United Nations
GENERAL ASSEMBLY
NINTH SESSION
Official Records

FIRST COMMITTEE, 707th MEETING

Friday, 5 November 1954, at 10.30 a.m.

New York

CONTENTS

Chairman: **Mr. Francisco URRUTIA (Colombia).**

Tribute to the memory of Mr. Mahmoud Azmi and expression of sympathy with Iran

1. The CHAIRMAN extended condolences on the Committee's behalf to the Government and people of Egypt upon the death of the Chairman of the Egyptian delegation, Mr. Mahmoud Azmi. He also expressed sympathy with Iran upon the death of Crown Prince Ali Riza. Subsequently, he requested the members of the Committee to observe a minute of silent tribute.

The members of the Committee rose and observed one minute's silence.

AGENDA ITEM 67

International co-operation in developing the peaceful uses of atomic energy: report of the United States of America (A/2734, A/2738)

2. Mr. LODGE (United States of America) recalled that the President of the United States, Mr. Eisenhower, in his speech before the General Assembly on 8 December 1953 (470th meeting), had addressed himself to the overwhelming problems confronting the world, in particular, the danger of atomic war. One nation, Mr. Eisenhower had said, could, by surprise attack, inflict grievous damage on the United States, and would, in return, receive atomic retaliation of fearsome proportions, leaving a ruin of mangled bodies, cultures and economic and political systems. Such a thought, he had added, had better be left unspoken unless a message of peaceful hope could be added. However, seven years of debate and negotiations had failed to bring the world closer to a system for the reduction and control of armaments and the effective elimination of nuclear weapons.

3. Mr. Eisenhower had therefore decided to make a proposal removed from the aura of past dejection and failure, to offer a plan whose outstanding characteristic was that it was feasible and which Member States could easily accept without having to lose face by reversing previously stated positions.

4. President Eisenhower had proposed that the Governments principally involved should begin to make joint contributions from their stockpiles of normal uranium and fissionable materials to an international atomic energy agency to be established under the aegis of the United Nations. He had further stated that his Government was prepared to undertake to negotiate, in good faith, with the other Governments principally involved, the ratios of contributions, procedures and other details concerning the proposed agency. The main purpose of the new international agency, Mr. Eisenhower had said, would be to devise methods whereby fissionable materials would be allocated to serve the peaceful pursuits of mankind, specifically in the fields of agriculture, medicine and electric power. Mr. Eisenhower had finally declared that the Soviet Union must be among the Powers principally involved.

5. Mr. Eisenhower had wished to take every precaution to ensure that the Soviet Union Government would take the proposal at its serious, sincere, long-term, face value, and not interpret it as a short-term propaganda trick. Accordingly, the United States Ambassador in Moscow had been instructed to advise Mr. Molotov in advance of the delivery of the speech. Moreover, Mr. Eisenhower had chosen to make his proposal before the General Assembly because he had wished the world to know that, in that overwhelmingly important matter, he was turning to the United Nations as the international body most appropriate both to hear the original enunciation of the proposal and to participate in the development of the plan.

6. Despite the positive and hopeful response which had greeted Mr. Eisenhower's proposal from all the parts of the world, the USSR had rejected it until such time as the United States would agree to an unconditional and unsafeguarded ban on the use of atomic weapons. The exchange of Notes between the two Governments had been published in document A/2738. On 22 September 1954, the Soviet Union had told the United States Government that it was keeping the door open a tiny crack; actually, the door had been thrown wide open on 8 December 1953 by the United States, and had been kept wide open by the United States ever since. The door was still open.

7. On learning of the essentially negative Soviet attitude, the United States had lost no time in proceeding with conversations with other States which had either developed raw material resources or had advanced atomic energy programmes, namely, the United Kingdom, France, Canada, Australia, Belgium, the Union of South Africa and Portugal. All those States had agreed, despite the refusal of the Soviet Union to participate, to proceed with the formation of the agency.

8. It was in those circumstances that the United States Secretary of State, Mr. Dulles, had declared on 23 September before the General Assembly (475th meeting) that the United States was proposing an agenda item which would enable those States to report further on their efforts to explore and develop the vast possibilities for the peaceful uses of atomic

energy. Those efforts, Mr. Dulles had said, had been and would be directed primarily towards the following ends: first, the creation of an international agency whose initial membership would include nations from all regions of the world; secondly, the calling of an international scientific conference to consider that whole vast subject, to meet in 1955, under the auspices of the United Nations; thirdly, the opening, in the United States, early in 1955, of a reactor training school where students from abroad might learn the working principles of atomic energy, with specific regard to its peacetime uses; and, fourthly, the extension of an invitation to a substantial number of medical and surgical experts from abroad to participate in the work of American cancer hospitals, in which atomic energy techniques were among the most hopeful approaches to controlling that menace to mankind. Mr. Dulles had added that he wished to make it perfectly clear that such planning excluded no nation from participation in that great venture.

9. On 3 November, President Eisenhower had announced that the United States had delivered to the Soviet Ambassador in Washington a reply to the Soviet Note of 22 September and had expressed the hope that that Note would start a new phase in the negotiations between the United States and the Soviet Union which might be more fruitful than past efforts. He had reiterated, however, that the United States was determined to proceed with like-minded States in establishing an international agency to make the great power of atomic energy available to mankind. The thought behind all the United States Government's suggestions was to do something that was feasible.

