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President: Mr. SUDJARWO (Indonesia)

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* GC(II)/57.

N.B. The list of delegations attending the second regular session of
the General Conference was issued as document GC(II)/INF/17/Rev.3.

GENERAL DEBATE AND REPORT OF THE BOARD OF GOVERNORS FOR THE YEAR 1957/58
(GC(II)/39) (continued)

1. Mr. HAMILTON (New Zealand) said he would first describe the development of nuclear science in New Zealand. For the past ten years, experts in that country had been using isotopes in their research work: they had developed the technique of radio-carbon dating to provide an absolute chronology for geologists and archaeologists etc.; they were using tritium as a tracer for underground water movements in the country's thermal areas; and they had made wide use of stable isotope ratios in the study of various natural processes. New Zealand was also planning a modest programme of expansion in nuclear science, and the Government had approved the establishment of an Institute of Nuclear Science equipped with a 3-MeV van de Graaff accelerator and a small research reactor. New Zealand possessed adequate sources of energy for the immediate future and it was not expected that nuclear power would be required for some years. Its research programme did not therefore touch on reactor design and technology but aimed at the application of nuclear techniques to assist research in industry and agriculture and to provide facilities for research for the universities.

2. After recalling his Government's attitude with regard to the Agency^{1/}, he made some comments on the Agency's activities, which had been suggested to him by the Report of the Board of Governors (GC(II)/39). In the first place, there was no need to be surprised by the lack of spectacular progress. The Agency's initial period had necessarily been devoted to recruiting staff and preparing the groundwork for its future operations. Secondly, the major role for which the Agency had been established was to supply fissionable and source materials. Nevertheless, although such materials had already been put at the Agency's disposal by the more advanced countries, it had received no request until that announced by the Japanese delegate during the current debate^{2/}. It could therefore be concluded that knowledge of nuclear technology was not yet sufficiently widespread in the under-developed countries to create a demand for fissionable and source materials. The Agency was therefore rightly placing greater emphasis on the training of experts. His delegation

^{1/} GC.1(S)/OR.9, paragraphs 61-65.

^{2/} GC(II)/OR.17, paragraph 6.

appreciated the eagerness of those Members of the Agency who wished to draw immediate benefits from a new source of energy, but it must be borne in mind that the use of new techniques required a period of sound preparation.

3. The report gave the impression that the Agency was spreading its activities over a field so wide that there was a danger of its limited resources being dissipated without any real progress being achieved. It should avail itself of the experience gained by other international organizations in their initial years. In that respect, co-ordination on the national level could be important. The Agency should, at least in the initial stages, concentrate its efforts not on problems which could be solved at the national level, but on selected nuclear energy fields in which work at the international level could most fruitfully be performed. By its success in carrying out those limited tasks, the Agency would consolidate its position and ensure that it retained the confidence of all its Members. Only in that way would it be able to proceed to the major tasks which still lay ahead.

4. Several of the tasks that the Agency might undertake had been discussed during the Second United Nations International Conference on the Peaceful Uses of Atomic Energy, recently held at Geneva (the second Geneva Conference). One was the problem of disposing of radioactive wastes with particular reference to dumping in the deep ocean trenches. Contrary to the conclusions given in the paper presented by Dr. Krobs of the Soviet Union at the above-mentioned Conference, New Zealand research based on carbon-14 in the Tonga Deep suggested that those waters had not been in exchange with the atmosphere for hundreds of years. Those ocean depths fell outside any national jurisdiction and the Agency could play a vital role in fostering and promoting an international agreement on the disposal of radioactive wastes. His delegation welcomed the action of the United Nations Conference on the Law of the Sea in recognizing the urgency of that problem.

5. The second Geneva Conference had also examined the question of nuclear propulsion for ships. The feasibility of that means of propulsion had been amply demonstrated. However, it had to be borne in mind that after a certain period of operation the reactors in such ships would contain large amounts of highly radioactive fission products, which in the event of collision or shipwreck might contaminate large areas. In spite of the advances in navigational

aids, such accidents were still possible, therefore a general agreement on the safeguards to be adopted in respect of nuclear-propelled ships would be desirable. Consideration of that question by the Agency would have to be closely co-ordinated with the work of other international organizations also concerned with various aspects of the problem. He was pleased to note that steps in that direction had already been taken.

6. One of the activities of the Agency was directed to the wider use of radio-isotopes in agriculture, medicine and industry, and to assisting Member States in installing laboratories, etc. In that respect, he wished to emphasize that a certain degree of caution was necessary. Experience had shown that certain of the possibilities at first envisaged for using isotopes had been unduly optimistic, and that isotopes in agriculture were useful mainly in unravelling complex problems in animal and plant physiology and bio-chemistry. It was essential that general research in a country should have already attained a fairly advanced level of development before isotopes could be of maximum use. In most fields, radioisotopes were not a panacea and could not replace long-established methods. It would be regrettable if the Agency, in its eagerness to foster the use of isotopes, adopted too optimistic an attitude.

7. Finally, he stressed how necessary it was for the Agency to have the full confidence of scientists from all countries if it wished to fulfil the hopes it had aroused. As the delegate from the Union of South Africa had pointed out^{3/}, it had been clear from informal discussions at Geneva that scientists tended to regard the Agency principally as a political body which did not warrant their serious interest. To remedy that state of affairs, it was indispensable for the Agency to secure the participation of scientists in all phases of its activity. The appointment of an advisory committee of eminent scientists was only a preliminary step. The Board of Governors itself should be so composed that the scientific implications of its decisions were fully understood by all its members.

8. Mr. EMBELIANOV (Union of Soviet Socialist Republics) pointed out that the second session of the General Conference followed closely upon two other important meetings, the second Geneva Conference, from 1 to 13 September, and

^{3/} GC(II)/OR.16, paragraph 22.

the conference of experts on atomic questions ("Second Pugwash Conference") held at Kitzbühel from 14 to 21 September. The Geneva conference had shown the immense possibilities which atomic energy could offer to the world if used for peaceful purposes. The Kitzbühel conference had emphasized the dangers of using atomic energy for military purposes. Both had demonstrated the passionate desire of scientists to work together, a desire so strong that it would break down all barriers erected in the path of international co-operation.

