problems until events compelled attention to them. Notably there was an urgent need for East and West to increase and coordinate their help to the Third World for the development of new raw-material resources, so as to avoid competition and conflict in the quest for scarce supplies.

Frank and unrepentant discussions took place about the ownership and roles of the media in the socialist and non-socialist blocs, and about the different rules on the two sides affecting the availability of information and the scope of comments. Nevertheless, exchanges of articles and television programmes between countries of East and West, although typically on cultural and peaceful scientific matters, were welcomed as an aid to international understanding and goodwill. This was one way of correcting the journalistic clichés which gave stereotyped impressions of other countries and their political and economic systems.

The conception of this workshop dated back to the Pugwash workshop on crisis management (Geneva, December 1978), which attached great importance to the role of the news media in crises. The Altenburg workshop considered, for example, the intense and persistent interest of the US media in the fate of the American hostages seized in Teheran in 1979. In part this was engineered by the Iranian students, who stage-managed a succession of events for the television cameras. As a result the hostages loomed larger in US foreign policy throughout 1980 than they might otherwise have done, and the question arose whether the armed raid to free them would have been attempted in the absence of such media interest.

Concerning the Polish strikes of 1980, criticisms were levelled at some of the Western media for speculating too often about Soviet intervention in Poland. Against this, a strongly worded comment on Polish events in the Soviet press had been read as implying a possibility of intervention. Western journalists commented on the difficulty in obtaining explicit statements of official Eastern views on political and military developments.

The Iran-Iraq war, in progress when the workshop met, illustrated problems of a different kind. New technical possibilities of reporting from remote places using satellite-relayed images were counterbalanced by restrictions on the movements of journalists and camera crews. A criticism was voiced of 'northern' media, that they tended to discuss issues in the Third World as aspects of the East-West competition rather than attempting to understand the viewpoints of the local protagonists. But media representatives insisted that questions of 'who is backing whom?' were often essential for interpreting events. They also stressed the sheer impossibility of obtaining sufficient and timely information to arrive at a fully balanced view of fast-moving crises. The media are not omniscient; nor are they

all-powerful in influencing national leaders and public opinion.

During the closing session, participants warmly expressed their wish to continue the contacts and exchanges established at the Altenburg workshop. Practical consequences included ideas for media treatment of particular topics in averting nuclear war, and a promise by Pugwash officers to make themselves available as a channel of non-governmental expert advice for the press on technical matters. A forceful statement by one scientist about the despair felt in the Third World was to be adapted into an article for release to the press.

Three suggestions for future activities were commended to the Pugwash Council:

1. That media workshops of this type should take place about once a year with some continuity and some turnover of participation. One suggestion was that the next workshop might focus on nuclear proliferation and on crises in the Third World.
2. That national Pugwash groups might be encouraged to involve well-informed media people in their activities. Pugwash in the German Federal Republic was cited as one national group where this is normal practice.
3. That renewed consideration be given to inviting some media representatives as full participants in 'ordinary' Pugwash meetings and workshops, subject to the usual rules of confidentiality.

A fourth suggestion, greeted with more doubt, was that Pugwash should involve itself directly in promoting a better flow of information to 'northern' media about the perceptions of the Third World. A possible media workshop on Third-World and proliferation problems, as indicated in (1) above, might give further consideration to ideas of this kind.

Nigel Calder
Andrew Wilson

Speech by Professor Abdus Salam

It is an honour for me to attend the Pugwash meeting on this occasion.

I am not normally subdued, but today I am in a very subdued mood because I have just come from the UNESCO Annual Conference which is at the present moment going on in Belgrade. The reason for my being subdued is, of course, the war between Iraq and Iran and the fighting in Afghanistan, next door to my own country.

Tomorrow, at the Belgrade Conference of UNESCO, a start will be made in the discussion of the media problem. There are around 4,000 persons attending the Belgrade Conference, the majority coming from the developing countries. Our meeting here today, if it had been held in Belgrade, might have received an input from these delegates from the developing countries which, with all due respects to our Viennese hosts, it is unlikely we can get here in Vienna. Being transferred from Belgrade to Vienna in a matter of two hours, I feel as if there are two different planets and two different sets of preoccupations between one conference and the other.

As you know, the Belgrade Conference and its discussion on media will be devoted to

the feeling of misrepresentation at the hands of the media which the developing countries feel they have to try to put right. If I may summarize the feeling in Belgrade, and if I may speak very frankly among friends here, the feeling is that the superpowers have divided the developing world into two blocs - two spheres of influence. Even if there are differences between what part belongs to whom, no one among the superpowers is going to risk nuclear annihilation to stop one of the superpowers occupying any of the developing countries. This feeling of hopelessness is what I heard from the delegates of the developing countries in Belgrade.

As an example of how things can look very different when seen from one side or the other, let us take the case of the OPEC nations and particularly the Arabs among them. From their point of view, they do not have any other resource except oil. Once the oil finishes, in less than fifty years, they will have absolutely nothing, except the desert. Why should they mine their oil and finish it in fifty years? It is hard for them to invest their money. There is the fear of appropriation. If they deposit the money in the rich countries there is the fear of inflation, of a catastrophic drop in the real value. If they buy real estate, there are groups in the rich countries which try to deny them this, and on top of this the media in the West still persist in representing them as nothing but robbers. Honestly, these countries are to be pitied for their long range predicament, rather than otherwise.

And another thing: whenever the question of aid to developing countries comes up, one always hears the remark "the Arabs have all the money. Why don't they share it with the developing countries?". It is not realized that the total wealth of the Arab countries, the GNP of all of them, including Egypt, is just one third of the GNP of the USSR, or one half of Germany. This fact is seldom brought home to the readers of the Western media.

Another example of misrepresentation which is very strongly felt is this. An Iranian delegate in Belgrade said to me "Can you tell me of any countries in the developing world, or among the many developed countries, in which after a revolution there have been three free elections - one a referendum, one an election for the parliament, and one an election for a president?". The Iranian was bitter that they were hardly ever commended for their maturity as a country observing democratic processes.

I was in Venezuela in the early part of last year, and they showed me a report written on Venezuelan science by an eminent Western scientist who had been specially invited to visit and report on the science situation there. Venezuela, as you may know, is trying very hard to build up science at a high level. The man who showed me the report summarized it as saying: "How can these men, in such a developing country, aspire to work on advanced science like neurobiology or hydromechanics? These people are, after all, no better than monkeys who jump from the trees into Rolls Royces."

This should give you an example, not of misrepresentation, perhaps, but of a singular lack of sensitivity.

I was on the receiving end of the same misunderstanding. I still recall my suggestion to set up a centre for theoretical physics for the developing countries. In almost identical terms, a delegate from one of the rich countries at the General Conference of the IAEA, spoke in the following way: "Salam has asked for a centre on theoretical physics. Does he not realize that theoretical physics is the Rolls Royce of science? What these countries want more than anything else, is donkey cards."

