

CHAPTER VIII

THE SCIENTISTS' PUGWASH

associated The specific name "Pugwash Conference of Nuclear Scientists", now internationally connected with Eaton and these same conferences, did not come into being until 1957. It is interesting to discover how this occurred.

Einstein Eaton had already established Pugwash as an educational and intellectual centre when a news item in the New York Times of July 10, 1955, caught his notice. This was a report of an appeal by nine eminent scientists, now known as the Russell-Einstein Appeal, which was sponsored by Lord Russell and endorsed by Einstein in a letter which reached London on the day of his death, April 18, 1955. The Appeal, signed by Percy W. Bridgman, Hermann J. Muller, Frederic Joliot-Curie, Cecil Powell, Hidaki Yukawa, all Nobel Laureates, as well as Joseph Rotblat of the British Atomic Scientists Association and Leopold Infeld, Einstein's co-worker, stated: "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." That is, it asked for a congress of world scientists to be convened subscribing to the resolution which read, "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 purposes 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."

Eaton himself has said of the Pugwash Conferences of Nuclear Scientists that "Einstein was responsible, 'Einstein and Bertrand Russell, the British mathematician and philosopher.'" Eaton also stated that the Canadian Government had agreed to allow the meetings "with the understanding that it relied on me not to have the meeting turn into a platform for anti-West propaganda" (Cleveland Plain Dealer, March 6, 1960).

But there is more to the origin of these conferences. In the period 1955-56 three separate moves by three different groups converged to produce an international conference of scientists concerned with nuclear hazards, civil and military. The first of these acts was the now famous Russell-Einstein appeal of 1955, which called attention anew to the international crisis arising from possession of nuclear weapons and urged a settlement. The second critical action was the exchange of correspondence between Eugene Rabinowitch, atomic physicist and Editor of the Bulletin of Atomic Scientists, U.S.A., and Professor Rotblat, Executive Vice-President of the British Assoc-

iation of Atomic Scientists. They, also, were discussing the possibilities of such an international conference. In July 1955, Russell and Rotblat met with this idea in mind.

The third group concerned was the World Federation of Scientific Workers which included Professor Joliot-Curie on its distinguished executive board. In England, Professor Burhop of the University of London and Nobel Prize-winner, C. F. Powell of Bristol, both active executive members of the World Federation, were also engaged in exploring the possibilities of such a conference. They contacted Bertrand Russell in the hope of obtaining his assistance in convening such a meeting. By November 1955, Russell had met with Powell and Burhop and agreed to the proposal so long as the conference was convened on the basis of his appeal. It is quite clear that these separate activities were taking place independently of each other.

This unique combination of groups was absolutely essential for the success of the Pugwash type conference because only people like Professor Joliot-Curie and an organization such as the World Federation could bring in the scientists from the Eastern countries; whereas, on the other hand, only Rotblat and Rabinowitch could bring in the Americans, and so both groups were able to combine with the great personal prestige of Russell to make this unique type of conference successful. Plans had originally been made to hold the conference in India in December-January 1956-57. The Suez crisis partially intervened but it is also true that the Indian Science Congress could not pay the expenses of bringing the scientists to India.

It was C.F. Powell, Nobel Laureate in Physics, of Bristol Univ-

ersity and President of the W.F.S.W., who was in India in 1955, who sought the support of Pandit Nehru and the Indian Government for the project. Mr. Nehru was quite enthusiastic and promised to support the conference. He received Professor Powell kindly and indicated that they could count on Indian support for a conference planned about January 1957. As was mentioned previously, the Suez crisis intervened and the problem of finance was not completely solved. It was then decided to make a personal appeal for funds to a number of people in order to get the scientists to India. One of the people written to in Russell's name was Aristotle Onassis, the Greek shipping magnate. Onassis replied that he would support the conference and pay the whole bill if they would hold it in Monte Carlo. Now, quite separately and previous to this, Eaton had written to Russell with whom he had been on close terms in the 1930's, concerning the Russell-Einstein statement and announced his support for the appeal. Russell wrote back asking for money for the Indian conference and Eaton then replied that he would put up enough money to back the conference entirely, but that he would like the conference to be held in Pugwash. At that time there was an ad hoc committee, comprising Dr. Burhop and Professor Powell, who were partially representative of the W.F.S.W., and Professor Rotblat, Eugene Rabinowitch and Lord Russell. It is clear that without all of these groups participating, it would be the East without the West, or the West without the East, and only with all of them involved could both sides be politically and geographically represented. Thus the basis was laid to launch the Conferences of Nuclear Scientists.