9. The second session of the Agency's General Conference differed from those two conferences in that its task was to work out a programme for practical action designed to hasten and increase the contribution that atomic energy could make to peace, health and prosperity throughout the world. In that connexion, he recalled the support which the USSR had given from the outset to the establishment of an international atomic energy agency; defining its attitude in unequivocal terms, it had declared its readiness to provide assistance in all fields connected with the use of atomic energy for peace and progress. At the first Geneva Conference, held in 1955, his delegation had presented his country's programme for mutual assistance and collaboration with other countries in the atomic field.

10. That programme, which provided inter alia for the establishment of scientific research centres in several countries, was already partly completed. It was worth mentioning that the assistance given by the USSR was open to all, and free of any political, economic or other conditions. Nine States had already concluded bilateral agreements which had enabled them to take advantage of that offer, and the USSR was prepared to extend the benefits of its help to all other States who wished to take advantage of it. In addition to the establishment of research centres, the Soviet Union had offered its assistance to other countries in prospecting for uranium ore and processing it, and in the fabrication of fuel elements for experimental or power reactors.

11. As it attached great importance to the training of specialized key personnel, the Soviet Union had welcomed more than 14 500 foreign students to its educational establishments, where two million pupils were following courses in physics, chemistry and scientific technology. A hundred places had been reserved for students in higher educational establishments, and fifty fellowships had been granted to fellows from the under-developed countries which were

Members of the Agency. In addition, the Government of the USSR had agreed to accept fifty experts from States Members of the Agency in 1958/59, for periods of from 3 to 6 months, for training or advanced study in Soviet scientific research establishments. Finally, to assist countries in putting their national programmes into effect, the Soviet Government had placed at the disposal of the Agency thirty highly qualified specialists in the various branches of science and technology.

12. From that brief account of the part the USSR was playing in the efforts that were being made to put nuclear energy to scientific use, he would pass to consideration of the practical achievements of the Agency. In his view, the initial programme drawn up by the Preparatory Commission^{4/} had remained at the planning stage. He expressed his regrets, and in support of his view drew attention, inter alia, to the lively criticisms formulated by Mr. Randers at the Kitzbühel conference. In the opinion of the Soviet delegation, one of the Agency's main activities should be assistance to the under-developed countries, and concrete results in that field could have been obtained by the Agency even in its first year of existence, had it not let slip all the opportunities which had arisen. The experts who had been made available had been badly employed, and insufficient thought had been given to the question how real assistance could be given to the under-developed countries.

13. The programme for 1959^{5/} covered only a small part of the initial programme drawn up by the Preparatory Commission, as far as the scientific activities of the Agency and its assistance to the under-developed countries were concerned. The insignificant results so far obtained were explained by the fact that certain founder Members of the Agency had had no intention of making it an effective instrument. Thus, after promising to put 5 000 kg. of uranium-235 at the Agency's disposal, the United States had so far not delivered any, and the terms of delivery had not yet been defined. It even seemed likely that the price would be slightly above the prices quoted on the international market, and in those circumstances it was clear that countries wishing to acquire uranium-235 would prefer to apply directly to the producing countries. For that reason the

^{4/} GC.I/1.

^{5/} GC(II)/36 and Corr. 1.

Agency had not been able, and would not be able, to fulfil its functions as a distributing body for fissionable materials. The Government of the USSR, in its desire to come to the assistance of the less-developed countries, had announced its intention of supplying uranium at lowest world prices. In supplying uranium through the Agency, it was not seeking to make a commercial profit.

14. The Agency had not so far supplied a single gramme of uranium-235, and no programme existed for the use of fissionable materials put at its disposal. Meanwhile, the less-developed countries were expecting from the Agency, not paper decisions and a swollen administrative budget, but real assistance. That was not to say that the Agency had done nothing during the first year of its activity; but it had begun its studies in a haphazard fashion, concentrating on such topics as strontium-90 and the tritium content of water. It should have attacked problems of wide interest, particularly the industrial use of radioisotopes, the training of its Member States' key technical personnel, study of the conditions for the development of atomic energy and the design of reactors which were economically sound. Instead it had limited itself to the study of secondary problems, accompanied by loud beating of the big drum.

15. The sole result of its self-advertisement was to obscure the fact that the enemies of peace were continuing to stockpile fissionable materials and make experiments for warlike purposes. Meanwhile, however, the USSR had set an example by unilaterally renouncing nuclear weapons tests, unlike the United States which was continuing them. What the Agency should do was first to "demobilize" the atom, to take it "out of uniform". It was necessary to banish for ever the menace that radioactive waste (strontium-90 and caesium-237) held over humanity, which was living in terror and uncertainty over the fate both of the present and of future generations. That was all well brought out by the conclusions of the United Nations Scientific Committee on the Effects of Atomic Radiation^{6/}.

16. The foregoing conclusions, like those of the experts who had met at Geneva to study means of detecting nuclear explosions, showed that there was no moral or technical obstacle to the final cessation of nuclear test explosions. As long as scientific research was devoted to military ends, other activities would remain in the background. It was therefore essential for the Agency to

^{6/} United Nations Document A/3838, paragraphs 54-62.

re-establish an atmosphere of confidence by guiding the raw materials of nuclear energy towards peaceful uses; the laboratories would then re-open their doors and scientists would work for peace.

17. Certain Members of the Agency had raised the question of safeguards, which it had been desired to perfect even before the Agency had begun to operate. That would be making the Agency a supervisory body rather than one specializing in assistance, and dividing members into "countries exercising supervision" and "countries subject to supervision" rather than seeking beneficial co-ordination of efforts. The USSR delegation could not support that view of the Agency's functions. It considered that in accordance with Article III.B of the Statute the Agency should "conduct its activities in accordance with the purposes and principles of the United Nations to promote peace and international co-operation." That was the course pursued by the USSR, which exercised no supervision over countries benefiting from its assistance.

