



CONTENTS

Agenda item 32:

International co-operation in the peaceful uses of outer space: report of the Committee on the Peaceful Uses of Outer Space (*continued*)
General debate (*continued*) 1

Page

Chairman: Mr. Ismail FAHMY
(United Arab Republic).

AGENDA ITEM 32

International co-operation in the peaceful uses of outer space: report of the Committee on the Peaceful Uses of Outer Space (A/6668, A/6804) (*continued*)

GENERAL DEBATE (*continued*)

1. The CHAIRMAN: I call on the representative of the World Meteorological Organization.

2. Mr. DAVIES (World Meteorological Organization): May I begin by saying how happy I am to have the privilege of addressing for the first time the distinguished representatives of the First Committee. I hasten to recall, however, that the World Meteorological Organization (WMO) has, of course, been represented at most, if not all, of the sessions of this Committee since it first assumed responsibility for outer space affairs. By that means, as well as by the preparation of reports and publications, the Organization has kept the Committee fully informed of its activities in so far as outer space matters are concerned. For that reason, I am sure that it is unnecessary for me this afternoon to recount in full detail the rapid sequence of events from the launching of the first artificial earth satellite ten years and fourteen days ago to the present stage where meteorological satellite data are available and put to good use on a daily routine basis in most countries of the world. I shall therefore pass quickly over the earlier developments and direct my remarks primarily to the events which have taken place in the last year or so.

3. While the tremendous importance of the artificial satellite as a meteorological observing platform was realized by WMO from the outset, there can be no doubt that the recognition of this fact by the General Assembly of the United Nations and the request which the Assembly addressed to WMO to formulate a plan designed to ensure that the benefits of this new device were made available to all the countries of the world, provided an essential stimulus and impetus to the whole concept. I refer, of course, to General Assembly resolutions 1721 (XVI) and

1802 (XVII). The early preliminary studies made by WMO, with the very close and indeed essential co-operation of scientists from the United States and the Soviet Union, revealed that the meteorological satellite was not just another means of observing the earth's atmosphere which could be incorporated into the existing world weather system in the same way as other developments had been incorporated or absorbed in the past. It was rather a development of such significance as to necessitate a complete reappraisal of the world weather system, a system which had evolved slowly over the past century or so. Thus, the concept of a new world weather system was developed, to which the name World Weather Watch was given.

4. There were also some other important developments, notably the use of electronic computers for meteorological purposes, which added force to the idea of World Weather Watch and which clearly needed to be taken into account in preparing the World Weather Watch plan.

5. It will be readily appreciated that the task of preparing in full detail a new world plan, which would ensure that the benefits of these modern developments would be made available to all countries of the world and which would be sufficiently flexible to enable new developments to be introduced as they became proven, is a very complex one and one which, because of the highly specialized nature of many aspects of the work, particularly in respect of satellites, could only be accomplished with the full collaboration and assistance of scientists from the countries concerned.

6. I am happy to report that one of the characteristics of this whole endeavour has in fact been the enthusiastic support received from the member countries of the Organization, and the plan which finally emerged is therefore an expression of what was needed by the members and what was also technologically feasible and reasonable from all points of view. It was not, as it were, simply a secretariat exercise the results of which were put forward in the hope that the members would find them acceptable. Of course, the secretariat has had a vital part to play in all of this, and I would naturally be the last person to try to minimize this contribution; but, as I have said, close contact was maintained at all stages with the member countries themselves.

7. The WMO procedures call for a session of all members, which we call the Congress, at four yearly intervals, and the fifth Congress took place in April of this year in Geneva. After careful consideration and some adjustment, the plan which had been submitted to the Congress was approved not only unanimously but with great enthusiasm. It was welcomed by the developing countries and by the highly developed countries alike, because all realized that a new

era was opening up in meteorology which would not only produce some immediate benefits, but would also enable some of the long outstanding fundamental problems involved in understanding fully the atmospheric processes to be looked upon with the hope of solution, which a few short years ago was inconceivable.

8. But the preparation of a plan is one thing, and its implementation is another. Thus, side by side with the preparation of the plan, we have proceeded with the preparation of proposals whereby it could be implemented. Needless to say, such proposals had to be no less realistic and feasible than the plan itself. The WMO Congress considered these and, at the same time as it approved the World Weather Watch plan, it approved also an implementation programme. Both have since been reproduced in a WMO publication in four languages, copies of which, I believe, have been distributed to this Committee [A/AC.105/L.38].