The First Pugwash Conference of Nuclear Scientists took place in Pugwash, July 6 to 11, 1957. In a statement at the opening of the meeting, the scientists said their aim was "to exchange ideas about the new importance of science in public affairs, and to think of ways in which scientists could help in avoiding a catastrophe to mankind through the use to which scientific achievement may be put."

The group, which included three Nobel Prize winners, was made up of geneticists, physicists, chemists, physicians and other experts. Some of them had played leading parts in the development of the atomic bomb and the harnessing of nuclear energy. Those who attended, with their positions and countries, were:

Australia. Professor Sir Mark Oliphant, physicist, director of the Post-Graduate Research School of Physical Sciences at the National University of Australia.

Austria. Dr. Hans Thirring, professor of physics, University of Vienna.

Canada. Dr. Brock Chisholm of Victoria, B.C., former Director-General of the United Nations World Health Organization; Professor John Stuart Foster, professor of physics at McGill University, Montreal.

People's Republic of China. Professor Chou Pei-Yuan, Vice-Rector of Peiping University.

France. Professor A.M.B. Lacassagne, L'Institut du Radium, Paris.

Great Britain. Dr. J. Rotblat, professor of physics, University of London and executive vice-president of the Atomic Scientists Association; Professor C.F. Powell, Nobel Prize Winner in physics, of the H.H. Wills Physical Laboratory at Bristol, England.

Japan. Professor S. Tomonaga, department of physics, Tokyo University of Education; Professor Hideki Yukawa, Director of the Research Institute of Fundamental Physics, Kyoto University, Nobel Prize Winner in physics; Professor Iwao Ogawa of Rikkyo University.

Poland. Professor Marian Danysz of the University of Warsaw.

Soviet Russia. Academician A.V. Topchiev, General Secretary of the Soviet Academy of Sciences; Academician A.M. Kuzin of the Soviet Academy of Sciences; Academician D.V. Skobel'tzyn of the National Academy of the Soviet Union and Director of T.N. Lebedev Institute of Physics, Moscow.

United States. Professor Paul Doty, Department of Chemistry, Harvard University; Professor Hermann J. Muller, professor of Zoology, Indiana University, Nobel Prize Winner in medical physiology; Professor Eugene Rabinowitch, research professor, University of Illinois, Editor of The Bulletin of the Atomic Scientists; Professor Walter Selove, department of physics, University of Pennsylvania; Professor Leo Szilard, University of Chicago physicist who collaborated with Enrico Fermi in producing the first nuclear chain reaction; Professor Victor Weisskopf, professor of physics, Massachusetts Institute of Technology; and Professor David P. Cavers, associate dean, Harvard Law School.

Miss Betty Royon served as Director of the Secretariat. Dr. E.H.S. Burhop, University College of London, acted as assistant to Professor Rotblat. Vladimir F. Pavlichenko, Assistant General Science Secretary of the Soviet Academy of Sciences, was aide to Academician Topchiev.

Their statement, issued on the final day of the conference, warned the governments of the world that misuse of nuclear energy could lead to the annihilation of mankind. They said observations based on the results of test explosions already had led them to the "unquestioned conclusion" that unrestricted nuclear war would be a disaster of "unprecedented magnitude". They found little ground for hope that nuclear war, once begun, could be limited to any region.

The scientists pointed out that there were two aspects of the international problem of this age, one technical and the other political. They declared they could discuss with authority only the scientific and technical implications of atomic energy. At the same time they noted that they must take into account "the political problems which are the background to international negotiations".

The time had come, the statement said, for scientists to consider "the implications of their own work". Their views on politics, the scientists said, were as diverse as those of other men. This made it extremely difficult for them to reach agreement on such controversial matters as the political and strategic problems of the nuclear age. Nevertheless, they said, their meeting here under the most informal circumstances, free of the responsibility of speaking for their governments, had made it possible to define the areas of agreement and disagreement, and to reach an understanding of each other's opposing opinions.

On returning to their native lands, the scientists moved swiftly to place the Pugwash manifesto into the hands of their colleagues. Mr. Eaton said of the effect of their actions: "The moral chain

reaction touched off by the Pugwash manifesto hopefully may affect the future of mankind as profoundly as that famous first nuclear chain reaction of 17 years ago in the laboratories of the University of Chicago."

The Japanese scientists were the first to act. The Science Council of Japan devoted much of its annual meeting to the Pugwash proceedings. It adopted a resolution placing its component societies and their 25,000 members squarely on record as endorsing the Pugwash findings in their entirety.

Germany was next to act. Twenty of her leading scientists reviewed and approved the Pugwash manifesto. Their consensus was that settlement of political disputes by force was no longer possible and would be suicidal. They saw slight prospects for survival of the human race if the armaments race were not stopped.