18. He supported that part of the programme which provided that the Agency should send to the under-developed countries groups of experts to study the conditions under which atomic energy could contribute to their development. The USSR had placed thirty of its scientists at the Agency's disposal. He stressed the need to assist the under-developed countries in drawing up their programmes and in choosing the most useful spheres of action; even a country considered to be under-developed might have highly gifted specialists with whom the Agency's own experts could establish fruitful collaboration. In regard to the training of its Member States' key personnel, the Agency had not made full use of all the possibilities open to it, and the Board of Governors in particular had under-estimated the importance of fellowships.

19. He also emphasized the role the Agency could play in the exchange of scientific and technical information. It should arrange a series of scientific and technical conferences in order to draw practical conclusions from the great mass of material that had been submitted to the second Geneva Conference. Close co-operation in that work between the Agency and the United Nations was essential, and he hoped that the General Conference would stress the need for it.

20. He had heard with satisfaction the delegate of New Zealand urge that as many eminent atomic scientists as possible should be brought into the Agency's

work. The representatives of India and the USSR had proposed in the Preparatory Commission the establishment of an advisory committee of eminent scientists, and he was glad that the Board of Governors, albeit after long hesitation, had eventually decided to set one up. In conclusion he again expressed his conviction that the Agency must do all in its power for peace and co-operation between all peoples.

21. Mr. FERRERA (Belgium) said that admittedly the Agency had not as yet gained sufficient experience for firm conclusions to be drawn but that his delegation, believing in the Agency's future, approved the Report of the Board of Governors.

22. Paragraph 8 of the report stated that: "The major role for which the Agency was established is to supply fissionable and source materials and to help ensure continuing fuel supplies for atomic energy programmes." Fortunately, it was now known that there was a superabundance of uranium and thorium in the world, and that the distribution of source materials had ceased to be vitally important except for safety precautions.

23. He also shared the view expressed by several speakers about the effect on the Agency's development of progress in the construction of nuclear reactors for supplying electric power in countries still industrially undeveloped. It was now realized that high-power reactors would be the first to compete with conventional sources of energy. It was therefore necessary to make efforts, in which the Agency should participate, to reduce the power level at which the production of power became competitive.

24. The Agency should seek to play a more integral part in the United Nations system. For example, it should interest itself, should occasion arise, in the technical activities of the Scientific Committee on the Effects of Atomic Radiation - which he hoped would continue to function - and in whatever system for supervising nuclear weapons tests was devised by the Conference of Experts which had met in Geneva. As the delegate from France had said,^{7/} it might perhaps be necessary to draw closer the bonds between the Agency and the United Nations. In general, the Agency should join with the other international

^{7/} GC(II)/OR.16, paragraph 11.

organizations in an efficient relationship based on mutual confidence in which its statutory competence would be maintained.

25. If the Agency was to help Member States, they in their turn must support it. Belgium had decided to put at the disposal of the Agency seven Type II fellowships for study, training and research, each of ten months' duration. They would cost \$20 000 and Belgium would be responsible for travel and laboratory costs; it would also pay each of the seven fellows a monthly allowance of 10 000 Belgian francs. The fellows would be able to work either in the laboratories of one of the six nuclear centres of the Belgian universities or at the National Nuclear Research Centre at Moll, in particular, they would be able to help in the construction of two reactors.

26. Further, private Belgian companies were prepared to accept foreign trainees on Type I fellowships and were ready to put experts and research material in several spheres of nuclear engineering at the disposal of Member States.

27. Finally, subject to a prior agreement with the European Atomic Energy Community (EURATOM) and in conformity with Article IX of the Statute, options could be given each year on large quantities of uranium metal or oxide of nuclear purity including even fabricated fuel elements for reactors.

28. Belgium had faith in the Agency's future and in the distinguished men at its head and, being persuaded that it had been called to perform great tasks, gave it its complete confidence.

29. Mr. SIWABESSY (Indonesia) recalled that Indonesia had participated in the work of the Preparatory Commission and had had the honour of serving on the first Board of Governors, it was therefore aware both of the noble objectives set forth in the Statute and of the difficulties which had inevitably faced the Agency at the beginning of its life. However, those difficulties had to be overcome. Atomic energy which, since its discovery, had been considered primarily from the point of view of military application, as a result of political conflicts which were dividing the world, was now to be considered within the Agency in an entirely new light. The Agency had thus been endowed with a great moral importance and should serve as a guide and inspiration to all peoples of the world.

30. It was important that the ideals embodied in the Agency should be implemented so as to benefit all the peoples of the world, especially those countries which were less well developed and which had high hopes from atomic energy. The Agency, which was only embarking on its activities, had aroused certain criticism, and constructive suggestions had been made in the course of discussion. Nevertheless, the Report of the Board of Governors had, in general, been approved by the Conference, a fact which Indonesia warmly welcomed.

31. Without dwelling on all the points dealt with in the report, he would draw attention to certain aspects of the Agency's activities and stress Indonesia's interest in it. It was indisputable that those countries which were highly developed from an economic point of view were in a better position than the less developed countries to benefit from the advantages of atomic energy. It was for that reason that so much importance attached to the resolution adopted by the General Conference at its first session inviting the Board to give high priority to those activities which would give the maximum possible benefit from the peaceful applications of atomic energy in improving the conditions and raising the standard of living of the peoples of the under-developed areas^{8/}.

32. In the opinion of the Indonesian delegation, the most urgent requirements of the under-developed countries were for programmes of training in the following spheres:

- (1) Radiation, including health and safety problems, methods of measurements, etc.;
- (2) Radiochemistry, for example the study of nuclear fuels such as uranium, thorium and plutonium and the chemistry of radioisotopes used in botany, biology and medicine, including veterinary medicine;
- (3) Biophysical and biochemical aspects of radiation; and
- (4) The commonest applications of radioisotopes in medicine, biology, etc.