10. The world was dealing with a force whose gigantic power of destruction was exceeded only by its power for human good.

11. The world was in the presence of a whole range of atomic discoveries, the most important of which stemmed from the use of the radio-active isotope. Many elements long known to physics, such as gold, cobalt and carbon, could be changed in atomic reactors into new versions of those elements themselves. A change in their atomic structure made them give off rays. Those rays had two main uses: they could bring about changes in living things; they could also be used as tracers, giving off signals to detection machines, to control the intricate processes of industry, or to reveal new facts about the growth and diseases of plants and human beings that had never before been know to man.

12. Mr. Lodge gave examples of how isotopes had already been applied in the United States. They had been used to bring about changes in living things, particularly in the treatment of cancer, the preservation and storing of food and the development of new agricultural strains. Isotopes had also been used as tracers in the following fields, among many others: in the manufacture of flat sheets, to control their thickness; in welding and riveting, to detect flaws; in the operation of oil pipelines, to signal changes; in agriculture, to show how fertilizers were absorbed in growing plants; in the poultry industry, to determine which feed was most efficiently converted into eggs; in fish breeding, to increase supplies; in medicine, to detect faulty blood circulation and to perform other miracles of diagnosis and control of diseases; in control of epidemics, to follow the migration of disease-bearing flies and mosquitos. Those were just a few of the discoveries already made and put to work at the beginning of the atomic age. Still other projects were well under way, among which the most extraordinary was the research into the mysterious process of plant growth called photosynthesis, the understanding of which might some day enable mankind to manufacture vast quantities of inexpensive food out of common chemicals.

13. Every one of those advances had at its centre the use of radio-active isotopes, most of which could be produced in comparatively small atomic reactors. In the past eight years, the Oak Ridge National Laboratory had sent out nearly 50,000 shipments of isotopes to factories, laboratories, hospitals and universities. Most of those had been sent within the United States, but over 2,800 had gone to fifty countries abroad.

14. The most difficult application of atomic energy was the production of electric power. That was a subject of intensive engineering research in the United States today. In 1954, the Atomic Energy Commission had launched a five-year programme for the building of five experimental power reactors in the United States, all radically different in design. None of them was expected to produce power at prices that competed with power plants that burned coal and other conventional fuels. But they would tell a great deal about the future of atomic power. For the knowledge to be gained from them, those plants would be worth the investment. They pointed the way to an age when all countries could be assured of abundant electric power, even where natural fuels were scarce. On the basis of that power, new industries could grow to enrich the lives of many millions of people.

15. An atomic power reactor was of great complexity and required expert knowledge. Research reactors, however, could be built in a year's time for less than $500,000. Those reactors would produce most of the radio-active isotopes, thereby making possible a great increase both in research and in the practical application of the atom in medicine, farming and industry. Also, they would afford training grounds throughout the world at which a new generation of atomic scientists, engineers and technicians would learn the principles of reactor technology.

16. The discoveries already made, however, were no more than the nuggets at the surface of a newly discovered mine. To tap that wealth in peace and co-operation should be a noble enterprise for the nations of the world. It was fitting that the discovery which was bringing the world together should have come from the hands of one of the truly global fellowships of mankind — the fellowship of science, which knew no national boundaries and sought truth and human betterment.

17. As for the specific activities contemplated for the international agency, the United States believed that the agency should encourage world-wide research and development of the peaceful uses of atomic energy; it should arrange for nuclear materials to meet the needs of research, development and practical application to all manner of peaceful activities, including the eventual production of power; it should foster the interchange of information on peaceful uses; it should conduct its activities in such a way as to prepare for the time when the use of atomic energy for peace would become the predominant, and perhaps the exclusive, use of that great force.

18. The agency should be created by a treaty defining the standards and principles governing the organization in the discharge of its functions. All States which had originally ratified the agreement should become members of the agency, and there should be a provision for accepting additional members. Members should accept an obligation to supply materials and information for the work of the agency, financial support, facilities for open discussion and contacts among scientists engaged in peaceful research activities.

19. For practical reasons, the agency could carry on only a few of the possible activities in the immediate future — those most suitable to it.

20. For its part, the United States was prepared to start discussion with other countries for the conclusion of bilateral agreements which would make it possible for it to furnish technical information and assistance, as well as necessary amounts of fissionable materials for the construction and operation of research reactors to be located abroad.

21. Mr. Lodge then described in some detail the programme which the United States was prepared to carry out in 1955 pending the creation of the proposed agency.

22. First, the United States intended to establish, early in 1955, a reactor training school which would deal not only with atomic power theory, but also with the application of that theory. Between thirty and fifty scientists and engineers were to be invited to the United States from overseas to study practical reactor engineering, in order to furnish sufficient basic science and engineering knowledge to permit the members of that group not only to understand the theory, but also to become competent to operate reactors. Initially, the atomic information available to the members of that course would be non-secret. But as the United States and other countries concluded the bilateral agreements required by the Atomic Energy Act of 1954, additional information would be made available.