But coming back to the media. One of the reports which the media totally neglected was the report submitted by the US President, which I believe was published in July this year, on the forecast for the year 2,000. I believe it carried one day's editorial in the Washington Post, but I do not know if any paper in Britain reported it. The report is absolutely frightening. It was apparently prepared by scientific organizations in the US so, factually, there is nothing one can find fault with. It says that in twenty years, the population of the world will have grown from 4 billion to 6.5. There will need to be an increase of 90% of the present levels of food available. However, since the world's arable area will increase by 4%, the remainder will have to be found by an increase in energy inputs to agriculture. The report went on to remark that normally the demands of arable land and the demands for fuel from developing countries will require that 40% of forest cover will disappear and with this would die half a million species of plants, animals and birds. What amazes me is that the environmentalists who are so active in Western countries, hardly took any notice of this dire warning of half a million disappearing species of plant and animal life. Or is it that since this will happen in the developing countries, they just wished to shut their eyes to this? It is not that the developing countries love the environment less, it is simply a fact of poverty and the utilization by the rich countries of the resources of the poor which drive those in developing countries to such extreme measures.

The scandal of the use of resources on armaments is, of course, well known, but one figure which was very significant for me came up recently. A month ago I was asked to speak about the accelerator which the European nations would like to build in Geneva in order to prove the theory for which I and my colleagues have recently been responsible - the unification theory of the weak and electromagnetic forces. I was speaking to the Science Research Council in the UK and I was defending the project. Someone from the audience asked me how I could defend useless expenditure on what would cost half a billion dollars spent over the next six years, particularly since I come from a developing country. My reply was that if building an accelerator was madness, at such costs, what can one call the building of nuclear submarines costing three billion dollars each, of which four have been commissioned by the UK a few months back. And there are 250 of these in the world's oceans.

I would like to end with just one remark. It is about the Vienna Conference on Science and Technology held in September 1979 in this beautiful town. The scientists from the poor countries came flocking to Vienna, hoping that the big global problems of disease and deserts and food and other developments, to which science and technology could make important contributions, were going, at last, to be solved. There was the hope of sympathy from scientifically trained delegates, pondering on solutions of scientific problems, as well as provision of scientific resources, in an atmosphere of cooperation and good will. When the delegates of the rich countries had arrived, one saw, for example, that there was not one single scientist in the UK delegation. This was protested against by "Nature". Alas, the whole atmosphere of the Conference was nothing but a political confrontation.

The developing countries started with the statement that on the basis of 2% of their GNP spent on science and technology, they should be spending 20 billion dollars a year. In actual fact they could afford only one tenth of this - about two billion. They requested that a fund should be set up which should be levied like a tax on certain types of exports - something which Pugwash has on several occasions advocated. This would collect around two billion dollars, and the idea was that one third would be paid by the US, one third by the

European nations and one third by the OPEC countries. In the lobbies, one heard the remarks that the European nations, Japan and the US had not only refused to consider this fund of two billion dollars, they had also persuaded the OPEC countries to stop making an offer. In the end, the discussion went on until early morning hours of the last day of the meeting, and the fund was whittled down from two billion dollars to around one seventh of this. The tenor of the discussion which went on during the rest of the Conference was something like this: the Chairman: "We need these sums to stimulate science and technology". Rich country delegate: "Sir, what my delegation object to is the word stimulate. This should be replaced by the word encourage." This would take five minutes of discussion.

So the fund for science and technology to be created by the UN whittled down from two billion dollars to 250 million.

This year, in May, the pledging conference was held and the pledges did not even come to 250 million dollars, producing nothing more than 45 million dollars, of which Italy promised 12 millions and USA 10 millions. Nothing from Germany or the UK. Of course, the USSR never appeared at these pledging conferences and did not contribute anything at all.

So this is the story of science and technology for the developing nations. How many tears were shed by the media on this or on similar conferences? How many people really understood how desperate this makes the poor countries, who are trying to build up new information media in Belgrade?

SCIENCE AND THE MEDIA

by S. P. Kapitza

Finally, after many years of a game in hide-and-seeK, scientists engaged in issues of peace and war are meeting the media. On our agenda we have some of the most pressing issues facing the world at a time of increased international complications. Looming over all other items in the menace of nuclear war.

During the years of Pugwash activities many of the participants were engaged in discussions on the scientific and social issues emerging from the advent of arms technology, and the direct threat that they bear on humanity. The results of these studies were primarily meant for statesmen as an impartial attempt, if not to educate, to enlighten concerning basic scientific facts.

Today it is recognized that our efforts should also be directed towards the public at large, and it is here that the media step in. On the other hand the media, the fourth estate, have become an independent political factor on their own. A new dimension, the emotional one, is added to the framework of our deliberations. Here it would be proper to remind ourselves that our founding father's first major action was the now famous public statement that so powerfully expressed scientific reasoning with words of passion on the imminent danger of nuclear arms.

Of the items of immediate importance on our agenda we once again single out the fateful ideas on permissiveness in the limited use of nuclear weapons that have been recently propagated. We have to keep in mind the possibility of the escalation of wars, the ill-

defined if existent difference between tactical and strategic weapons, and the great vulnerability of modern industrialized countries demonstrated on a number of occasions by accidental breakdowns in technology. It is instructive to note the remarkable contrast with which nuclear energy has been treated in some countries as compared to lax words about bombs. In a number of cases we notice that the emotional, if not the irrational, emerges when reason sleeps and hope is seemingly lost.

Are we today in a position to enquire in an age that has been with some arrogance called the Age of Science, to what extent the all-powerful media can or even should be impartial on these matters. To what extent the scaring game of numbers, supposedly objective and scientific has become an instrument of propaganda, and what are the responsibilities of the media in this case.

It is recognized that the media have a dual function, that of informing the public and in developing attitudes of society. If we can grant a degree of independence to the first dimension of its activity, both the scope, methods and importance of the second are basically governed by the Establishment.

The discussion of this dichotomy is to a great extent covered in the prolonged debate on the MacBride Report on the mass media. Unfortunately, the problems of science and the media were not examined in any detail in this interesting study.

It should be explicitly stated that over the past few years the media have definitely come to recognize the importance of socio-scientific problems. From a service in informing the public on the progress of science and technology, from popularizing the concepts of science, the media, especially television, have now gone on to develop attitudes towards scientific matters, to enlighten and hopefully to help develop a more scientifically based Weltanschauung.

In propagating our common intellectual heritage, the concepts of world science, we have to overcome not only educational, departmental and cultural boundaries, but also national ones. Of special importance here are global problems, that by their very nature are international in scope. Moreover, it has often been mentioned that in considering these problems we are paving a way for a new mentality based on cooperation and parity, rather than sovereignty and superiority, to policies of détente and coexistence.

In presenting global problems the consensus of opinions worked out by a number of international organizations like UNESCO, IIASA, MAGATE, SIPRI, etc. could help in expressing the point of view of science. We cannot, moreover should not, expect these to be the final solutions. The message here is the method of approach, rather than the results themselves, that have by themselves often led to undue alarmism. On these matters we should be guided both by historical optimism and political realism.