Further, the Indonesian delegation recommended that reactors having a flux of

^{8/} GC.1(S)/RES/5.

10^8 to 10^{11} neutrons per cm^2/sec should be set up in the under-developed countries to train specialists in nuclear science and technology.

33. Indonesia had already gone some way towards bringing such training programmes into being. Bilateral agreements would permit it in the near future to obtain help in accelerating the process. That did not, however, exclude the possibility of obtaining help from the Agency in the form, for example, of fellowships, teaching staff, equipment and also fissionable materials. The Agency could, in particular, play a big role in the supply of fissionable materials, on condition that it offered more favourable conditions than those existing under bilateral agreements.

34. At present Indonesia was engaged in constructing a reactor for the Faculty of Science at Bandung and a radiation laboratory which would be situated at Djakarta and which would serve as a reception and dispensing centre for radio-isotopes. Another radiation laboratory was to be set up at Djogdjakarta, to deal mainly with the applications of cobalt-60 in agriculture.

35. With those projects in mind, Indonesia had already sent people abroad for training to obtain the necessary skill. It was grateful that the Agency had already granted it a few fellowships and was hoping to receive, within the next five years, more fellowships to meet the growing demands for scientific manpower.

36. In the recruitment of the Agency's staff, while priority should certainly be given to technical qualifications, the principle of geographical distribution should be applied as much as possible.

37. His delegation was happy to observe that the Agency was becoming increasingly universal in character as a result of the accession of new Members. That universality was a guarantee of effective work, and also accorded with the principle contained in Article II of the Statute, which his country had always warmly supported.

38. In conclusion, he wished to point to the important role which publicity should play in the Agency. The problem was to dispel the fears of a large part of the world's population, for whom the word "atom" was too often linked with the idea of destruction and calamity wrought by nuclear weapons. Well-planned publicity, to bring the Agency's aims and objectives to the knowledge of the public at large, would contribute a great deal towards that end.

39. Mr. VENARDIS (Greece) said that, by continually sending people to the United States, the United Kingdom, France, Canada, Yugoslavia and other countries for training, his country had now established a nucleus of experts and technicians capable of operating the reactor which was due to go into service on 1 January 1959.

40. The reactor, constructed with the valuable assistance of the United States, had been called "Democritus" in honour of the ancient philosopher who had first conceived the idea of the atom, to which he had given that name. The reactor was situated in the outskirts of Athens, and plans had already been made to build a group of chemical, physical, geological, biological and medical laboratories around it.

41. A large quantity of apparatus and equipment would be required if the laboratories were to operate satisfactorily, and much of that equipment was still lacking. His country had therefore welcomed with special satisfaction the passages in the Report of the Board of Governors dealing with technical assistance to be offered by the Agency to its Members. It also welcomed the establishment of the fellowship programme, and proposed to appeal for the Agency's assistance in those two fields.

42. Greece deeply regretted that none of its nationals occupied any post in the Agency's Secretariat. That was certainly not a deliberate omission, and his country hoped that it would be made good in the course of 1959.

43. His delegation wished to congratulate the Agency on the work accomplished during the past year, and hoped that the coming year would bring still better results.

44. Sir Leslie MARTIN (Australia) expressed his pleasure at the fact that his country had been closely associated with the various stages of the Agency's development. Australia had been a member of the group of States which had met in Washington in 1955 and 1956 to draft the Agency's Statute. It had then been represented on the Preparatory Commission and the first Board of Governors, and had been designated as a Member of the second Board of Governors.

45. The programme which the Board had drawn up for 1959 was as a whole well conceived, and should provide a solid basis for fruitful development of the

Agency's work in years to come. His Government took the view that, rather than engage in too ambitious a programme, the Agency should concentrate on certain important activities of an international character which could not be conducted more efficiently or economically by national scientific institutions or by existing international organizations.

46. There were a number of specific tasks which would justify the Agency's existence and assure its future, if it could carry them out successfully. In particular, radiation hazards, which were inevitable in all uses of nuclear energy, raised an important problem, the urgency of which was generally recognized, and the Agency should co-ordinate its activities in that field with those of other organizations. Research on safety measures should be developed to the utmost; it called for painstaking work in laboratories all over the world and statistical analysis at the international level of the results obtained. That was one task for which the Agency was particularly well suited.

47. It should also play an active role in the organization of international scientific conferences, a role which it could now take over from the United Nations. His country doubted whether it was advisable to convene any more large conferences, such as that which had recently been held in Geneva. The Agency could, however, promote contacts among experts and among persons dealing at government level with problems relating to the peaceful uses of nuclear energy.

48. To attain those objectives, the Agency should establish close and harmonious relations with organizations whose work embraced atomic energy and related fields. Its main task would be co-ordination. The Board of Governors had approved the texts of agreements between the Agency and a number of specialized agencies; those agreements would form the basis of practical co-operation to ensure a rational distribution of work between the various agencies and a wise use of available resources.

49. The Agency should pay particular attention to the requirements of underdeveloped countries. For many countries the most pressing need was the training of experts, technicians and engineers, without whom no economic development programme could succeed. That was a task in which his country could help.

50. Australia possessed coal reserves far outstripping its own requirements, but unevenly distributed; some areas were very far from the coalfields. Power reactors were therefore among the priority projects on the Australian Atomic Energy Commission's programme. A relatively small-power reactor was now being developed which could serve small isolated communities. It was a gas-cooled high-temperature reactor which seemed likely to be able to supply electric power economically in 5 - 10 MW stations and also in larger stations, between 50 and 100 MW. Research undertaken in Australia was accordingly of value also to its neighbours in South-East Asia and the Pacific.