Reaction in Soviet Russia was most encouraging. First the Presidium of the Academy of Sciences of the U.S.S.R. met and officially ratified the Pugwash manifesto. Then 195 leading Soviet scientists called in writing for a further meeting of scientists of as many nations as possible at any time in any place to work for world peace.

When the Russian declarations reached the United States, the New York Herald Tribune devoted a major part of its editorial page to an interview with Mr. Eaton, entitled 'Let's Meet the Soviets Half Way'. The newspaper supported this interview with a leading editorial lauding Mr. Eaton for his stand and praising the appeal of the Soviet scientists. In the interview Mr. Eaton expressed the belief that the Russians meant what they said, and he proposed

meeting the Soviets half way.

The statement was picked up by the world press, and produced an amazing response. One day's voluminous mail, which included letters from six Nobel Prize winners, contained this typical comment from Dr. Albert Schweitzer: "I attach great importance to the fact that the proposal of the Soviet scientists goes back to your meeting of international scientists at Pugwash last year."

There are several aspects of the First Pugwash Conference of Nuclear Scientists which are not publicly known. Bertrand Russell, who had been one of the prime movers, was not able to attend the Conference due to bad health but he did write a welcoming letter to it in which he said:

"Our own age is faced with the task of either solving this problem (i.e. the question of war) or witnessing the destruction of all those finest achievements for which the very highest of human intellect, courage and resourcefulness have laboured during past milleniums. When it is agreed that a major war would be an unspeakable disaster to all mankind, it follows that methods other than war or the threat of war must be devised for deciding questions in which different nations disagree. The first step towards such understanding must be the lessening of mutual suspicion, which has been rendering all negotiations abortive. It may be hoped that the present co-operation of scientists of diverse nations and diverse opinions will come to replace the present futile competition from which nothing but catastrophe will result. It seems hardly possible that the present meeting can get very far towards a solution of some of these perplexing

problems but if it does no more than bring scientists of so many different nations and points of view together for frank and informal discussion, and if it can work out ways and means of continuing these contacts, then it will have achieved something of importance. I hope, indeed, that this meeting will not be thought of as just an isolated incident, but rather as the forerunner of other larger meetings, even more fully representative of different countries' ideological and scientific disciplines."

There was indeed the occasional vicious attack, but press coverage was generally excellent, and the conference and its conclusions were treated with great respect, in many cases leading to serious editorials. For example, the Halifax Chronicle Herald of July 8, 1957:

"Representatives from fourteen countries, both East and West of the Iron Curtain, have been brought together by the American industrial giant and former farmboy, Cyrus Eaton, in his Pugwash Home for Thinkers, for an exchange of views on nuclear hazards and what to do about them. It will be the most distinguished and international of all gatherings arranged by Eaton since his plan for informal meetings of intellectuals started a few years ago. It is in gatherings like that being held at Pugwash where men of many nations and many political philosophies, but with the same understanding of nuclear dangers get together that there is to be found a spark of hope that this monster will be brought under control so that the face of the earth will not be turned into a vast empty darkness."

The Montreal Star on July 7, 1957 in an editorial stated: "The operation of mutual understanding, however, is not a technical process and if it can be sufficiently increased technical difficulties will diminish. To that end at least such gatherings as the one~~x~~ at Pugwash do contribute."

The American press, for example the New York Times, the Washington Evening Star, etc., also gave very excellent and, in general, friendly coverage of this conference. Newsweek and Time also reported it.

ed One of the most surprising things about the Conference was the degree of unanimity it was possible to reach about the effect of tests of nuclear weapons. A subcommittee contained scientists of unquestionable competence in this field from the U.S., U.S.S.R., Great Britain, France, Japan, and other countries. The position they adopted may be summed up roughly as follows:

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There is still some uncertainty as to whether somatic effects of radio-activity and the production of leukaemia or bone cancer vary lineally with the dose right down to the smallest doses. On the whole, the evidence seems in favour of a linear relationship. (But
Be that as it may, (no lack of)
(in general) there was unanimity on the actual hazards.

There were two Canadian delegates at the first Conference: Dr. G. Brock Chisholm and Professor J. Stuart Foster. Altogether there were 22 scientists involved in the conference, but the draft statement of conclusions was signed by 20. Professor Foster, who is Professor of physics at McGill, was one of those who did not sign. The other was Dr. Leo Szilard. The inside story of Foster's particular stand

* Effect on the cells of the body that do not affect inheritance but may cause leukaemia, cancer and other diseases

at the Conference is extremely interesting. One of his arguments was that the suspension of bomb tests was favourable to the U.S.S.R. in some way or another but not favourable to the U.S.A. and that this accounted for the fact that the U.S.S.R. was ready to suspend tests and the U.S.A. was not.