9. I may mention in passing that, as a third aspect to the planning activities, we have been making studies on the economic benefits which will be derived from the improved meteorological services which may now be expected. Already two planning reports on this subject have been issued and the work is continuing. It is, however, already clear that the effort involved is more than justified by the practical economic benefits being derived. But this is getting far away from the outer space activities *per se* and I shall therefore revert to the World Weather Watch plan and the implementation programme.

10. The plan itself is divided into five main sectors as follows: the Global Observing System, the Global Data Processing System, the Global Telecommunication System, the Research Programme and the Programme of Education and Training. In each of these, outer space questions are involved to a greater or less extent, and in the future developments envisaged the degree of involvement will, I believe, tend to increase. It would be impossible in the time available to discuss these in full, but a few brief words on each may serve to demonstrate the point.

11. In the Global Observing System, the use of meteorological satellites is, as I have said, an innovation of major importance. The scientific scope of the data being received will doubtless increase in the coming years, and it seems certain that satellites will always be a major component in the Global Observing System. Many new and exciting possibilities of using satellites in other rôles in the Global Observing System are being actively considered, such as means of collecting data from constant-level balloons or from unmanned meteorological observing stations on land or sea.

12. In the Global Data Processing System one of the main problems yet to be solved is how to process the vast quantity of satellite data now being received from using electronic computers. Important progress is however being made in this field both in processing, for example, cloud data obtained in photographic form and radiation data being received in digital form.

13. In the World Weather Watch Global Telecommunication System there is the need to ensure that satellite data

are made available promptly to all countries. Here the Automatic Picture Transmission System is of course an invaluable innovation, and the number of countries installing the necessary equipment is steadily increasing. The exchange of satellite data by conventional means from one centre to another, from one country to another, is also another essential feature. We look forward of course to the use of communications satellites for this purpose and for other meteorological purposes.

14. Turning now to the research programme, I should first like to mention that only a few days ago WMO signed an agreement with the non-governmental body, the International Council of Scientific Unions, whereby both bodies would pursue a new and ambitious Global Atmospheric Research Programme—or GARP as we call it. A joint GARP Organizing Committee has been set up with the world's best scientists in this field as members, and it is our intention to push forward with all speed in the formulation and implementation of the Global Atmospheric Research Programme and its many sub-programmes.

15. It is premature for me to try to describe what will be the rôle of satellites in that important scientific project, but the very tentative ideas which have been put forward indicate that the rôle will be a very important one. For example, four earth-synchronous satellites and two polar orbiting satellites have been mentioned as one possible feature of the Global Atmospheric Research Programme. As I have said, it is premature to go further than that in these remarks, but the rôle of meteorological satellites for research purposes will undoubtedly be one of great importance.

16. With regard to the fifth element of the World Weather Watch, that of education and training, for several years WMO has been giving greatly increased attention to meteorological education and training in all forms and at all levels. The interpretation of satellite data has now become an essential element in this branch of WMO's activities.

17. As I have mentioned, our aim is to make the benefits of outer space technology available to all countries of the world, big and small, developed and developing. That means not only the transmission of satellite data to every country, but the training of meteorological personnel in the interpretation and application of the data. We are doing that by issuing publications, by means of training seminars and by approving fellowships, and other means will be used if necessary.

18. That brings me to the end of a very brief review of the WMO World Weather Watch plan as seen from the point of view of outer space activities. I should like to turn now to the Implementation Programme. Here again I shall be brief, in the knowledge that fuller details will be found in the publications before members of the Committee.

19. The Implementation Programme establishes a basic principle that, as far as possible, each country should be responsible for that part of the plan which falls within its territory. We realize however that some developing countries in the present circumstances will find that difficult and we recognize that assistance must be available in such cases. We envisage three possible means of assistance. In the

first place, the United Nations Development Programme should be used as far as possible and whenever appropriate. I need hardly say that Mr. Hoffman and his staff have been kept informed of this development and have readily recognized its importance. Therefore, I have no doubt that within its terms of reference the United Nations Development Programme will make a valuable contribution towards the implementation of the World Weather Watch. Indeed, the attitude of the United Nations Development Programme towards the whole project has always been one of interest and willingness to assist as far as possible.