51. Research on the use of radioisotopes in industry, agriculture and medicine was particularly useful to the small countries. Since the first session of the Agency's General Conference, the Australian Atomic Energy Commission had set up at Lucas Heights, near Sydney, an atomic research institute which included a 10-MW reactor on the model of the British DIDO reactor. It would be used for research as part of the atomic power programme and for the production of radioisotopes.

52. Research on nuclear-produced electricity was costly and often slow to give results. As had been shown at the second Geneva Conference, the cost price of electricity produced from the atom could not compete with that of electricity from conventional sources, at least in many parts of the world. Radioisotopes, on the other hand, offered immediate benefits for public health and the material well-being of peoples. During the coming year Australia would begin to produce radioisotopes and would be happy to co-operate with the other States Members of the Agency in promoting applications of radioisotopes throughout the world.

53. Speakers as eminent as Sir John Cockcroft and Mr. Perrin had pointed out at Geneva that, unless a large number of technicians were available, miracles could not be expected from electricity of nuclear origin in the less-developed countries. The Australian Atomic Energy Commission and the universities were setting up at Lucas Heights the Australian Nuclear Science and Engineering Institute, which would train specialists in all branches of nuclear technology; its work would be complemented by that of the atomic science faculties of the universities. The research teams had at their disposal four electrostatic

generators, two electron-synchrotrons and a variable-energy cyclotron (2 - 12 million volts). A 10 000 million volt proton accelerator was being built and the Government had just approved the purchase of a 10 million volt tandem generator. Schools for nuclear chemistry and nuclear metallurgy were being built.

54. Australia's extensive scientific research programme enabled it to assist less-developed countries. It could offer training facilities in nuclear science and technology in Australian universities to graduates from Member States, ten to twelve of whom would from 1959 onwards be able to use the special equipment at Lucas Heights for training and research purposes. Under the Colombo Plan, Australia had already trained experts in various specialized fields connected with atomic energy. Colombo Plan countries could ask for other training facilities for their nationals, subject to the normal annual allocation under the Plan. Further details would be communicated to the Agency. Australia also hoped to be able to provide scientists and experts for Agency projects and, through the Agency, to supply radioisotopes for use in countries of the area to which it belonged.

55. The Agency's fellowship and technical assistance programmes would be among the most useful of its activities. It should also profit from the resources of the United Nations Expanded Programme of Technical Assistance and Australia accordingly approved the Board's recommendation that the Agency should participate in that programme^{2/}.

56. Australia approved, as a whole, the remainder of the programme proposed for 1959 by the Board of Governors; its only reservation concerned the proposed construction of the Agency's own laboratories if those were to be at all large. For the moment the Agency should preferably make use of suitable existing scientific institutes. With that reservation, Australia accepted the Annual Report of the Board of Governors; it hoped that the General Conference would also approve it and that the Board would carry out the programme proposed for the following year.

^{2/} GC(II)/44.

57. Mr. HEDAYAT (United Arab Republic) said he did not wish to speak in detail of what had been done in his own country since the first session of the General Conference. He would merely state that the Cairo Atomic Energy Institute, with the help of United Arab scientists had been able to carry on its work, thanks to the unfailing support it had received at the instance of the President of the United Arab Republic. Prospecting by the geological service and the raw materials section of the Atomic Energy Institute had led to the discovery of considerable quantities of uranium and thorium. A plant for processing monazite from black sands which was being built near Rosetta would shortly be producing thorium.

58. The United Arab Republic had concluded an agreement for co-operation with the Union of Soviet Socialist Republics under which the USSR Government had delivered to the United Arab Republic a 2 000 KW research reactor which would shortly go into operation; the agreement also provided for the building of a nuclear physics laboratory, at present under construction. It should be stressed that the agreement provided the basis for an entirely free bilateral co-operation between two sovereign States.

59. The United Arab Republic also had a national radioisotope production centre, with branches throughout the country. Those activities and the training programme, while satisfying the country's present needs, represented the point of departure for more ambitious plans. The United Arab Republic had at the same time asked the Agency to help in establishing a regional radioisotope production centre in Cairo; the Government intended to receive trainees from friendly countries in its nuclear laboratories.

60. His country would continue to support the work of the Agency and to defend the interests of the less-developed countries. That support, coming from a small country, even if the contribution which accompanied it was only symbolic, was proof of the interest that the United Arab Republic took in the Agency's activities. His delegation had instructions to pledge a contribution to the operational part of the budget.

61. The United Arab Republic was ready to support the Agency so far as its resources allowed, but it also hoped to benefit from the Agency's assistance. It had been the first country to present candidates for Agency fellowships.

It had already asked the Agency to help in various ways, in connexion with the extraction of uranium from phosphates, for example, and in the production of heavy water as a by-product from the fertilizer factory under construction near Aswan. Like all Middle East countries, the United Arab Republic was keenly interested in the building of small reactors which might transform arid zones into fertile land and bring prosperity to areas which were at present derelict.

62. All the questions already raised at the General Conference by previous speakers were of vital interest to his delegation, and in view of their importance and their possible repercussions it intended to have them studied fully and objectively by appropriate bodies. Many of the problems involved were dynamic and not easy to deal with. The delegation of the United Arab Republic and the Governor from that country would accordingly give its views in detail at a later stage.

63. It was very satisfactory that the Agency had the support of the United States of America, the Soviet Union and other countries, great and small. He hoped the Agency and its Secretariat would work for the well-being of all mankind, and thanked the Austrian Government for its generous hospitality to the Conference.

64. Mr. BHABHA (India) recalled that the first session of the General Conference in 1957 had coincided with the launching of the first artificial satellite. The present session was meeting immediately after the second Geneva Conference, during which an enormous mass of scientific information had been exchanged - an exchange which would undoubtedly contribute immensely to the peaceful development of atomic energy. The first Geneva Conference in 1955 had released from secrecy the phenomenon of fission, opening the way to a rapid and widespread development of atomic energy. That was reflected in the still wider scale of the second Geneva Conference where it was fusion that had been freed from secrecy; thus, scientists of all countries could now make a united effort to find a solution to the extremely difficult problem of fusion and so provide mankind with an inexhaustible source of power.