Of increasing importance are problems of values, leading to a reappraisal of the existing system of ethics and consumerism. Here the concepts of scientific humanism are gaining ground.

We can express hope that by a concerted international effort we should explore ways and find means to employ science as a signal for mutual understanding and trust. Perhaps in this divided world of ours this is the one simple thing that really matters and can be done by those present. For it is in the caves of ignorance that monsters are born.

The Third Pugwash Workshop on
THE CURRENT CRISIS OF NUCLEAR FORCES IN EUROPE

Geneva, 6 and 7 December 1980

Agenda: Terms of a NATO/WTO Agreement Aimed at Stopping and Reversing
Deployment of Nuclear Forces in Europe

Participants

Dr. Frank Barnaby, Director, Stockholm International Peace Research Institute,
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Gen. (ret.) Wolf Graf von Baudissin, Director, Institute for Peace Research and Security,
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Gen. (ret.) H. de Bordas, Les Invalides, Paris, France

Dr. Anders Boserup, Adviser on Disarmament, Copenhagen, Denmark

Prof. Francesco Calogero, Professor of Theoretical Physics, University of Rome, Italy

Prof. Christian Dominicé, Director, University Institute for Graduate International Studies,
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Prof. Paul Doty, Director, Centre for Science and International Affairs, Harvard University,
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Prof. B.T. Feld, Professor of Physics, M.I.T., Cambridge, Mass., USA

Prof. Jacques Freymond, Chairman, Centre for Applied Studies in International Negotiations,
Geneva, Switzerland

Prof. E.E. Galal, Adviser to Minister of Health, Cairo, Egypt

Dr. M.M. Kaplan, Director-General of Pugwash, Geneva, Switzerland

Dr. Jean Klein, Institute of International Relations, Paris, France

Prof. Peter Klein, Institute for International Politics and Economics, Berlin-Adlershof,
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Ms Flora Lewis, Foreign Editor, New York Times, Paris, France

Acad. M.A. Markov, Academy of Sciences, Moscow, USSR

Prof. Jorma Miettinen, University of Helsinki, Finland

Gen. (ret.) Mikhail Milstein, Professor, Institute of US and Canada Studies of Academy of
Sciences, Moscow, USSR

Dr. W. Multan, Polish Institute of Foreign Affairs, Warsaw, Poland

Prof. Maciej Nalecz, Chairman of the Pugwash Council, Warsaw, Poland

Dr. Vladimir Pavlichenko, Academy of Sciences, Moscow, USSR

Prof. J. Rotblat, Emeritus Professor of Physics, University of London, UK

Dr. Joseph Schaerli, Federal Military Department, Bern, Switzerland

Prof. A.C. Sjaastad, Norwegian Institute of Foreign Affairs, Oslo, Norway

Prof. Jean-Pierre Stroot, Institute of Nuclear Sciences, Brussels, Belgium

Mr. K. Subrahmanyam, Director, Institute for Defence Studies and Analyses, New Delhi, India

Prof. Kosta Tsipis, Department of Physics, M.I.T., Cambridge, Mass., USA

Prof. Miguel Wionczek, El Colegio de Mexico, Mexico City, Mexico

Lord Zuckerman, House of Lords, London, UK

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The third in a series of Pugwash workshops on the deployment of nuclear weapons in Europe was held in Geneva on 6 and 7 December 1980. The first two meetings were held in January and April of 1980, also in Geneva, to promote the initiation of formal negotiations on the problem (see January and April 1980 issues of the Newsletter). The first round of official negotiations between the USA and USSR was started in October. The Pugwash Executive Committee met after the closure of the third workshop and issued the following report agreed to by the participants listed.

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Report

The Third Pugwash Workshop on "The Current Crisis of Nuclear Forces in Europe" was held in Geneva on 6th and 7th December 1980 and was attended by 28 participants from 17 countries. Like the two earlier Workshops held in January and April of this year, the Third Workshop was convened because of the escalation of the arms race and the increased possibilities of nuclear conflict brought about by the so-called "modernization" of medium range nuclear delivery systems in Europe.

The Workshop was encouraged by the beginning of formal discussions, in October and November here in Geneva, on limiting medium-range nuclear weapons. In view of the overall deterioration in the international situation, the participants urged an early resumption of these negotiations and a commitment on both sides to secure substantial and verified reductions of nuclear weapons in Europe.

The participants reaffirmed the conclusion of earlier meetings that the negotiations would be greatly facilitated by a determination of the parties involved not to take any practical steps during the preparations for negotiations, and during the negotiations themselves, that would change the present level of nuclear forces in Europe.

The participants discussed a number of specific proposals that could further facilitate successful negotiations. Among these a proposal was made not to increase the present level of medium range missiles, and to proceed promptly with negotiations for reduction of nuclear weapons in Europe. Another proposal was to have a temporary agreement whereby development and deployment in the West of ground-launched cruise missiles with a range of over 600 kms would be withheld in exchange for limitation of numbers of SS-20 launchers. It was considered desirable that proposals along these and other lines be agreed quickly so as to stop current developments and thereby provide the appropriate

environment for negotiations, including eventually mutual limitations on the number and types of so-called tactical, theatre nuclear (TNF) weapons and conventional forces.

It was agreed that the successful limitation of long range theatre nuclear weapons in Europe requires the implementation of a SALT II treaty. Moreover, it was agreed that the maintenance of world peace, in which SALT and TNF treaties would continue in force and expand their coverage, requires that all nations respect each other's territorial integrity and independence and, in particular, abstain from deploying forces and establishing military bases in developing countries.

Deep concern was expressed with respect to the doctrines that appear to govern the actual use of nuclear weapons. It was believed that new weapons development was destabilizing, that "limited war" strategies were making nuclear war more likely with an almost certainty that such wars would escalate to world-wide destruction, and that "winability" of nuclear war is a profoundly dangerous illusion. Finally, there was a broadly based consensus that the sense of security and mutual confidence, which is the essence of a peaceful world, would require going beyond the present balancing of the numbers of warheads and other military capabilities.

CAN A NUCLEAR ARMS RACE IN EUROPE BE AVOIDED?

Background paper by F. Calogero

1. This paper is a sequel to the contribution by J. Rotblat and myself to the preceding Workshop (1). Thus we will not repeat here the points made in (1), although we suggest they are still valid.
2. The final draft of this paper is written just at the time the negotiations in Geneva between the United States and the Soviet Union on Long-Range Theatre Nuclear Forces (LRTNFs) in Europe are beginning. This is a welcome development, although it is evident that no serious business will be possible before the outcome of the US Presidential election is known. The fact that these negotiations seem to be taking place in a specific forum, rather than being imbedded in the context of negotiations (such as SALT and MBFR) having a cumbersome history of their own, supports the hope that they will yield quickly the agreement which is urgently needed to forestall the current and envisaged escalation of nuclear weapon deployments in Europe.
3. It stands to reason that while a negotiation is in progress some sort of freeze prevails. This may however be difficult to achieve in view of the asymmetry of the present situation of European LRTNFs, with the Soviet side producing and deploying SS20s (and Backfires), and the Western side still at the development stage for the Pershing II and the Ground Launched Cruise Missile (GLCM). Of course a preferred solution would be a moratorium, pending the negotiation, on deployments, production and development. But since the asymmetrical nature of the situation (and the difficulties of definition and verifiability) might make the realization of such a freeze difficult, it might be preferable not to put too much emphasis on this requirement. Indeed, since the primary goal is to reach an agreement quickly, a protracted prenegotiation on the question of a freeze should be avoided;

the more so since the very prospect of a quick agreement decreases the importance of a freeze. But we shall return to this question below; indeed the simple and quick agreement proposed below could itself be viewed as a freeze.