23. Secondly, since the members of that group would be dealing with a power which was both a danger and a boon, it was necessary also that special training courses in radiation safety and medicine should be instituted simultaneously with any training in atomic power development. Accordingly, the following courses, which would be open to all other nations, would be established under the sponsorship of the United States Atomic Energy Commission: industrial medicine for industries concerned with atomic energy; industrial hygiene in industries dealing with hazardous atomic materials; and radiological physics and the theory and use of radiation instruments.

24. Thirdly, two hospitals and one laboratory would be open for one-year to two-year courses on the use of atomic energy in medicine and biology for approximately five to ten foreign students per course. Moreover, since the field of cancer was so important, and other countries had made such strides, the United States was prepared to invite as many as 150 competent visitors in the field of cancer research from overseas to visit its cancer research facilities during 1955.

25. Fourthly, the United States Atomic Energy Commission was prepared to establish special courses in the field of radio-isotope tracer techniques for foreign technicians, to begin early in 1955.

26. The proposed training courses would bring basic knowledge and training to more than 250 persons from other nations during the next twelve to fifteen months. The limitation on numbers was imposed not by any desire to restrict the sharing of that knowledge, but simply by the ability to absorb observers, students and trainees effectively and efficiently within the existing facilities.

27. Closely allied to that programme was the question of written information about the atom. The United States anticipated that from the outset the international agency would carry on a series of information and service activities. The United States, which had published more than 20,000 papers about atomic energy, totalling more than 700,000 pages of data, had accumulated ten complete libraries of its own material which it was prepared, as a beginning, to present to the principal technical libraries of co-operating nations. Also, it was prepared to provide complete sets of index cards, and American journals of the past seven years, abstracting 50,000 scientific and technical books and reports published in all countries.

28. In addition to training and publication, a third step must be taken in the field of research and development. The practical applications of the atom to medicine, agriculture and other peaceful activities, including the eventual production of power, must be further developed.

29. The United States believed that a relationship should be established between the international agency and the United Nations similar to that of the specialized agencies and the United Nations. The exact terms of the relationship had, of course, to await the creation of the agency itself, which would be established by negotiations among interested Governments. Such negotiations, which were already in progress, would lead to the conclusion of a treaty, subject to the usual constitutional processes of ratification. The international atomic energy agency would consult and co-operate as appropriate with other United Nations bodies whose work might be related to its own, as well as with national atomic energy organizations and regional organizations.

30. While there had been a certain degree of agreement among the States which were negotiating the creation of the agency on some of the administrative features, it did not seem possible to go into the subjects of negotiation in great detail for the moment.

31. It should be mentioned that the United States had originally visualized that the international agency would hold fissionable materials itself. But after the Soviet rejection of the United States proposals, all the negotiating States had concluded that it might be preferable that the agency should act as a clearing house for requests made to the agency by the various beneficiaries. The donor State would earmark fissionable materials for the agency's operations and would transfer those materials directly to the projects approved by the agency.

32. The desire and purpose of the United States was to remain within the area of the feasible, and not become hampered by being placed in the context of unending arguments or insuperable vetoes.

33. One further way in which the United Nations could contribute materially towards the goal of extending to all peoples the benefits of atomic energy was by convening an international conference to discover the fields in which progress would be technically feasible and to develop procedures whereby the nations

of the world could make known their wants. The United States Atomic Energy Commission would remove restrictions from information and make it available in the hope of contributing thereby to the value of the conference; other States would undoubtedly do as much. The opportunity to exchange information and become better acquainted with each other's problems in the vast field of the beneficial uses of atomic energy would be fruitful.

34. The representatives of various specialized agencies whose tasks were such that the discussions at the conference would be of direct interest, should also be invited.

35. In order to organize the conference, issue invitations, and prepare an agenda and rules of procedure, the Secretary-General of the United Nations should act on the advice of a committee composed of representatives of certain States Members of the United Nations. The United States suggested that the composition of that committee should meet two essential qualifications: knowledge of atomic energy development and appropriate geographical representation.

36. The proposed conference should discuss, *inter alia*, topics such as probable world power requirements, the possible contribution of atomic energy to meet deficits in conventional fuels, the economics of nuclear power, and the health and safety aspects of atomic energy. Discussions could be held on nuclear technology, on reactor application in research and power, on medical and biological applications of atomic energy, and on industrial application of radio-active products.

37. The United States intended to co-sponsor a draft resolution which would reflect the views just expressed, and would indicate the best pattern for practical United Nations participation in that great work of international co-operation, the developing of the use of the atom for peace. It would assist in the fulfilment of a programme whose only purpose was, as President Eisenhower had told the Assembly last December, "to find the way by which the miraculous inventiveness of man shall not be dedicated to his death, but consecrated to his life".

38. Sir Pierson DIXON (United Kingdom) recalled that the item had been included in the agenda as a direct result of the initiative of the President of the United States in his speech before the General Assembly on 8 December 1953, and that Mr. Eisenhower had informed Sir Winston Churchill in advance and had received his warm support.

39. He recalled also that Sir Winston had declared before the House of Commons on 17 December 1953 that he considered President Eisenhower's speech as one of the most important events in world history since the end of the war. Though Mr. Eisenhower's proposal had been limited in scope and shrouded in technicalities, Sir Winston had said that he could not help but feel that the world was in the process of what might prove to be a turning point in man's destiny, and he had fervently hoped that the Soviet Government would not ignore that beam of light. Commenting again on that proposal on 5 April 1954 in the House of Commons, Sir Winston had referred to it as a proposal for a new consultative and co-operative machinery, limited to the industrial atomic sphere in which all those Powers directly concerned in atomic production, including, of course, the USSR, would have the opportunity to take part.