65. During its first year the Agency had set up its internal administration and concluded the Headquarters Agreement with the Austrian Government. It must henceforward devote itself increasingly to achieving the specific objectives laid down in its Statute.

66. Considering the various tasks awaiting the Agency's attention, it was immediately evident that certain aspects of the peaceful application of atomic energy were essentially international in character. Thus, the international transport of radioisotopes and radioactive materials, the disposal of radioactive effluents and waste, in the air, in rivers or in the high seas, and the entry of nuclear-propelled ships into ports raised international health and safety problems which could only be dealt with by international co-operation.

67. India was therefore happy to note that the Agency had convened a committee of experts to frame a draft manual of practices for the safe handling of radioactive isotopes; it was clearly desirable that the practices followed by the various countries should be embodied in an internationally accepted code. The manual would be of enormous assistance to many countries, and India had readily agreed to be represented on the Committee, since that task was a very important part of the Agency's functions.

68. There were several other problems of that nature, such as the disposal of wastes arising from a constantly growing atomic energy industry. As a first step in arriving at generally accepted practices, the Agency might convene experts to formulate the areas of agreement and the areas in which they felt further study was necessary. Such a task could best be done by an ad hoc panel of experts rather than by the Agency's permanent staff, because what was required was not only the drawing up of a code of safe practices but also its acceptance by all countries.

69. Now that the remarkable achievements of the United States atomic submarines were known and a paper had been read at the second Geneva Conference on the potentialities of the Soviet atomic ice-breaker and other projects for the use of atomic energy for marine propulsion were under way, it seemed none too early to start thinking about the health and safety standards with which such vessels should comply. Since no progress could be made without the willing consent of the countries concerned, the Agency should confine itself to convening a meeting of their experts. The problem had also many political implications and the Agency would have to keep in very close touch with the United Nations while dealing with it.

70. One of the functions mentioned in the Agency's Statute was to foster the exchange of scientific and technical information and to encourage the exchange and training of scientists and experts. However, many countries did not at present have an atomic energy programme. They should therefore be equipped with the means to initiate such a programme by visits from fact-finding teams and by their participation in the fellowship programme side by side with existing bilateral and multilateral arrangements. By 31 August there had been 247 applications under the Agency's fellowship programme, which clearly indicated the importance which training had in the eyes of many countries. However, every care would have to be taken to integrate that international training with the development of atomic energy programmes in the countries seeking such fellowships. If the facilities made available by the countries offering assistance were to be fruitfully utilized, the trainees would have to return to their own countries so that the latter could benefit from their skills.

71. In connexion with the training programme, the Agency should use whatever facilities might be available in different parts of the world. For instance, India had made available to the World Health Organization (WHO) at its request the facilities of the Atomic Energy Establishment at Trombay for a training course in Health Physics to be held in November 1958 for scientists in South and South-East Asia. The Agency might well emulate that example, as it was clearly more economical, and indeed better for several other reasons, to arrange training courses in the areas concerned rather than transport large numbers of scientists thousands of miles. India was also prepared to make the facilities at Trombay available to the Agency for the training of scientific personnel from the countries of that vast region.

72. In the highly industrialized countries, savings of several hundreds of millions of dollars had been made possible by utilizing radioisotopes in industry. In the less industrialized countries, more emphasis might have to be given to agricultural applications, and regional research based upon regional radioisotope laboratories might well yield valuable results. There would, of course, have to be the closest co-operation with other international organizations working in that field, such as the Food and Agriculture Organization (FAO), WHO and the United Nations Educational, Scientific and Cultural Organization (UNESCO). India could not support the view that the use of isotopes in

agriculture or biology should be the exclusive responsibility of the Agency. He recalled moreover what was already being done in that field at the national level.

73. The exchange of scientific information, the exchange of experts and the training of scientific personnel were important functions, but they were hardly sufficient to justify an international agency of the Agency's size. However, it had originally been intended that the Agency should discharge more important functions, more particularly functions relating to the generation of electric power from nuclear energy.

74. It was often said that atomic power would find its immediate application in the highly industrialized countries and that the industrially less developed countries would have to wait some time before they could make use of it. That generalization was based on insufficient study. India had an industrial potential which was not small, but considered itself an industrially underdeveloped country in the sense that production per head of population was small and the average standard of living of the people therefore low. The role of nuclear power in India had been very carefully studied and the conclusion had been reached that it would be competitive in most parts of India at present; for that reason it had been decided to include a minimum of 250 MW of installed nuclear capacity in the power programme for the period ending March 1966. It was probable that that figure would be doubled and possibly even quadrupled. The present installed capacity of the Bombay grid was over 500 MW and was expected to reach nearly 800 MW by 1963 when the hydro-electric and thermal stations now under construction were finished. A study of the load curve for the grid showed a load factor of over 69 per cent. Moreover, because of the cost of long-distance transport of coal, the cost of thermal power per kWh was about Rs. 0.04 or 9 mills. These figures indicated clearly that a nuclear power station of 150 or even 250 MW could be installed and could without difficulty be operated at a high load factor. There were moreover few places, even in highly industrialized areas, where such favourable conditions for the operation of a nuclear power plant could be found.

75. It was possible that conditions in other less industrialized areas differed from those in India, but he felt that a thorough study of the energy problems of those areas was required. The vast area of Southern Asia and the Far East

(excluding China), with a population of 775 millions, had the poorest energy resources of any large area in the world. The statistics available to the United Nations showed that the maximum economically feasible production of energy in the area would be about 2.3 MWh per annum per head of population, a figure which was only 50 per cent above the present average for the area and which represented one-eighth of the annual per capita energy consumption in Western Europe. That clearly showed that the inevitable industrialization of that vast area would only be possible on the basis either of large-scale imports of conventional fuel or, more probably, on the basis of atomic energy. After all, the problem facing the less industrialized areas was not that of the high cost of power but rather that of there being practically no power at all, unless atomic energy were utilized. For all those areas, at least in the immediate future, small 20-MW power stations would prove very useful even if the power produced by those stations was more expensive than that produced by large stations. Moreover it had to be remembered that the areas in question were, in any case, used to high-cost power.