4. From the Soviet side it appears that the main requirements which are formulated in view of the negotiations on nuclear weapons in Europe can be summarized in three points:

- i) that the basic guiding principle be overall parity and equal security;
- ii) that SALT II be ratified;
- iii) that the negotiations include the so-called Forward Based Systems (FBSs) deployed in Europe or at sea near Europe.

The last point is consistent with the standard Soviet contention that all nuclear weapons capable of reaching the Soviet Union be counted as strategic. Indeed the exclusion of FBSs from SALT up to now has been considered by the Soviet side as a major concession on their part. But a serious disadvantage of the inclusion of FBSs in a negotiation is the major complication this entails, thereby making a quick agreement unlikely.

5. The Western point of view cannot be summarized that easily. There exists indeed a large spread of different opinions, ranging from a genuine concern over any increase of nuclear weaponry in Europe (for instance by the churches in Holland) to an obsession with NATO "ineffectiveness" vis-a-vis Soviet "superiority" (see, for instance, (2)). These different perceptions lead naturally to opposite stands over European LRTNFs, as indicated for instance on one side by the reluctance of the Dutch Government to accept the NATO "modernization" programme, and at the other extreme (2) by the support of this "modernization" programme viewed as a minimum requirement, and by a transparent desire to use it as a step towards acquisition of more direct control over nuclear weaponry in Central Europe.

6. The achievement of an effective nuclear arms control agreement in Europe, namely one that will at least prevent the escalation in deployments now in progress and in prospect, hinge on the recognition of the existence of an influential advocacy of the "modernization" programme, largely motivated by ulterior motives, and on the political will and capability to over-rule it. To complicate matters, it is likely that the advocates of "modernization" will generally disguise themselves as supporters, rather than opponents, of negotiations (aimed in principle at preventing "modernization" from taking place), since such a posture is politically more viable and it offers plenty of opportunities to torpedo any effective agreement. Causing delays and raising difficulties will be an easy task, in view of the complexity of the matter, both as regards the substance of the agreement, its format, and the procedure to negotiate it (including the mechanism of consultations, especially within NATO).

These remarks apply to the Western side, where the supporters of the "modernization" programme can be fairly easily identified and their motivations fairly easily traced. They apply to the Soviet side as well, although the situation there is less transparent. Indeed, a clear measure of the ascendancy of such views will be the insistence by the Soviet side on the immediate inclusion of FBSs in the negotiations, since it is quite evident that the hope to forestall the current and envisaged escalation of nuclear weapon developments in Europe hinges on the quick achievement of an agreement covering the new systems. This requires readiness to postpone the goal to reach a broader agreement (including FBSs and other "grey"

area systems) to a subsequent phase (SALT III?). Thus the willingness by the Soviet side to go for a quick and simple agreement focusing on the novel systems will be a test of whether the advocates of "more weapons" within the Soviet decision-making system are or are not in the ascendancy (3).

7. Above, and below, much emphasis is put on the need for a quick agreement. This was already motivated in (1). The likelihood that it be achieved is moot, yet, without it, hundreds of novel intermediate range nuclear delivery vehicles will be deployed in Europe on both sides. Who would be prepared to argue that such an outcome is desirable?

And in addition to the dangers associated with the deployments that are now in progress and in prospect (1), there is the real prospect of an open-ended nuclear arms race in Europe, since the Soviet side is likely to "respond" in kind if the NATO "modernization" programme is fully implemented (1, 4); and so on.

8. In our previous paper we put forward some general principles and guidelines, to outline an acceptable platform for an agreement to prevent these ominous developments (1). An important task for the present Workshop is to pursue the matter, to try and outline in more specific detail what the terms of such an agreement might be. To this end a specific proposal that might provide the basis of a simple agreement is now outlined as a tentative ground for discussion.

9. The Western side should suspend immediately the development of any cruise missile with a range over 600 km, and undertake not to develop (nor produce) any such cruise missile. This would of course imply that no such weapon would be deployed in Europe.

The Soviet side should undertake that the introduction of the SS20s yield no increase in the total number of warheads deployed on intermediate range missiles. This would presumably lead to the elimination of all SS4s and SS5s and to an upper limit (in the range 150-200) on the number of SS20s, thus implying a more or less immediate halt to their production.

Moreover the Soviet Union should also undertake not to develop any cruise missile with a range in excess of 600km, this being an obvious counterpart to the analogous Western commitment.

10. An important motivation for the NATO side to accept such an agreement would be to obtain a stringent limitation on the SS20s (heretofore subject to no agreed limitation), in exchange for a commitment that does not go much beyond that already spelled out in the SALT II Protocol. It should perhaps be emphasized in this connection that Western Europe has lived with Soviet intermediate range nuclear missiles (SS4, SS5) for almost two decades. It would be hard to argue that, under the terms of the proposed agreement, such a threat would increase significantly.

11. An important motivation for the Soviet side to accept such an agreement would be to forestall the NATO deployment in Europe of several hundreds GLCMs, that is going to occur if no agreement is quickly struck. Moreover the declared purpose of the SS20s, to replace the SS4s and SS5s, would be fulfilled evenly, at least in terms of the most significant strategic parameter, i. e. number of warheads. As for other parameters, there would be a trade-off between increased accuracy and effectiveness (solid fuel, mobility) and decreased number of launchers.

12. We entertain no illusion that terms such as those outlined above would be universally approved. We have already noted that no agreement can satisfy those who are driven by ulterior motives, such as, on the Western side, those who look forward to the introduction of cruise missiles as an opportunity to increase the possibilities for Central Europeans to have a more direct control over those nuclear weapons that they deem vital for their security; or, on the Soviet side, those who are directly committed to the production and deployment of SS20s. Certainly the latter might point out that the suggested agreement involves a limitation that cuts more sharply on the Soviet programmes (at the production and deployment stage) than on the American programmes (at the development stage); while on the other hand the former may view the asymmetry in intermediate range nuclear missile deployments in the European theatre as an unacceptable (albeit old) imbalance.

Although we can hardly hope to convince people holding these views by rational arguments, and we therefore pin our hopes on the possibility that these objections would be overruled by political leaders, it is nevertheless appropriate to point out that any criticism to the proposed agreement should be based on a comparison between the likely effects of such an agreement as against the likely effects - as mentioned above - of no agreement at all (or of a different agreement, provided the latter is indeed viable). It was a sage man who once remarked that growing old presents many disadvantages, but nevertheless is a preferable course, in view of the alternative.