20. The second means whereby assistance is likely to be given to needy countries is by bilateral programmes. The WMO is not directly concerned, but has asked to be kept informed so that the over-all implementation of the World Weather Watch will be kept under review. It seems likely however that, even when both of the methods mentioned above have been applied, some gaps will still remain to be filled. It is envisaged that that will be done by means of a new World Weather Watch Voluntary Assistance Programme which the WMO has just established. The main features of that Voluntary Assistance Programme are, first, that, as the name indicates, contributions will be on a purely voluntary basis; and secondly that contributions may be either in financial form, in any usable currency, or in the form of equipment or services. It seems probable that by far the largest proportion of such contributions will be in the form of equipment. Thus in the field of outer space activities voluntary contributions of telecommunications equipment for reception in developing countries of satellite data—such as neph-analyses—by facsimile from a neighbouring world or regional centre, may be offered. The supply and installation of Automatic Picture Transmission ground equipment may likewise be offered without any financial contribution to the Organization being involved.

21. It is too early to comment on the success of the Voluntary Assistance Programme or the Implementation Programme as a whole, but all the indications are most promising.

22. Before bringing my remarks to a close, I should like to make a rather belated reference to the report of the Committee on the Peaceful Uses of Outer Space [A/6804]. The WMO has noted with much interest and pleasure the words of commendation on the World Weather Watch Plan contained in paragraphs 17-19 of Annex II of the document. It is reassuring to know that the value of our efforts is fully appreciated by the Committee on the Peaceful Uses of Outer Space. Moreover, it is helpful to our efforts to have the moral backing and support of that Committee and of the United Nations as a whole.

23. We in the WMO feel that the last few months have been very gratifying and encouraging; gratifying because the results of several years of planned work have now come to fruition; and gratifying because our efforts have been recognized by other bodies, including the Committee on the Peaceful Uses of Outer Space and, we hope, this Committee. We find the situation encouraging because the indications are that the Members of the WMO have every intention of translating the plan they have adopted into reality for the benefit of all the countries of the world.

24. As a final word, may I say that whilst we in the WMO are naturally happy to receive the support and blessing of

the United Nations in our work in the field of outer space, we are anxious to reciprocate by assisting the United Nations in any way possible. In that connexion, may I repeat what I said to Mr. Nesterenko when I had the pleasure of seeing him recently in Geneva, that the WMO will be happy to co-operate in the fullest and friendliest way possible in the important Conference on Outer Space which the United Nations is organizing in Vienna in August 1968 [General Assembly resolutions 2221 (XXI) and 2250 (S-V)], and to assist in any other United Nations activity in this field.

25. Mr. FOUNTAIN (United States of America): Mr. Chairman, in your opening statement on Tuesday, 17 October, when the debate began, we noted with great interest your expression of the hope:

“... that if the first decade of space exploration is to be known for its great scientific achievements, then the second decade should be known for its great international co-operative efforts in this field.” [1497th meeting, para. 7.]

26. With this in mind, and in the spirit of the Outer Space Treaty, which stresses the importance of international co-operation and the use of outer space in the interest of all mankind, my delegation is today sending to the Secretary-General copies of a publication issued by the United States National Aeronautics and Space Administration (NASA). It describes in detail opportunities available for scientists from all nations to participate in United States space flight investigations. We also have a limited number of copies, which we distributed earlier, for the information of delegations to this Committee.

27. This document is designed to inform the scientific and technical community of the opportunities in NASA's space flight programme. It describes briefly all NASA flight programmes now under way, identifies those programmes in which opportunities currently exist, and contains basic information of value to those interested in submitting space flight proposals to NASA. It indicates opportunities expected to arise in current NASA programmes, as well as in new types of missions currently under study for the early seventies.

28. It has been our experience that while scientists outside the United States are often aware that opportunities exist for co-operative space experiments with the United States, they do not know how to take advantage of them. This publication tells exactly how their proposals should be prepared, to whom they should be submitted, and what information they should contain. It describes in considerable detail the different fields in which participation is particularly invited, including opportunities for investigation not only on manned and unmanned spacecraft, but also on launch vehicles, sounding rockets, research aircraft and scientific balloons.

29. My delegation sincerely hopes that this publication provides the kind of information which scientists from all countries need in order to participate actively in United States space flight investigations, and we sincerely hope that its distribution will help to further meaningful international co-operation in outer space.

30. May I conclude by taking advantage of this opportunity to inform the Committee that the United States space craft Mariner 5 flew by Venus early this afternoon. It made its closest approach of 2,480 miles at about 1.34 p.m. New York time. Data received thus far indicate that all scientific experiments are operating.