Taped
The following discussion, taken from the actual conference proceedings, took place. Because agreement could not be reached on every point, Professor Powell who was in the Chair said, "If your name appears in the list of participants then in some way you inevitably appear associated. What I would suggest as being the most convenient for all parties is that we just do not include your name. Would that be agreeable to you?" To this Foster responded, "Okay, that would be perfectly all right." Then Professor Seleve said, "Do you propose to do the same with Szilard....Szilard is to be treated in the same way? To say that a group of participants, including the following, has met?" Powell: "Yes. We are proposing to publish a statement of material and we shall say that a group of scientists met at Pugwash, including those whose names are given below and the names given below have adopted the following." To which someone asked, "Then the names of Szilard and Foster will not appear?" Powell: "Yes. It seems a pity because they have subscribed to the central statement. The alternative would be what was done in the Russell-Einstein appeal, for example, for Professor Foster to say what he dissents to on this particular point. I would rather say unanimously adopted, and that Professor Foster has dissociated him-

self from the second, and Professor Szilard has from the first and second in an appendix. *Professor Powell continued:* "While the standard procedure when you issue a very long statement, as you are issuing, is to append it to a short paragraph which says what it is, where it comes from, and at that time you say that the group unanimously adopted the statement and Professor Szilard and Professor Foster abstained. This is not part of the official release. It is part of the note of explanation which is attached to the front. Because your release is really very long you've got to have an explanatory note in front in any case. I am not sure, would that meet your difficulty, Professor Foster? Or are you out of sympathy with many other features of the draft that a particular dissociation on one issue would hardly meet your position?"

Foster then replied: "Well, I think that if I were just left completely out it might be the best thing to do." At this point Powell went on to say, "May we proceed in this way. You have heard a draft. In connection with the preamble we are doing a little editing, we hope, with Professor Foster. I suggest this small point of editing here can be dealt with in a similar way and that we can now seek approval for the general material. Are you prepared to reach a decision on this material, prepared to approve it?"

Rotblat: "I move that we approve the material of the document."

Powell: "Professor Rotblat moves that we approve this material as a document. Professor Thirring seconds it. Any amendment? May I put the motion; those in favour? those against? Professor Foster is against."

Then at that moment, Foster made this very emotional statement.

"Look, let us get it straight. I have a son. I think a good deal of him; he's as good a young man as I know. He is working on the production of bombs. I know that young man well enough to know that he is not doing anything that he knows he should not do. I know that he ~~isn't~~ has greatly improved the bomb. I mean that his personal contribution has greatly improved the bomb, should trouble come. He would rather work at something else. I am not going to vote against those tests which I think he is doing as far as his work is concerned. He is doing it, on the one hand, to increase the security of the United States on the other hand to make the damage less...."

Powell interrupted at that point to say, "I think, if you will allow me to say, Professor Foster, that it is quite unnecessary for you to express these important personal considerations that weight with you. All that we need to note is that you have decided that you cannot vote in favour."

Foster said, "It is only a word. I do not want ^[my view] to become known without something that did explain it."

✓ In his earlier address to the meeting, Professor Foster said, "Now, as you know, there has recently been a change in the government of Canada. The general trend of ~~opinion~~ indicates that a sufficient number of Canadians suspect that there was a trace of dictatorship in the former Cabinet. Be that as it may, there never has been a suggestion that the former Government of Canada was thrown out because it did nothing to stop the bomb tests. When one couples this with the re-election of President Eisenhower by a very large majority, one is forced to the conclusion that the question of tests is not a big

political item in these two countries."

On another occasion during the conference, Professor Foster suggested that the group go on record with a statement that scientific progress could be made only in the Free World.

To return to Leo Szilard who had objected on other grounds, it is of interest that he is the scientist who in 1939 with Albert Einstein wrote to President Franklin D. Roosevelt to warn him of the German efforts in the nuclear field, the result of which was the U.S. atomic bomb project. Szilard had heard of the German experiments and after convincing Einstein of the danger of a German monopoly of such weapons, they had both appealed to the President. Szilard is one of the few senior scientists involved directly in the bomb project whose moral position is unassailable. When he could not obtain acceptable guarantees that the atomic bomb would not be used he resigned his position in the project. Szilard had known for some time prior to 1945 that the Nazis had abandoned their atomic project. One of the most tragic yet ironic events in history occurred on April 12, 1945. A few weeks prior to this Szilard had once again gone to Albert Einstein, this time to urge the reverse, the abandonment of the use of the atomic bomb. Both of these scientists, possessing an acute sense of social morality, had realized the danger implicit in the possession of such a weapon. Once again they attempted to see Roosevelt, this time to urge him to provide assurances that the weapon would never be used. However, due to fortuitous events, they were not able to see him and on April 11 they wrote him a letter, signed jointly, urging him to provide these assurances. The letter