13. It should moreover be emphasized that the most appealing aspect of the agreement we have outlined would be to impede the introduction of the cruise missile, a goal that is in the best interest of the NATO countries no less than the WTO states (1).

We are aware that many deem this goal is now unattainable: the cat is out of the bag. This scepticism is probably well taken, since the political will that would be required to implement such a decision is nowhere to be found (but this is written before the American presidential election; an optimist might hope things will be different after). On the other hand, from the point of view of technical feasibility (especially as regards verifiability), the difficulties of an agreement to exclude altogether long-range cruise missiles are clearly marginal, compared to the difficulties to constrain their number and/or characteristics after they have been produced and extensively deployed. Thus whoever argues the unfeasibility of banning the cruise now, should either explain how in the (near) future will it be possible to limit this weapon system, or face the prospect of an unlimited escalation of deployments (thereby giving up altogether the idea of strategic arms limitation).

14. The agreement we have outlined is simple, and we submit this is its main merit. It could indeed be presented as some sort of freeze. And it could possibly be achieved in the form of an interim informal agreement, perhaps only made explicit and public through the simultaneous issuance of unilateral declarations. Clearly such an agreement, whichever form it takes, should be immediately followed by more ambitious negotiations aimed at reducing nuclear weapons in Europe rather than merely preventing their increase. FBSs, and perhaps also the British and French nuclear forces, should then come into the picture; as well as conventional forces. More urgently other items, such as the Pershings and the Backfires that we have ignored in the interest of simplicity, should also be taken into account.

15. We have claimed simplicity to be the main merit of the proposal outlined in Section 9 above. This, we feel, is the main feature that may offer some hope to achieve the settlement that is so urgently needed in order to forestall the disastrous arms race in progress and in

prospect in Europe.

Yet we are aware that the proposal outlined above, simple as it may appear, involves several delicate points. One question - that of the more easily reachable and preferable format of such an agreement - has already been touched upon above. Other delicate points may arise at the fine print level, especially as regards definitions, verification, and the localization of the SS20s (whether on the Western or the Eastern side of the Urals). These details are important, yet they are clearly secondary with respect to the main issue, as spelled out in the title of this paper; and their relevance is undercut by the concept of an interim agreement, to be immediately followed by further negotiations aimed at agreed reductions of nuclear and conventional forces in Europe, and of the central strategic systems (SALT III).

We hope the Pugwash Workshop will concentrate on the main issue, but also go into details if need be. Our main purpose in formulating a specific proposal has been to provide a possible focus for the discussion, lest it becomes diffuse and unconstructive. Alternative ideas would of course be most welcome, as well as any contribution to a more stringent scrutiny of the proposal outlined above than has been attempted in this paper.

Let us end by reiterating that more ambitious schemes for nuclear arms control and disarmament in Europe, that go beyond the limited proposal outlined above, should also be explored - provided their feasibility and timeliness is realistically assessed. For we submit that the primary goal of any serious proposal must be to halt the current and envisaged escalation of nuclear weapon deployments in Europe. Any suggestion of a negotiating posture that would effectively - explicitly or implicitly - postpone the arms control attempt to a later stage, after the new weapons have been deployed, we consider merely a devious way to sanction their introduction.

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References and Footnotes

- (1) F. Calogero and J. Rotblat: Criteria for an Agreement on Nuclear Weapons in Europe. Pugwash Newsletter 17, 81-84 (April 1980).
- (2) U. Nerlich: Theatre Nuclear Forces in Europe: Is NATO running out of options? The Washington Quarterly, 3, 100-125 (Winter 1980).
- (3) The suggestion that the request to include FBS s is a deliberate ploy by the USSR to delay negotiations has been advertized in the West. See, e.g., the article by F. Bennart: Talks of Limiting Nuclear Missiles Viewed with Cold Caution in NATO, The Times, 10.10.1980.
- (4) See, for instance, the interview to the NOVOSTI journalist V. Ostrovskij given by the Soviet general N. Cernov (reported in the July-August issue of the Bulletin issued by the Soviet Embassy in Rome).

Rome. October 20, 1980

36th Pugwash Symposium

"NEW WEAPONS SYSTEMS AND CRITERIA FOR EVALUATING THEIR DANGERS"

London, 10-12 December 1980

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List of papers

1. J. Simpson (UK) Arms control, strategic concepts and distinctions between types of military activities: an analysis of linkages
2. T. Taylor & D. Dunn (UK) Arms control and conventional weapons: some conceptual and empirical issues
3. J.K. Miettinen (Finland) The effect of new military technology on future battlefield tactics and the structure of armed forces
4. F.A. Long (USA) The process of new weapons development
5. H.G. Brauch (FRG) The failure of arms control in coping with new weapons technologies and with technological change: conceptual and institutional deficits and reform options
6. E.E. Galal (Egypt) Whether? Whither? Whence?
7. R.W. Ditchburn (UK) Assessment of dangers in new weapons
8. K. Subrahmanyam (India) Some reflections on the eroding thresholds
9. K. Tsipis (USA) Directed energy weapons feasibility and effectiveness

10. J. Perry Robinson (UK) Quasinuclear weapons: a category for thinking about arms control futures
11. J. Prawitz (Sweden) Regional arms control applied to sea areas
12. A. Karkoszka (SIPRI) New weapons technology and the concept of nuclear thresholds: an appraisal of the relationship
13. R.B. Byers (Canada) Thresholds, deterrence credibility and technological change: the European perspective
14. P. Boskma (Netherlands) Theshold concepts in the security problem from the perspective of the smaller nation states
15. O. Marwah (India) New weapons systems and Third World conflicts
16. U. Albrecht (FRG) Trends in the improvement of conventional offensive weapons: the tank - are there boundaries in the technological arms race?
17. L.A. Naumov (USSR) Some criteria for assessing dangers in new weapons development.

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Requests for copies of papers should be made directly to the authors

Report

A total of 31 scientists from 16 countries participated in this meeting, which was held at the Ciba Foundation in London from 10-12 December 1980. The Ciba Foundation were generous hosts providing excellent hospitality as well as accommodation for about one third of the participants. The British Pugwash Group were able to organize this meeting as a result of a grant from the Nuffield Foundation for the purpose. In all, 17 papers were submitted and all of them were discussed specifically in the course of the proceedings of the symposium.

On one afternoon, December 11th, the British Pugwash Group also organized a public meeting (see p.100), which was attended by members of the symposium and about 220 other people.