31. Sir Leslie GLASS (United Kingdom): My delegation welcomes the report of the Committee on the Peaceful Uses of Outer Space published on 27 September. We likewise welcome the reports of the Legal Sub-Committee, and of the Scientific and Technical Sub-Committee.

32. No one can dispute that remarkable progress has been made since last year in the various national and co-operative international space programmes. There have been great new achievements in the exploration and use of outer space, and we join with others in offering warm congratulations to our Soviet colleague on the outstanding success of Venus 4, and our best wishes for success to the United States in their Mariner 5 project. The very volume of these achievements is something which cannot fail to impress. There are also the many rapidly advancing practical applications of space technology; satellite transmissions of television and radio, weather satellites—about which we have just heard such interesting and encouraging reports from the Secretary-General of the World Meteorological Organization—and many other potential applications to improve living conditions and understanding between peoples.

33. In their respective speeches, we have heard the representatives of several States speak of what their countries have achieved in these fields in 1967. We join those who have congratulated them on these successes. But progress of this kind is not achieved without cost. We share with them the disappointments of setbacks they have suffered and, in particular, extend our sympathy in the recent tragedies in the course of development of manned space flight programmes.

34. The most important event of the year in the field of international co-operation has of course been the entry into force, on 10 October, of the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies. My Government welcomes the entry into force of the Treaty, which it regards as one of the most important multilateral treaties of recent years, and welcomes the number of ratifications which have already been deposited. We look forward to the ratification in due course by many of the Governments who have already signed it.

35. The Treaty is however very general in its terms, and it has been widely recognized that it should be supplemented by agreements on specific topics within its scope as soon as possible. Progress in this field has unfortunately been less satisfactory. Nobody will contest that the tasks here, including that of the definition of outer space, are of the utmost sophistication and difficulty. As regards the conclusion of draft conventions on assistance to and return of space vehicles and personnel, and liability for damage caused by space objects, my delegation would urge the earliest possible agreement on these drafts, which should in our view be as wide-ranging and comprehensive as possible. The tragedies to which I have referred give urgent point to

our work in these fields. We note with interest from the Soviet statement in the main Committee that the Soviet Union is now willing to include provisions on return, in addition to assistance, in the scope of the agreement under discussion in the Legal Sub-Committee; it would be interesting to hear more of their views on this subject. We recognize that liability—in the technical sense of course—is one of the most complicated subjects in this field; nevertheless, we would again urge the need for speedy progress in reaching agreement on a draft convention on liability.

36. It is the policy of the Government of the United Kingdom to foster, as widely as possible, the highest degree of international co-operation to ensure that developments in this new dimension are shared with all, and for the benefit of all. This is particularly important, as few countries have the financial and technical resources to carry out on their own bold and difficult initiatives in outer space. The United Nations has a great part to play in ensuring that co-operation grows steadily between countries represented here today, and we look forward to a successful United Nations conference on this subject at Vienna in 1968.

37. For our own part, we have participated in many fields of international co-operative activity in space research. The United Kingdom is a member of several international space organizations: The European Space Vehicle Launcher Development Organization (ELDO); the European Space Research Organization (ESRO); the Interim Communication Satellite Committee (INTELSAT); and the European Conference on Satellite Communications (CETS); and we have participated fully in the programmes of these organizations. British experiments were carried on nineteen of the forty-seven rockets launched so far by the European Space Research Organization, and British experiments will be carried by all ESRO satellites at present under construction. The United Kingdom is responsible for the operation of one of the World's Data Centres, connected with the Committee on Space Research of the International Council of Scientific Unions (COSPAR).

38. A major part of our scientific space programme is based on the very successful Anglo-United States space co-operation which has led to the three Ariel satellites and to the acceptance of eleven United Kingdom experiments for inclusion in National Aeronautics and Space Administration satellites. One of those was launched successfully at 6 p.m. Florida time yesterday, 18 October, as part of the Orbiting Solar Observatory programme. We have co-operated widely in satellite observation work with observers in many countries. The United Kingdom Co-ordinating Centre issues predictions of satellite positions and collects observations from many observers in Europe. All those observations are made generally available. We also collaborate in the tracking of geodetic satellites and of deep-space probes. Only very recently, the President of the Soviet Academy of Sciences requested that Sir Bernard Lovell co-operate by using the Jodrell Bank radio telescope equipment to receive signals during the final stages of the approach of the Soviet automatic station to the planet Venus. As on past occasions, Sir Bernard was very willing to co-operate in this way, and successfully recorded the signals from the probe during its approach and landing on the planet yesterday.