40. Although the President of the United States had never spoken of his proposal as an alternative to disarmament, it could, if accepted by all the Powers primarily concerned, lead to consultations and discussions which, in turn, might lead to an increase in confidence among States and to a habit of co-operating.

41. The United Kingdom sincerely hoped that the USSR would decide to participate in that bold and practical plan, which deserved to succeed just because it did not aspire to solve the whole question in one step; it was intended to establish a small area of collaboration in the hope and expectation that that collaboration would grow. Though the United Kingdom believed that that objective would not be fully achieved without the participation of the Soviet Union, it was nevertheless prepared to co-operate with other nations in setting up the proposed agency, in the confident belief that it would bring considerable benefits to all those associated with it, particularly to countries which had lacked the power to develop their industrial resources.

42. When established, the agency should be brought into some appropriate relationship with the United Nations, perhaps as a specialized agency.

43. The United States representative had acquainted the Committee with the negotiations between the United States and the USSR on the subject. Sir Pierson Dixon wished only to say, in that connexion, that his Government had been consulted at every stage and had been in agreement with the course pursued by the United States Government.

44. The United Kingdom, Sir Pierson pointed out, had qualifications in the matter derived from a pioneering interest and a long and extensive experience. He recalled that until the very end of the nineteenth century scientists had continued to believe that the physical world consisted of unchanging and indestructible atoms and the space between them. The ancient Greek philosophers had propounded that view and it had held the field for more than 2,000 years. However, from 1895 onwards, doubts had begun to be thrown on the finality of that theory of matter, and it had finally been shattered by the experiments of the British physicists, Ernest Rutherford and Frederick Soddy. That had in due course led to the discovery of nuclear fission in the decade before the Second World War.

45. On the basis of the experience the United Kingdom had gained in the construction of an atomic industry, it believed that the essential requirements for any advanced project for the use of atomic energy were, first, the possession of the basic scientific knowledge and an adequate staff of scientists; secondly, the experimental tools and equipment with which to acquire familiarity with the technical and economic problems involved, for instance, experimental reactors; thirdly, the necessary materials — not only fissile material but also the other special materials that were required in the construction of reactors; fourthly, the power production units themselves and, equally important, the economic and technical means to work them effectively. It was important to realize that the last of those steps, which was the ultimate goal, could only be reached by way of the first three and in the order mentioned.

46. An international atomic energy agency could help its members to reach that final step in a variety of ways. It could not of itself provide all the basic scientific knowledge for everybody, since the need for that was limitless, but it could do a great deal to ensure

that those who needed it most were provided with the necessary facilities for obtaining it.

47. The agency could arrange for training and tuition at courses in various institutions in member countries; it could arrange for the supply of the complex laboratory equipment, such as accelerators, which were necessary to investigate the nucleus; it could create scholarships and foundations; it could provide for the dissemination of published material; it could provide library and information facilities, and could take effective steps to see that the facilities which member countries were prepared to offer were used to the greatest advantage of those who needed them most.

48. The next stage was the provision of experimental tools and equipment. That would no doubt involve the provision, on terms to be determined, of experimental reactors and other complicated equipment. Such reactors varied considerably in type and range, from quite simple models to those which were only a few stages removed from units for the production of electric power.

49. Sir Pierson explained that the United Kingdom had two types of experimental reactors in construction, a pressurized gas-cooled type and a more advanced breeder type. In a few years' time, those reactors should produce electric power on a substantial scale. From experience with those prototypes, improved versions would be built, and it should not be many years before some large atomic reactors would produce electricity.

50. In many cases, it might be beyond the means of member countries to operate or build such reactors. Skilled scientific and technical staffs were needed, also a great variety of special materials and considerable technical and financial resources. In such cases, groups of countries such as those of the Colombo Plan might pool their resources to build an experimental reactor. For its part, the agency would then be able to provide assistance of a much more concentrated form, which would be of much more value to the recipients than if its help had been shared between them.

51. The third and fourth stages, though separate in time, must be taken together in the drawing up of plans. The whole was a very complicated process which could not be hastened. The effort required was prodigious. That applied as much to the early stages of experiment and training as it did to the final two stages of gathering together the material and setting up the power production units which would use atomic energy for peaceful purposes.

52. An immense amount had been done in the United Kingdom, but it had taken a great many years to accomplish, and it would not have been accomplished if the necessary scientists and the full resources of an industrial country had not been available. In 1945, the United Kingdom had had the scientists to make use of the increasing knowledge of the process of nuclear fission and the technology of building, controlling and using nuclear reactors and the other machinery essential to an atomic energy industry. But it had not possessed the organization and research facilities to give the scientists full scope; in other words, the United Kingdom had not reached the second stage mentioned earlier, due to the fact that, for safety reasons, wartime atomic projects had been located on the American continent.

53. Therefore, immediately after the war, the United Kingdom Government had set up an atomic energy research establishment and had laid plans for the production of fissile material in sufficient quantity to enable the United Kingdom to develop its own programme.