The symposium considered many aspects of new weapon systems and their implications:-

1) Definition of new weapons

There was considerable discussion about the possibility of accurately defining new weapons. This did not necessarily depend on the development of new technology, but related to the potential use of weapons for new purposes or with radically better or more efficient performance. In certain circumstances cost effectiveness in military terms could be regarded as a criterion for judging innovations, in that 'cheap' weapons might themselves have an important effect on stability in international relations and on the possibility of effective arms control measures. It was clear that there had been developments already which in

the event of a future war would lead to fundamental alterations in battlefield tactics and entirely new problems of command and control. Though such weapons had only been partially tested, for example, in Vietnam and in the 1973 war in the Middle East, sufficient was known of their potential for it to be appreciated that they would change the face of any future war, especially between industrialized countries. So radical were the changes which had emerged that some participants thought that a war between major powers would be likely to have a very short duration. Problems of cost and of stock piling ammunition which would be quickly used up in a high intensity war were discussed, as was the probable psychological effect on soldiers called upon to serve in devastating conditions. It was questioned whether men could, in fact, sustain the capacity to fight in the forecast conditions using the type of equipment and wearing the protective clothing which would in future probably be required.

2) The Possibility of New Defence Postures

This appreciation of the devastating effect of new weapons, many of them conventional in character, led to the suggestion that such developments might be turned to advantage. The possibility, especially in Central Europe, of relying on military systems which were more strictly and overtly defensive was put forward. The accuracy and lethality of these new weapons, some participants thought, might be applied to creating defensive barriers in depth which could amount to a new style of defence against territorial invasion. The investigation of such a possibility ought to be pressed especially in the light of the apparent decline in utility of nuclear deterrence. There was a growing belief that in the end nuclear weapons would never be used by major powers because of their effect and of the danger of escalation into global war. That being so the deterrent effect of possessing them would be likely to diminish. It might be possible to link the concept of strictly defensive systems to a notion of deterrence related more precisely to what it was intended to deter, namely the invasion and occupation of territory - an idea which might have particular attractions for Western European countries. Clearly, however, such defensive systems based on tightly controlled patterns of conventional weapons would in turn depend for their deterrent effectiveness partly at least on the ability to convince the other side that such a method would be effective.

3) Criteria for Evaluating the Dangers and Characteristics of New Weapon Systems

While it was accepted that weapons might be regarded as offensive or defensive according to the use to which they were put, and that there were only very few weapons which could be described as unequivocally defensive, nevertheless this particular discussion led on to a consideration of criteria for determining whether some weapons were more desirable or less objectionable than others - or whether ultimately all developments of weaponry should be, without discrimination, opposed and resisted.

Many participants were concerned about the arms control aspect of weapon innovation. The threshold might be lowered, in the case of nuclear weapons, by the modification and reduction in size of nuclear weapon systems themselves. There were circumstances in which to military planners such weapons would appear to be more cost effective than their conventional counterparts. Conventional weapons in their turn might become so sophisticated in terms of precision and the level of destruction which they could inflict that they, in their turn, would affect the threshold and tend to blur the distinction between conventional and nuclear technologies.

The application of criteria concerned with the relative inhumanity of different weapon systems was not easy but it was certainly one factor which should be taken into account.

Weapons of mass destruction and others capable of indiscriminate use should clearly be controlled in some way or another and initiatives especially to ban weapons of mass destruction and inhumane weapons such as napalm, as well as chemical and biological weapons, ought to be taken. The distinction between nuclear and conventional weapons was still valid and must be maintained.

4) Political Problems Relating to New Weapons

Any factors tending to reduce the inhibitions on the use of certain categories of weapons should be a matter of concern. Particularly important, however, are weapons which would destabilize the situation prevailing either at the centre or on the periphery, or affect the global balance of power. Weapons which tended to reduce the importance of surprise, or to preclude it, might be regarded as less dangerous than others.

The possibility of arms control measures related to particular new weapons was repeatedly referred to. It was however suggested, in the light of negotiations over chemical weapons, that the isolation of one weapon in arms control negotiations encouraged its significance for military purposes to be magnified and put it out of context. The more a particular weapons system was publicized and discussed, the more likely it was to be assimilated into military theory and its application promoted. There was on the whole a consensus that arms control focussed on particular weapons was liable to be counter-productive.

5) General Arms Control Considerations

It was suggested that new weapon systems such as the medium and long range cruise missile heralded a new era in arms control, or rather the end of an old era and perhaps of arms control as we have known it. There was a recognition of the fact that focussing on particular developments had led to those weapons being by-passed and others substituted. It was argued, for example, that to concentrate on establishing a European nuclear-free zone would be effectively to shift the emphasis to the achievement of conventional superiority. Arms control was first of all a political issue. Effective steps could only be taken which were compatible with political interests. Restrictions on military capability had to be linked with confidence-building measures conceived on a broader basis than in the past, and not only related to military manoeuvres and the more superficial aspects of military deployment. There was a general recognition that initiatives related to naval confidence-building measures and the possibility of some understanding about the use of the seas on a regional basis would have repercussions on the situation on land well beyond their apparent technical limitations.

New weapons systems should in the first place be judged by the extent to which they might stimulate the arms race or interfere with the process of arms control comprehensively conceived.

6) Economic Implications of New Weapon Systems

It was recognized that the continual escalation in the sophistication of military technology might in economic terms work in two different directions. In the first place, keeping pace with potential enemies might lead a nation or group of nations into a situation in which their economies become broken-backed as a result. The defence burden in terms of the provision of new weapons might be eventually so great that they could no longer afford to finance them. There is some evidence that, for example, a fully developed Trident system for Britain would so increase economic pressures on the defence budget that other aspects of defence, perhaps seen as more vital, would inevitably be neglected. There was also the possibility that some

advantage might be seen in forcing a potential enemy to respond to a new development by adopting excessively costly counter measures; on the other hand, some weapons, and the cruise missile appeared to be such an example as well as certain types of anti-tank weapon, might prove to be relatively so cheap that their destabilizing and other undesirable effects could well be overridden as a result. The question too was whether the cost factor would reflect back on military policy and lead to an adoption of new tactics and strategies which were perhaps more aimed at war fighting than at deterrence.

The situation of the more developed industrialized countries in this respect, however, was clearly different from that of the less developed countries. One side effect of an ever increasing sophistication in weapon systems might be that the less developed countries would find it almost impossible to buy, if they wanted to do so, the cheaper and simpler weapons, which would have lesser repercussions on their societies. They would probably lose the option of choice in this respect. First and second generation jet fighter aircraft, for example, were now disappearing from the market and very expensive supersonic aircraft might soon prove much easier to obtain, with inevitable consequences not only for the economy but for the deployment of skilled manpower in a number of less developed countries.

Though it was recognized that the less developed countries might not be directly affected by many of the new developments taking place, regional stability was, in fact, being continually and disadvantageously influenced by military advantage achieved by particular countries in purchasing older systems which were new in their local or regional context. In general, the less developed countries feared the economic consequences of a continuing qualitative arms race more than the military applications of new technologies.