76. The Agency could play an important part in studying the economic aspects of nuclear energy in those areas; it would serve not only their interests but also those of the industrially advanced countries by determining the type of power station which could profitably be used in less advanced areas. By mutual co-operation the Agency could thus enhance the contribution which atomic energy could make to the prosperity of the under-developed, as well as of the industrialized, countries.

77. The most casual perusal of the Statute revealed that technical assistance was regarded as only one of the Agency's functions. If the Agency were to grow to its full stature it would have to be prepared to assist in matters connected with disarmament to the extent it was called on to do so by the United Nations. That was an area where the main policy could only be formulated and agreed on by countries within the comity of the United Nations and it was as the atomic arm of the United Nations that the Agency's greatest potentialities remained to be realized, thus the Agency would have to work in the closest collaboration with the United Nations. The Relationship Agreement with the United Nations referred to the Agency as "under the aegis of the United Nations"^{10/}. That

^{10/} Article I.

phrase, which had been repeatedly used at the Washington negotiations and at the Conference on the Statute, clearly showed that it was the Agency's function in that respect to supplement and not to supersede existing United Nations institutions in the atomic energy field.

78. It had sometimes been suggested that the Agency should take over the entire responsibility within the United Nations family for the peaceful uses of atomic energy. That was not desirable because the experience gained in those matters by various United Nations bodies should not be overlooked. It was not necessary for the Agency to carry out tasks which other bodies were already dealing with, but it should prepare itself to deal with work which none of those other organs did or could do.

79. The Indian delegation had noted with satisfaction that the Board of Governors had recently decided to set up a Scientific Advisory Committee of seven members to advise the Board and the Director General. It regretted, however, the rejection of the Indian proposal that the Advisory Committee to the Secretary-General of the United Nations should be used for that purpose. The Relationship Agreement between the Agency and the United Nations, which had been ratified by both organizations, provided for such co-operation. Would rejection of the Indian proposal imply that the Agency was going back on its agreement? That would be very unfortunate. All States Members of the Agency must do their utmost to bring about the closest possible co-operation between the United Nations and the Agency. It was clear that the United Nations was the primary organization in the field of international co-operation and that the other members of the United Nations family had an important but more limited role to play in their own specialized field. The Agency should avoid all delusions of grandeur and recognize its true role in relation to the United Nations. The Indian delegation hoped the Agency would be entrusted with important tasks in the field of atomic energy by the United Nations, even though that might eventually require an amendment of its Statute.

80. Mr. THIRRING (Austria) said that the Agency's activities in its first year had been mainly devoted to the administrative build-up of the organization. The Austrian delegation was certain that those preparations would lead in the years to come to the achievement of the noble objectives laid down in the Agency's Statute.

81. Reviewing Austrian accomplishments in the field of atomic energy, he stated that the Österreichische Studiengesellschaft für Atomenergie was establishing a nuclear research centre with a 5 000 kW reactor south-east of Vienna. Another research reactor would be available to the Austrian universities.
82. Research in the field of radioactivity had been taking place in Austria ever since the discovery of radium sixty years before, and it had been the Austrian Academy of Sciences which at that time had provided the Curies with several tons of uranium ores, from which they had been able to extract radium. The Vienna Radium Institute founded in 1910 had then been the world's only institute devoted solely to nuclear research, a few years later, the Nobel prize winner Hevesy had made the basic experiments showing how radioactive daughter elements of radium could be used as tracers. Research at the Austrian Radium Institute still continued.
83. Austria was also planning the construction of a pilot power plant for the Österreichische Verbundgesellschaft. Although Austrian hydroelectric potential was considerable, there was a need for thermal power plant as well; from 1960 onwards, therefore, there would probably be substantial investment in power reactors. Because his country had no particularly urgent need for nuclear power, it would be reasonable and economical to await further progress in reactor technology before starting construction of a nuclear power station.
84. It was in a different sector of the Agency's activity that his country could best play an active part. He proposed to give a brief account of the matter, but more detailed proposals would be made at a later stage.
85. After referring to the debt science owed to the Nobel prize winners Fermi, Compton and their collaborators, who had started the first chain reaction in Chicago in December 1942, he stressed the importance of producing not only technicians capable of constructing and operating a reactor, but also the kind of physicists who, starting from speculations about the state of matter in the interior of the stars, had developed the theory of plasma physics upon which all efforts to achieve thermonuclear reactions were based.
86. It was therefore not only necessary to train good nuclear engineers but also to create conditions in which geniuses like Bohr and Fermi could develop.

Gifted young men needed advanced training in theoretical physics and particularly qualified teachers. The famous school of Professor Sommerfeld in Munich, which had produced so many Nobel prize winners, was a notable example.

87. Austria had also been the scene of other important scientific work; for example, the first estimates of the size of atoms and molecules had been made by Loschmidt nearly a century previously and, later on, fundamental studies had been undertaken by Boltzmann and other Austrian physicists. The difficult economic situation since the end of the First World War had, however, proved to be a serious obstacle to Vienna and its University in attempting to maintain the University's position in the field of theoretical physics.

88. With improving conditions and in mutual co-operation with the Agency, however, the city might become an international centre of advanced theoretical physics to the benefit of all Member States.

89. The conclusion of agreements with the specialized agencies and the establishment of relations with regional inter-governmental organizations strengthened the position of the Agency as the co-ordinating body in atomic matters. That question demanded special attention in order to avoid duplication of effort.

90. The elaboration of rules and regulations on health and safety in handling radioisotopes and their inclusion in a manual was a very important task. It was to be hoped that such manuals would also be issued on the transport of radioactive materials. Lastly, the introduction of uniform terminology must be considered within the Agency's competence.