54. The objectives of the British atomic energy programme could be summarized as follows: first, to develop nuclear energy as a major source of heat and power and to manufacture fissile material; secondly, to develop the nuclear reactor as a tool of fundamental and applied research; thirdly, to develop new substances, to develop the special use of those substances in science, medicine, industry and agriculture, and to supply the substances to users.

55. The United Kingdom had by no means achieved all those objectives. However, it hoped in 1958 to have an atomic reactor producing electricity commercially for the first time. That would be a momentous event, but it would be the result of fifty-five years' effort.

56. That did not mean that other countries need necessarily have to wait the full fifty-five years. Much of the basic work had already been done and progress could therefore be faster for other countries, since the United Kingdom believed in the greatest possible freedom of information in those matters compatible with national security. But no stage towards the final aim of applying atomic energy to peaceful uses could be omitted; each part was an essential part of the whole and to some extent governed by the rate at which man could absorb knowledge of that special nature and could create the immense physical facilities. Though the day for the really large-scale economic application of atomic energy for the production of electric power was still far off, it was not wrong to hope that such application might be witnessed in the present generation.

57. The international atomic energy agency could be based on the concept of a bank, or on the concept of an international broker. The original idea had been that the agency should take the form of an atomic bank which would take physical possession of fissile materials and distribute them on the basis of merit. Later, however, it had been considered preferable to explore the possibility of agreement on a scheme under which the proposed international agency would, at least in the early stages of its development, act more as an international broker.

58. There was no doubt that progress could best be made if the agency, rather than undertake projects with what must be its own limited resources, assisted individual national Governments with the development and execution of their own projects. For some years the United Kingdom had had informal arrangements with other European and Commonwealth countries wishing to draw upon its experience for the development of their own atomic projects. For instance, the United Kingdom had processed uranium for the Dutch-Norwegian reactor and supplied graphite to Belgium.

59. Although co-operation in atomic energy matters had been limited, and secrecy had shrouded the subject, a vast mass of non-secret information in fact existed. But, owing to the history of the subject and the mysteries it held for laymen, there was very little understanding of how the information could be used and applied. One of the main functions of the agency would be to bring the subject of the peaceful uses of atomic energy into the open, to encourage men to approach the great discovery of nuclear energy as a subject no longer to be feared.

60. There were many other useful things not directly concerned with the distant goal of industrial nuclear power which the agency could do as soon as it was set up. The United Kingdom Government could immediately offer a number of places in the four-week training course at the Isotopes School at Harwell. The Harwell school of reactor technology might also be in a position to offer vacancies in its three-months courses, if the demand for attendance from abroad was great enough. Those facilities, which were already available in advance of the agency being set up, were entirely in the spirit of Mr. Eisenhower's conception of the peaceful uses of atomic energy being made available to all.

61. As a by-product of the work on atomic energy, there had grown up a programme for the production and study of isotopes, which had been used partly for medical, scientific and industrial research and partly, to a lesser extent, in medical therapeutics and in industrial processes. In industry, radio-active isotopes were used in a steadily increasing variety of ways; for instance, to check the soundness of welds, and to measure the rate of wear of bearings or furnace linings.

62. Radio-active isotopes were produced in the United Kingdom at the rate of about 12,000 a year. The United Kingdom was at present the greatest exporter of radio-active isotopes in the world.

63. The Isotopes Advisory Service, formed in 1948, offered advice and assistance free of charge. Harwell had trained over 300 British and foreign students in the use and handling of radio-active isotopes. In July 1954, there had been an Isotope Conference at Oxford attended by over 800 delegates from all over the world.

64. As an example of the kind of arrangement which the United Kingdom had within the Commonwealth, Sir Pierson Dixon mentioned that, as a result of recent discussions, it had been agreed that the United Kingdom would make available to Australia the latest information concerning atomic energy research in the United Kingdom and, in addition, would offer facilities to Australian scientists to gain first-hand knowledge in the United Kingdom of reactor design and operation. Australia, as its contribution, would undertake important research work related to work currently in progress in the United Kingdom. Duplication of effort would thus be avoided.

65. As to the proposed international scientific conference, the United Kingdom Government warmly supported the suggestion that it should be held under the auspices of the United Nations. The conference could undoubtedly help to promote the peaceful applications of nuclear energy by exploring the ways of applying it in such fields as medicine, physics, agriculture and power. It was thus logical that the conference should be called by the United Nations. By discussing questions of that kind, it should be possible to obtain a clearer idea of how international co-operation in the application of nuclear energy in those fields could be most successful.

66. The United Kingdom believed that the conference should be open to all Member States. It sincerely hoped that there would be wide representation from all quarters of the United Nations, and that Member States would send those of their scientists who were best informed in matters of atomic energy.

67. The conference should not make recommendations regarding the organization of the proposed international atomic energy agency, or concern itself with that subject. Its role would be to provide an opportunity for exchanges of views and the discussion of all the many problems connected with atomic energy.

68. It would clearly be necessary to draw up most carefully the agenda of the proposed conference. The United Kingdom found itself in general agreement with the ideas that had been put forward by Mr. Lodge in that respect.