7) The Process of Weapons Development and Mechanisms to Manage and Control It

The nature of the systems which led to the introduction of new weapons was clearly an important element in any attempt to control or stop innovation. The Symposium was, in general, pessimistic about the possibility of checking the technical advance. It was unlikely that the acquisition of the techniques which led to the development and manufacture of miniaturized, portable, easily operable and maintained weapons could be inhibited. Ironically, one way of imposing restrictions on this development might be to give a greater priority to the definition of military needs within the procurement system of advanced countries so that the specifications of technical devices might be linked more directly to foreseen operational needs. The linking of this process to arms control impact statements, such as those which had been introduced in the United States, could be important. So would a radical approach to the reduction of their research and development budgets on the part of the superpowers. It should be possible to get some agreement along the lines already proposed on weapons of mass destruction and on inhumane weapons. It could be just as important for full predictions of the economic implications of technical developments to be worked out in advance. At present the effect of the continuing escalation, not only of danger but of cost, arising from the cycle of measures and counter-measures was unpredicted.

8) International Security Aspects

Though the discussion began and frequently returned to the technical aspects, including the implications of improved tanks and other armoured vehicles, and the possible military development of lasers, it invariably returned to problems of international security seen in political terms. One problem was how to convince the defence decision-makers of the need for positive control. As already indicated, weapon systems were too frequently justified in

retrospect. They ought at least to be justified in anticipation so as to avoid a lack of clarity about the objectives. The confusion between deterrence and war-fighting had arisen largely because of an unwillingness openly to define what it was perceived as necessary to deter. New technologies provided primarily for flexibility in design and the possibility of simplicity rather than of continuing sophistication. The probability that any future global war would begin outside Europe and not through an initial confrontation between the superpowers was significant in this respect. New weapons made more and more difficult the achievement of relatively exact balances. Somehow or other public opinion had to influence the decision-making process towards a breadth of consideration which would lead to an acceptance of the concept of rough parity rather than continued agitation in search of positions of strength. The fallibility of the military establishment and the political decision makers in relation to defence was evident, but needed to be emphasized. Any steps towards regional détente on the part of the small nations was to be welcomed and the secondary powers, whilst accepting the fact of the strength of the global superpowers, should recognize that they had their limitations and that cooperation amongst a number of determined states to move towards a more positive era in arms control could have results. The lessons of the failure of arms control so far needed to be learnt, while at the same time its limitations as a mode of negotiation should be recognized. New weapons in general involved not only an upward swing in the qualitative arms race but also an increase in costs, which might in the end reach a point which in a number of countries was economically unbearable. Publicity should be given to the criteria for adopting new weapon systems. It would not be impossible to devise a set of indices against which they might be assessed. At the same time their financial implications in relation to the effect on social priorities could be raised. It was important that the technical aspects of the problem should not be allowed to become dominant and that it should be realized that even in terms of security conventionally conceived they are not the most important factor. Peace depends more upon the development of mutual trust and of clearly understood rules and limits as a basis for military and civil détente.

William Gutteridge
Trevor Taylor

PUBLIC MEETING ARRANGED BY THE BRITISH PUGWASH GROUP

In conjunction with the 36th Pugwash Symposium a meeting open to the public was convened on Thursday, 11th December 1980, in the Scientific Societies Lecture Theatre, London. Professor Rotblat chaired the meeting whose theme was "Nuclear War : Is its Danger Increasing?" The topics and speakers were:

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|--|---|---------------------------|
| Can we rely on deterrence? | - | Lord Zuckerman |
| The future of arms control negotiations | - | Professor B.T. Feld |
| Implications of the modernization of theatre nuclear weapons in Europe | - | Professor F. Calogero |
| The role of a British independent nuclear force | - | Field Marshal Lord Carver |
| Radical solutions | - | Lord Noel-Baker |

Many of the 250 people who filled the hall participated in a spirited question and comment period which followed the presentations.

Report on the Meeting

"Nuclear War : Is Its Danger Increasing?"

A public meeting on this topic, associated with the Symposium on New Weapons Systems, was held in London on 11th December 1980. The audience of nearly 250 was composed chiefly of scientists. The Chairman, Professor J. Rotblat, said that there were two facts basic to the present situation. Firstly, the explosive yield of the bombs now existing in the nuclear arsenals is equivalent to more than one million times the Hiroshima bomb, but secondly, during the past 35 years no bomb has been used. A balance of deterrence has existed, but it was an ever-changing, dynamic balance.

Lord Zuckerman speaking on "Can We Rely on Deterrence?" said that all of us (including U.S.S.R.) not only can but must rely on deterrence. The consequences of failure were too great. In a single incident, a bomb on a city of a million inhabitants (such as Birmingham or Detroit) would kill about 300,000 people instantly and a further 100,000 to 200,000 would die of radiation sickness. Rescue services could deal with one such incident but 6 to 10 strikes would break the communications network, destroy unified command and lead to an uncontrollable situation. Deterrence was threatened by (i) the arms race (ii) proliferation and (iii) the dangerous idea that nuclear weapons can counter-balance an inferiority of conventional weapons in a limited nuclear war. We needed first a halt to the arms race and then balanced disarmament. Unbalanced disarmament (i.e. unilateral disarmament on either side) would be dangerous. The first step was to stop current R and D which would lead to the deployment of unknown new weapons in 10 years' time.

Professor B. Feld (U.S.A.), Chairman of Pugwash Executive Committee, spoke on "The Future of Arms Control Negotiations". He said that the general approach of recent negotiations had been to recognize the existence of a huge overkill capacity and to seek to reduce the rate at which stockpiles were increasing - if possible to stop the increase. No attempt to negotiate actual reduction of stockpile had been made. The negotiators had also sought to reduce the probability of nuclear war starting by accident or design. These negotiations were useful insofar as they might buy time in which a popular demand for real disarmament might arise. The present situation was extremely bad. SALT II had virtually no chance of U.S. ratification. Popular pressure in favour of disarmament on the U.S. government was less than economic and military pressure for increase of arms. The whole concept of restraint had been abandoned. There were just one or two rays of hope. There was, in the U.S.A., an increasing tendency to analyse the consequences of a nuclear strike in a more realistic way. Medical men had begun to consider the problem and to tell the public that they would be quite unable to deal with the casualties. This was important because people listened to doctors more than to scientists.

Professor F. Calogero (Italy) spoke on "Implications of the Modernization of Theatre Nuclear Weapons in Europe". His address centred round the conclusions of the December Workshop in Geneva which is reported elsewhere in this Newsletter (p.88), therefore only his conclusion is given here. "Modernization is a euphemism for increase. If no agreement is reached, then in 10 years' time there will be several hundred intermediate

weapons deployed on both sides - but it is optimistic to believe that we shall still be here in 10 years' time!"

Field Marshal Lord Carver spoke on "The Role of a British Independent Nuclear Force". He gave a summary of the history of the British nuclear force and said it was originally started for political reasons of national prestige and subsequently justified with military reasons. True independence had been abandoned because we were unable to produce adequate means of delivery and Polaris had been purchased. American attempts to obtain some degree of control over Polaris had failed. The ships were under British Command but assigned as part of our contribution to NATO. Lord Carver said he was not in favour of an independent British nuclear deterrent which would be used only if bombs fell on Britain. He was not, however, in favour of British unilateral nuclear disarmament because this would weaken the west by creating the impression that we were pulling out of the alliance. We should maintain a long- and short-range contribution to NATO. Possibly the best way of doing this involved having some Tridents but we should not need 4, nor need they be on station all the time. We needed to face an aggressor with the knowledge that he would meet with very strong resistance from conventional forces, that he risked being opposed by battlefield nuclear weapons and risked the holocaust of general nuclear war. Lord Carver does not believe in nuclear war limited to Europe or limited in type or in time.