lay unopened on Roosevelt's desk when he died on April 12, 1945. We all know the ensuing events. Truman became president and the military allegedly had their way. They dropped the bomb on Hiroshima and Nagasaki, creating the era of atomic diplomacy leading to the unprecedented crisis of today. As Robert Jungk wrote in his book, Brighter than 1000 Suns: "Thus the sum of a thousand individual acts of an intensely conscientious character led eventually to an act of collective abandonment of conscience, horrifying in its magnitude." The scientists, creators of the Frankenstein, ^{monster} felt the moral obligation to take the lead in protesting this mad threat to civilization.

Cyrus Eaton's own concept of the purpose of Pugwash is contained in his address to the 88th General Meeting of the Canadian Manufacturers Association:

"I have watched the evolution of nuclear weapons with intense concern from the start. The University of Chicago, of which I am a trustee, conducted the critical experiments that led to the production of the first bombs. Most of the leading scientists who participated in the early development work for these bombs have subsequently been devoting their full energies to efforts to persuade the American Government to halt the armaments race. Through the Pugwash Conferences of International Nuclear Scientists, I have been trying to help. I fervently hope that history will support the famous French scientists who predict that Pugwash will rank with Austerlitz and Waterloo as a true point in the fate of the world. The stark and terrifying fact is that the use of only five per cent of the atom and hydrogen bombs

now in the possession of the nuclear powers would completely wipe out every last vestige of life on this Continent. That is a terrible possibility to contemplate. I have been doing what I can, sometimes gaining the criticism of my friends, who are very sincere people who disagree with me; but I do not want to see my children, my grandchildren, and yours, destroyed in the terrible catastrophe that would ensue if we allow ourselves to get into another international conflict on a major scale."

Later at Lac Beauport in March 1958 Cyrus Eaton, in a welcoming address to the Second Conference referred to the first meeting as follows:

"What impressed me most about last summer's Pugwash conference was the reception your findings received from the rest of the world. Thousands of letters have come to me from citizens in all walks of life in every part of the world. They all endorse the purpose of the meeting and rejoice in its findings. Timid statesmen have taken courage from Pugwash. More significant however than this universal lay approval is that no scientist has raised his voice in disagreement with Pugwash conclusions.

"The first conference lasted for four days and the subjects were divided into three commissions. The commissions made pronouncements on three main topics: 1) the hazard arising from the employment of nuclear substances in peace and war; 2) problems of control and verification of nuclear weapons; 3) the social responsibilities of scientists. At the conclusion of the Conference, the following statement was issued:

✓ 'It should be noted that as these scientists were meeting for the first time as a group, they were as much concerned in getting to know each other and overcoming certain barriers and laying the foundation for subsequent conferences; as may be seen from the topics discussed the range was very broad, perhaps too ambitious. However, the main task was to launch the general pattern of this entirely unique and invaluable experiment, and this it accomplished most successfully.' /

~~Eaton continued his report to the Second Conference in this vein:~~

✍ / In addition, the First Pugwash Conference set up a continuing committee consisting of Bertrand Russell as Chairman and of Professors Powell, Rotblat, Rabinowitch and Skobel'tzyn as members. This committee met in London between December 10 and 11, 1957, and with the benefit of advice from Professors Szilard and Von Weizsacker of The German Federal Republic, they set up plans for a subsequent meeting. As a background to their plans for future conferences, they had the results of a questionnaire addressed to a large number of scientists in the United Kingdom and the United States.

✍ / The answers to this questionnaire indicated a widespread sense of urgency felt by these scientists at the worsening of the world situation, and their desires to contribute towards diminishing these dangers. It was the consensus of opinion that it was no longer sufficient for scientists to give general warnings but it was now necessary to make a concrete contribution towards a solution of our problems. The continuing committee, therefore, decided to give

expression to these views and those of the First Pugwash Conference by planning two meetings quite different in character. The first of these two meetings, now known as the Second Pugwash Conference of Nuclear Scientists was designed to be held in private with the express intention of not issuing public statements. It was felt that under these conditions scientists influential with governments could meet and discuss really difficult technical and political problems without the burden of political responsibilities, and without the possibility of adverse publicity. This conference was really designed to make a contribution to international thinking in scientific and political areas without public participation.

Chapter IX