69. A first aspect of the question was the development of nuclear energy for industrial uses, and particularly as the source of fuel. Coal mines did not last forever, and the United Kingdom was keenly interested in exploring possibilities of supplementing its fuel reserves. The conference might well begin by devoting time to questions such as the deficiencies of conventional fuels which were likely to arise in the future, the contribution that could be made by atomic energy to meet those deficits, and the question of the cost of the power produced from atomic energy. In addition, attention should be paid to the wider and more general aspects of that matter, such as the world supply of uranium.

70. Another important area for examination was the social implications of atomic energy, and such matters as precautions to safeguard health. Education should not be neglected if atomic energy was to play a really considerable part in the life of future generations.

71. There might also be exchanges on the question of materials. Attention could well be directed to the chemical processes which were required before the ore which was extracted from the ground could be turned into fuel. The processes depended on the production of substances such as uranium and graphite. It would therefore be desirable to discuss in some detail the methods which could be used to produce those substances. When the substances had been treated, they would have to be stored; that again was a question which might be considered. Similarly it might be beneficial to go into the question of the metallurgy of substances such as uranium, thorium and their alloys.

72. The conference might also consider the question of the treatment and disposal of radio-active materials. The disposal of waste was a normal problem in a normal factory, but the waste of atomic energy, known as effluents, could not be dealt with by normal methods.

73. The conference should also consider, more briefly perhaps, such questions as the operation of the various types of reactors which were used in research. There was a choice of reactors which could be applied to research, and the various types which had been devised might well be discussed. Some types were more valuable for one purpose than were others. It would also be valuable if there could be exchanges on the development of reactors for power. The question of which reactor would be the most suitable to fit into the economy of a given country should be studied.

74. As regards the applications of atomic energy in the fields of medicine and physiology, that part of the discussions of the conference would follow directly from the objectives which had been mentioned. The scientists at the conference could exchange views on such questions as the use of radiation for plant physiology and genetics. Finally, there should be some time devoted to the question of the industrial applications of radio-active products.

75. The agenda would be of great complexity. Discussion would be of a very technical nature. For that reason, among others, the United Kingdom delegation considered that an advisory committee should be established to assist the Secretary-General in his task of convening the conference. Such a committee should be a widely representative and technically qualified body.

76. The United Kingdom delegation wished to suggest that advantage should be taken of the facilities at the disposal of the United Nations in Geneva. Late summer, possibly July, might be the best time to hold the conference. That would give time for the preparation of the necessary arrangements, and also for the preparation of whatever basic documents and papers were needed.

77. The United Kingdom would be represented by its foremost authorities on nuclear energy problems. It sincerely hoped that all other States which decided to participate in the conference would do likewise, and trusted that the Soviet Union would be among those States.

78. Mr. MARTIN (Canada) stated that, until last December, it had been assumed that international co-operation in the development of peaceful uses of atomic energy must follow rather than precede disarmament. Although headway on some aspects of the disarmament problem had been made in the United Nations, the differences were still far from resolved. During the debate on the present item, there would be an opportunity to examine the proposition that the time had come, without waiting for agreement on all aspects of a comprehensive disarmament programme, to move forward towards fuller international co-operation, through the United Nations, in developing the positive benefits for all mankind which knowledge of the atom even now made possible.

79. It was of great satisfaction to the Canadian delegation that that effort was being discussed in the United Nations and that the aim of the sponsoring Powers was to set up an agency closely related to it.

80. Mr. Martin observed that, from the discovery of radio-activity at the turn of the century to the culmination of that discovery in the demonstration of the power of the atom, international co-operation had been the outstanding characteristic of nuclear physics. Without international co-operation, those achievements would have been impossible. Post-war efforts to achieve, through the United Nations, a basis for international co-operation in developing the peaceful uses of atomic energy had been aimed at re-establishing, over as broad a field as possible consistent with elementary prudence, the co-operation which the international scientific community used to take for granted.

81. Mr. Martin then referred to the declaration made on 15 November 1945 by the then President of the United States, Mr. Truman, and the Prime Ministers of the United Kingdom and Canada, Mr. Attlee and Mr. Mackenzie King, stating that their countries were prepared to share with other Members of the United Nations detailed information concerning the practical industrial application of atomic energy just as soon as effective enforceable safeguards against its use for destructive purposes could be devised.

82. On 24 January 1946, the General Assembly had adopted unanimously its first resolution, establishing the Atomic Energy Commission, which was in particular charged with making specific proposals "for extending between all nations the exchange of basic scientific information for peaceful ends" (resolution 1 (I)).

83. During the years that followed, hope of securing international co-operation had gradually diminished as disagreement on the prerequisite disarmament scheme hardened into deadlock. Meanwhile the scientists of a number of countries, working without the benefit of a full interchange of information, had nevertheless succeeded in opening up new horizons for peaceful uses. Much of the basic information had gradually become available, but the tools of atomic research and development were still prohibitively expensive and the necessary materials were not everywhere available.

84. At that point, on 8 December 1953, Mr. Eisenhower, the United States President, had made his historic, generous and imaginative proposal before the General Assembly (470th meeting), a proposal which the Canadian Government had immediately welcomed.