91. It appeared that the Agency's fellowship programme had made a good start as well as the programme of technical assistance to under-developed areas. Co-ordination of that assistance with the corresponding United Nations programmes ought to be discussed in the Programme, Technical and Budget Committee.

92. The Agency's intention to create regional training centres was to be welcomed, and it was encouraging to note that the 1959 budget provided for the construction of a laboratory at the Agency's headquarters. Austria would do everything possible to facilitate the carrying out of the latter project. The installations which his country was at present erecting would lend themselves admirably to co-operation in that field.

93. The programme for exchange of scientists should be extended. The Austrian universities were very interested in such exchanges, and plans for creating an advanced school of theoretical physics in Vienna depended largely upon the possibility of securing regular visits by professors from abroad.

94. He was in agreement with the opinion expressed by other speakers that the Agency should be entrusted with the organization of international scientific conferences and symposia in the field in which, within the family of the United Nations, it was primarily responsible.

ELECTION OF MEMBERS TO THE BOARD OF GOVERNORS (GC(II)/38, GC(II)/59)

95. The PRESIDENT reminded the General Conference that it had to elect five Members to the Board of Governors, in accordance with the Report by the General Committee (GC(II)/59).

96. Mr. BEN-DOR (Israel) speaking on a point of order, asked the President what were the precise responsibilities of a State elected to the Board of Governors as representative of a particular area. He recalled that one of the speakers at the current session had stated that his country would welcome trainees from friendly countries in its nuclear laboratories, and he doubted whether, in view of that significant reservation, the State in question could properly represent the geographic area of which it was a member. Israel, on the other hand, had started courses at the Weizmann Institute which were open to nationals of all other countries without any discrimination.

97. The PRESIDENT recalled, in reply to the Israeli delegate's question, that there had already been discussions on that question during the Conference on the Statute in New York. Article VI of the Statute defined the eight areas from which the Members of the Board were chosen, but it did not specify their duties and obligations. He regretted that he himself could not answer the question of the Israeli delegate, though another delegate who had taken part in the drafting of the Statute might perhaps be able to give the information asked for.

At the request of the President, Mr. Grue (Denmark) and Mr. Eleftheriades (Greece) acted as tellers.

98. The PRESIDENT first invited the General Conference to elect a Member for Western Europe.

A vote was taken by secret ballot.

The result of the vote was as follows:

<u>Number of ballot papers:</u>	60
<u>Invalid ballots:</u>	None
<u>Number of valid ballots:</u>	60
<u>Abstentions:</u>	None
<u>Number of members voting:</u>	60
<u>Required majority:</u>	31
<u>Number of votes obtained:</u>	
Netherlands	60

The Netherlands was unanimously elected to membership of the Board of Governors.

99. The PRESIDENT then invited the General Conference to elect a Member for Africa and the Middle East.

A vote was taken by secret ballot.

The result of the vote was as follows:

<u>Number of ballot papers:</u>	62
<u>Invalid ballots:</u>	6
<u>Number of valid ballots:</u>	56
<u>Abstentions:</u>	None
<u>Number of members voting:</u>	56
<u>Required majority:</u>	29
<u>Number of votes obtained:</u>	
United Arab Republic	48
Tunisia	6
Iran	1
Israel	1

Having obtained the required majority, the United Arab Republic was elected to membership of the Board of Governors.

100. The PRESIDENT next invited the General Conference to elect a Member for South-East Asia and the Pacific.

A vote was taken by secret ballot.

The result of the vote was as follows:

<u>Number of ballot papers:</u>	62
<u>Invalid ballots:</u>	None
<u>Number of valid ballots:</u>	62
<u>Abstentions:</u>	None
<u>Number of members voting:</u>	62
<u>Required majority:</u>	32
<u>Number of votes obtained:</u>	
Indonesia	33
Thailand	29

Having obtained the required majority, Indonesia was elected to membership of the Board of Governors.

101. The PRESIDENT finally invited the General Conference to fill the two elective places which remained vacant.

A vote was taken by secret ballot.

The result of the vote was as follows:

<u>Number of ballot papers:</u>	62
<u>Invalid ballots:</u>	2
<u>Number of valid ballots:</u>	60
<u>Abstentions:</u>	None
<u>Number of members voting:</u>	60
<u>Required majority:</u>	31
<u>Number of votes obtained:</u>	
Venezuela	54
Peru	37
Thailand	14
Mexico	7
Czechoslovakia	1
Israel	1
Italy	1
Sweden	1
Vatican City	1
Yugoslavia	1

Having obtained the required majority, Venezuela and Peru were elected to membership of the Board of Governors.

102. The PRESIDENT congratulated the elected Members and said that he felt sure that they would discharge their responsibilities well during the next two years.

MEASURES TO OBTAIN VOLUNTARY CONTRIBUTIONS TO THE GENERAL FUND, INCLUDING THE CALLING OF A PLEDGING CONFERENCE (GC(II)/54)

103. Mr. McCONE (United States of America) presented to the General Conference the joint draft resolution submitted by Brazil, Canada, Japan, Norway, the United Arab Republic and the United States of America (GC(II)/54) providing that during its second regular session the General Conference should convene a special committee of the whole Conference, under the chairmanship of the President of the Conference, where pledges of voluntary financial contributions to the General Fund to meet the expenses of the operational part of the Agency's budget for 1959 would be announced.

104. He trusted that the draft resolution would be adopted unanimously and that all Member States would make generous contributions to the General Fund. The decision to convene a special committee would not in any way prejudice the question of the acceptance of voluntary contributions to the General Fund, nor was there any reason why Member States should not offer contributions after the special committee had completed its work.

105. Mr. FURUUCHI (Japan) endorsed the United States delegate's remarks. Voluntary contributions were very important, for during the initial phase they would be the only means of financing the Agency's operational programme.

The joint draft resolution was adopted unanimously.

The meeting rose at 6.55 p.m.