Lord Carver thinks that the danger of nuclear war breaking out is not increasing because there is a growing understanding of the consequences. Our dilemma is to reduce weapons - but not so far as to lose the deterrent effect which maintains peace.

Lord Noel-Baker, speaking on "Radical Solutions", said that his first radical solution would be to put the media under the control of men who would tell their fellows about the dangers of nuclear war and would go on doing so with the energy and persistence now devoted to advertizing a commercial product. Man's attitude to war must change. It was now considered glamorous to kill and glorious to die in war. Men must come to feel that the ideal was not to die for one's country but to live for it, to promote its true greatness by a dedicated life.

Scientists should convince men that society could change. Man was the dominant species not through his aggression but through his altruism and his ability to cooperate. Let the scientists convince the average man that we can get rid of armaments totally and of war itself, and that the need for deterrence can be abolished. Radical solutions are not only possible, they are indispensable.

Discussion. There was about an hour's discussion in which 14 people took part. The overall impression of the meeting was that the dangerous results of a nuclear war are increasing but that one cannot conclude whether the danger of nuclear war breaking out is increasing or decreasing at present.

Robert Ditchburn

THE "TEST EXPLOSION" IN THE SOUTH PACIFIC : ALARM FALSE OR TRUE ?

(The following comment refers to the note by B. T. Feld and J. Rotblat in the April 1980 issue of the Newsletter, p.100)

There seems to have been a misunderstanding by Professors Feld and Rotblat when they stated that my letter to the Executive Committee does not enumerate the evidence on which I based my conclusion. The facts are that my letter merely requests discussion of the issue in the Executive Committee, since the public airing of different views to date had led to no conclusive agreement. I therefore requested the two authors to publish their comments in the Newsletter. The reason I issued the challenge and requested publication was the concern expressed by some groups over Pugwash's seeming reluctance to take stands on the nuclear situation in Africa and the Middle East, as compared to the vigorous stand taken by the Committee after the Indian test explosion, a protest which some of us thought was too precipitate and without the usual consultations with concerned groups, particularly the Indian group.

The evidence referred to the nature of the observed flashes and their timing. Some experts thought that the chance of their replication by non-nuclear artifacts was of very low probability indeed. Coupled to that was the withdrawal of the New Zealand conclusion on the identification of the fallout after the central laboratory claim of contamination. Again such an unusual error in such a weighty matter gave rise to scepticism in worried quarters. The conclusive evidence to a layman like myself relates to the circumstances which no objective observer can overlook.

First there was the matter of R & D cooperation between South Africa, Israel and certain European concerns in the enrichment of atomic fuel techniques, as well as missile delivery systems. A working group raised this issue, with evidence, at the Munich Conference and continued the investigation with our colleagues in the FRG. We received the assurance that no government organization was involved in such an activity! The project is now expected to enrich 300 tons of uranium per year.

Then, there was the very conclusive incident in 1977 when the USSR reported the building of a nuclear-test zone in the Kalahari Desert which, somehow, the intricate USA observation system, apparently including an embassy aeroplane with photographic equipment, failed to report. The international outcry led to the abandonment of the Kalahari project.

In spite of the UN Embargo, there was the acquisition by South Africa of the American 155-mm cannon system capable of firing nuclear bullets.

Also, there was the reported reservation from even USA Government departments on the conclusions of the presidential expert groups that Feld and Rotblat referred to.

Coupled with the widespread assurances over years by experts, and even official quarters of east and west, of South African and Israeli established capabilities and co-operation, the assessment of these observations cannot be laid aside with technical detachment.

I abide, for the time being, by the assessment of our expert and distinguished colleagues. As I originally stated I can do no less nor more as a non-expert. I do differ, however, with them basically on their conclusion. While they may be justified in their

first and second conclusions regarding lack of evidence and the risks of alarms, I strongly feel that the use of "false" alarm in connection with South African and Israeli nuclear preparation is not only completely unjustified but may undermine the whole purpose of this dialogue. This was, and still should be, to assure international opinion of Pugwash concern and dedication against all and every proliferation.

E. E. Galal

THE SECOND INTERNATIONAL STUDENT PUGWASH CONFERENCE ON
"MORAL DILEMMAS OF TECHNOLOGY AND DEMOCRACY"

Yale University, 15-21 June 1981

The first Student Pugwash Conference was convened at the University of California, San Diego, in June 1979 (See January 1980 Newsletter, p. 75). The major aims of the second Student Pugwash Conference are to sensitize undergraduate and graduate students, both scientists and humanists, to the ethical issues surrounding their studies, and to provide the opportunity for students to discuss their concerns with senior scientists, humanists, public officials and professionals.

Each of five workshops will be devoted to a different subject. They are:

- (1) Biomedical Technology and Health Care;
- (2) Weapons and World Peace;
- (3) Regulation of Science and Technology;
- (4) Energy, the Economy, and the Environment; and
- (5) Computers and Society.

A total of 75 student participants will be selected from their respective colleges and universities, and their hospitality costs at Yale will be covered. The deadline for applications will be 15 March 1981, and selections will be announced shortly thereafter. Prominent Pugwashites will be amongst the senior participants. For further information and applications write to Jeffrey R. Leifer and Gregory S. Gross, Conference Directors, c/o History of Science, Yale University, 2036 Yale Station, New Haven, Connecticut 06520 (Tel. (203) 436-3445).

CALENDAR OF FUTURE MEETINGS

1981

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|----------------------------|---|
| 2 - 4 April | Eighth Pugwash Workshop on Chemical Warfare, Geneva, Switzerland |
| 9 - 11 April | 37th Pugwash Symposium, "Confidence-Building Measures", Hamburg, FRG
(For agenda, see below) |
| 23 - 24 May | Fourth Workshop on The Current Crisis on Nuclear Forces in Europe, Geneva, Switzerland |
| 26 - 29 May | 38th Pugwash Symposium, "The Future of Pugwash", Rehovoth, Israel |
| 27 August -
1 September | 31st Pugwash Conference, Banff, Canada.
(see July/October 1980 issue of the Newsletter for the agenda) |
| October
(tentative) | Second Workshop on Averting Nuclear War: The Role of the Media, Geneva, Switzerland |
| November
(tentative) | Ninth Pugwash Workshop on Chemical Warfare, Czechoslovakia |

37th Pugwash Symposium, "Confidence-Building Measures"
9-11 April, Hamburg, FRG

Agenda

1. Theory and concepts of CBM in the East and West
 2. Non-military CBM, especially in the economic field
 3. CBM within the framework of the UN and in different regions
(for instance Latin America, Middle East)
 4. CBM and SALT
 5. CBM in and for Europe (MBFR, CSCE/Madrid, European Conference on Disarmament)
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