85. Mr. Eisenhower's proposal had been followed by months of negotiations between the United States and the USSR. There was no need for Mr. Martin to dwell on the disappointment which his Government had felt as it followed the negligible progress of those negotiations. The Soviet Union Government until recently, at least, had insisted upon the unconditional prohibition of the use of atomic weapons as a prior condition for any substantive negotiations on the establishment of an international agency which might, in spite of the continuing disagreement on disarmament, promote international co-operation in the development of peaceful uses.

86. The Canadian Government still hoped that the USSR Government would decide to participate. It was encouraged in that hope since the Soviet Union had apparently dropped its insistence on the unconditional prohibition of atomic weapons as a precondition for negotiations both on disarmament and on an atomic energy agency. Mr. Martin was glad that the statements of the representatives of the United States and the United Kingdom could have left Mr. Vyshinsky with no doubt that the door was still wide open for the Soviet Union to participate in the organization, establishment and operation of the agency.

87. In the exchanges between the Soviet Union and the United States, the former Government had reverted time and again to the objection that the proposed agency would not deal with the disarmament problem. That point had never been in dispute.

88. International co-operation in the atomic field without the Soviet Union would only be a second-best solution. However, a genuine attempt to secure Soviet participation had been made, so far without success. Did anyone seriously suggest that the United Nations must wait indefinitely in the hope that the Soviet Union would change its mind? Was international co-operation in a field of such great promise to be delayed indefinitely? Surely that was not the general wish.

89. The representatives of the United States and the United Kingdom had explained in some detail the type of agency it was hoped would be negotiated, preferably with the full co-operation of the Soviet Union from the outset. No attempt was being made to set up any kind of exclusive organization. From the rather narrow point of view of national interests, there would have been many attractions for certain countries to have made their own arrangements for the rapid exploitation of atomic resources for their own benefit. If the nego-

tiating countries had wanted to be exclusive, they would not have brought the subject to the United Nations, certainly not at such a very early stage.

90. It seemed to the Canadian Government that the most immediate need was for information and training to spread the technology required for the application of atomic energy for peaceful purposes.

91. At present, it would be visionary to imagine that, if the agency were established within a year, it would shortly thereafter be in a position to export power reactors. The first economically practicable reactor had yet to be built. That fact should be made clear to prevent possible misconceptions being followed by disillusionment. The Canadian Government did hope, however, that the agency would assist other countries participating in its programme to set up their own research reactors and to join with those countries already possessing them in developing economic atomic power as well as the other actual and potential applications of atomic energy for peaceful purposes.

92. In order to construct reactors and to carry on research in the field, it was necessary not only to have technical information on the subject, but to have scientists, engineers and technicians trained in the use and interpretation of those research tools. The agency should foster the interchange of information on peaceful uses and facilitate the arrangements to be made for those countries wishing to set up research reactors to have their people suitably trained. It should encourage world-wide research and development and be in a position to arrange for the needed nuclear materials. Canada would be a potential source not only of information but of raw material and fissile material.

93. No doubt some States not at present included in the negotiations, or rather consultations, which were then in progress between the United States, the United Kingdom, France, Belgium, Australia, the Union of South Africa, Portugal and Canada felt that they had a legitimate claim to participate in the agency from the outset. It would be conceded, however, that, with the exception of the Soviet Union, there were no countries which could claim, on the basis of their atomic research and development and of their resources of fissionable material, that they had a better claim to be founding members than any of the present eight.

94. As had been explained previously, it was intended that as soon as substantial agreement among those eight Governments had been reached, the circle of consultations should be broadened. At a later stage, when the agency had been established, it should negotiate an agreement with the United Nations, in accordance with Articles 57 and 63 of the Charter, similar to those of the specialized agencies. At that stage, all States not previously consulted would be given an opportunity to express their views before the new specialized agency was finally constituted and its working relationships with other United Nations organs defined. Mr. Martin doubted whether any of the specialized agencies had come into existence as a result of initial negotiations involving sixty or more countries. There was therefore nothing unusual in the present procedure except perhaps in the fact that, in view of the importance of the subject matter, the organizing group of States had taken the General Assembly into its confidence at an unusually early stage in the negotiations.

95. While there was bound to be a considerable gap in time between the formulation of new scientific theories and their practical application, the exigencies of war, the concentration of scientific knowledge in a number of countries and the expenditure of enormous sums of money had made possible a phenomenal speeding up of the normal progression between theory and application in the development of atomic energy. Its application to peaceful purposes had also been vastly facilitated by the research and development of a few countries. It would be tragic if any of those countries decided to keep its knowledge solely for the benefit of its own peoples and refused to co-operate for the general welfare of all peoples.

96. Mr. Martin observed that every Government considered major questions of policy from the point of view of its own experience. Canadian experience had shown what could be achieved through such forms of co-operation as were open to it by a country of modest resources and attainments. Few countries in the world had the scientific, technological and financial resources to break their way into the atomic age unaided. The United States, for example, had spent many thousands of millions of dollars for the development of atomic energy. The Canadian programme owed much to the invaluable assistance it had received from the United States and the United Kingdom. Since much of the basic research and development work had been done by the pioneering countries, there was no point in others going over the same ground in order to arrive several years hence at the practical benefits which were already attainable through international co-operation.

97. Since the Second World War, Canadian scientists had devoted their efforts almost exclusively to the peaceful application of atomic energy and, in particular, to the problems of power development. Because of the complete pooling of Canadian and United Kingdom atomic projects during the latter part of the war, Canadian scientists had had in operation at the end of the war in the Pacific the only atomic reactor outside the United States. Building on the experience gained from that small experimental reactor, Canadian scientists had been able to complete in September 1947 the famous NRX reactor at Chalk River. In 1951, work had been started at Chalk River on a new natural uranium heavy water reactor, the NRU, which would have an even higher neutron flux than the NRX reactor. A recent study carried out in Canada suggested that electric power could perhaps within a few years be produced at a cost which would compete with coal at $8.00 per ton.

98. Sometimes it was forgotten that the generation of economic atomic power was as much dependent on an adequate supply of uranium as upon the availability of efficient reactors. At the present time the production of uranium in Canada was three times what it had been at the end of the Second World War, and it had been estimated that by 1956 it would be eight times as great.

99. While developing economical atomic power, Canadian scientists had developed the cobalt bomb to treat victims of cancer. Because of diagnostic aids for earlier detection and the development of the cobalt bomb, thousands of cancer victims in Canada and elsewhere were still alive who would have had little hope of recovery a few years before.

100. As Minister of National Health and Welfare, Mr. Martin had followed with particular interest the

applications of radio-isotopes not only to cancer but to a wide range of uses in the diagnosis and treatment of disease and in medical research.

101. It was just three years since the first cancer patient had been treated with cobalt 60 radiation in London, Ontario. Almost all cobalt therapy machines in use in the world had been made in Canada. The active ingredient, cobalt 60, had been developed as a by-product of the high neutron flux of the NRX reactor at Chalk River. Although cobalt 60 was perhaps the best known, the Chalk River establishment had produced more than a hundred radio-isotopes for export.

102. Many uses of isotopes had been developed in Canada, ranging from the testing of welds on metal castings to the control of the thickness of paper. Isotopes had also been made available to countries throughout the world.

103. Recalling that the representatives of the United States and the United Kingdom had spoken about what their Governments were prepared to do in the period during which the international atomic energy agency was being negotiated, Mr. Martin stated that the Canadian Government was giving sympathetic consideration to parallel interim activities, although it could not offer anything comparable in extent to the programmes indicated by Mr. Lodge and Sir Pierson Dixon. The Canadian Government agreed, however, that the first requirement of countries entering the atomic energy field was that their scientists should acquaint themselves with the basic technology on the subject. It was prepared to broaden its existing programme of exchanging reports on atomic energy with foreign scientific research institutes, to furnish additional information on the structure and operation of research reactors, and to provide information on the techniques of exploring for radio-active ores and on their mining and milling operations.

104. In the field of health, Canadian cancer treatment and radiological research centres would welcome from other countries qualified radiologists and specialist physicians who wished to visit their clinics.

105. With regard to fundamental research in science and engineering, Canada's National Research Council had, since 1948, carried out a programme of post-doctorate fellowships. There were no restrictions as to the nationality of the applicant. While it was true that a good many of those holding fellowships worked in fields not directly related to atomic energy, the knowledge and experience they gained added to the reservoir of scientific and engineering competence which was essential to any nation proposing to establish an atomic energy programme. The feasibility of establishing additional courses in the related fields in the near future was being studied, to supplement what was already being done in the field of technical assistance through the Colombo Plan and under the United Nations programme.

106. The proposed international scientific conference would be the first occasion to focus world-wide attention on the efforts of the countries with experience in atomic energy to speed the development of its peaceful applications by making freely available the knowledge thus far acquired. Canadian scientists were preparing papers for the conference containing information, particularly in the fields of uranium production and power reactor technology, which would be of value to scientists of other countries.

107. To avoid possible confusion, Mr. Martin wished to confirm the fact that it was not the intention of the eight countries negotiating to set up the international atomic energy agency that the international scientific conference should review or advise on the negotiations concerning the agency.

108. The agency and the scientific conference were two distinct operations, neither of which would benefit from any attempt to confuse the two. They were mutually supporting and aimed at the same general objective — the most rapid and effective international co-operation in the development of the peaceful uses of atomic energy. The agency was essentially a diplomatic operation, while the conference was essentially scientific. The immediate object of the diplomatic negotiations was an appropriate piece of international machinery to assist in international co-operation. The conference would produce ideas as to what the agency should do, what forms of co-operation it should encourage, what priorities, and so forth.

109. Mr. Martin concluded by expressing the hope that all nations might be able to agree to make a common attack upon the remaining problems which barred the peoples of the world from the fullest utilization of atomic energy for peace.

110. Mr. MARQUES CASTRO (Uruguay) observed that the statements made by the representatives of the United States, the United Kingdom and Canada warranted the Committee's respect and consideration.

111. No small or medium-sized nation could carry out alone a successful atomic energy programme. That was why, without prejudicing the detailed study that would be made in the debate, he wished to congratulate the Government of the United States on the effective and generous contribution it had made by its historic proposal to the United Nations. With that proposal, an era had begun that would revolutionize the world and, by international co-operation in the development of the peaceful use of atomic energy, would lead to progress, peace and happiness for all nations.

The meeting rose at 1.15 p.m.

Printed in Canada A—41889—December 1954—1,950