39. Turning to the specific issues before us, we note that the Scientific and Technical Sub-Committee in its report [A/6804, annex III] expressed appreciation of the request by the Government of Argentina for United Nations sponsorship of its scientific sounding rocket launching facility at Mar del Plata. The Sub-Committee recommended that our Committee should approve the visit of a small group of scientists to the station near Mar del Plata, when it is operative, to advise us on its eligibility for United Nations sponsorship. My Government would be happy to offer an expert to participate in due course as a Member in that group. Furthermore, my Government would like to commend the initiative of the Argentine Government in setting up that scientific sounding rocket launching facility and to suggest that United Nations sponsorship should in due course be extended to it.

40. The United Kingdom is thus playing a full part in activities designed to ensure the maximum possible co-operation in the peaceful exploration and use of outer space, and hopes also to make a positive contribution to education and training for countries which are not yet so far developed in both telecommunications and space science.

41. For example, as a follow-up to its successful Space Training Course held in London and Goonhilly in November and December 1965, the United Kingdom Post Office has now made plans for the organization of a seminar on "Planning and Operations of Communication Satellite Earth Stations". That seminar is designed for senior and middle-range engineers; it will be held in London in May 1968. It is confidently expected that the seminar will be of considerable assistance to participants from countries which are planning to provide and operate Earth stations. Through the space research groups in some of our universities we are able to arrange, in suitable cases, for foreign nationals to obtain training related to collaborative space research programmes. We have particularly in mind here scientists and engineers from developing countries, and our collaboration with Pakistan is an example of such an activity.

42. In conclusion, may I express the hope that the work of this Committee will contribute to ensuring that narrow considerations of national self-interest do not act as a brake on this tremendous adventure on which many countries have embarked and in which we all hope to share in varying degrees. Developments in outer space will increasingly play a direct and vital part in the lives of ordinary people in all countries. It is up to us to exclude rivalries and animosities from the new dimension into which we sometimes hesitantly, sometimes precipitately, but always hopefully, venture.

43. May I also say how refreshing I find it personally to take part in discussions which deal with the hopeful new world of the future which technology is making possible for us, instead of with the old and often stale problems of the past.

44. Mr. SHAW (Australia): As other members of this Committee have remarked today, the world has just witnessed a new and spectacular feat with the landing of a space capsule on the surface of the planet Venus. The

achievement of that landing, after a voyage of some 49 million miles from earth, staggers the imagination of us laymen. We join our voice in congratulating the Soviet space scientists on their achievement, and we also congratulate the United States scientists who are presently engaged on their Venus flight.

45. May we also express the hope voiced, I think, by our colleague from the Netherlands a few days ago [1498th meeting, para. 9] that the time will not be too far distant when we shall see some joint ventures between the major space Powers.

46. It is appropriate that we should be discussing the problems of outer space in this Committee so soon after the deposit in London, Moscow and Washington of the instruments of ratification which bring into force the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space. Australia joined with other countries in depositing its instrument of ratification in the three capitals. That Outer Space Treaty codifies in an international legal instrument principles which were embodied in the Declaration of Legal Principles governing the Activities of States in the Exploration and Use of Outer Space adopted by the General Assembly in 1963 [resolution 1962 (XVIII)], and also extends the scope of those principles in certain important respects. It is not meant to be the last word in the law of outer space. Along with the rapid developments in space science and technology, there will need to be further efforts to arrive at international instruments which, we hope, will facilitate international co-operation in this field.

47. During the past year, both the Scientific and Technical and the Legal Sub-Committees of the Outer Space Committee continued to be active. In considering the work of the Scientific Sub-Committee, we were particularly interested in reports from the World Meteorological Organization, including that just presented orally this afternoon, about the uses of satellites in meteorology in areas where there is at present a scarcity of available data. In the Southern Hemisphere, and more especially in South and South-East Asia, the development of methods of weather observation from satellites is of great importance because the possibilities of weather observation by conventional means are limited by the vast surrounding areas of ocean. Furthermore, accurate weather forecasting is of vital interest to countries which are extensively engaged in primary industry.

48. The plans for the World Weather Watch referred to by the Director of WMO also offer valuable opportunities for international co-operation in applying the benefits of space technology in a practical manner and on a global basis.

49. Australia is co-operating with the World Weather Watch through its Melbourne centre, which will be fully operational in about 1971. It will then provide analyses and forecasts for the whole Southern Hemisphere from data received from the Australian continent and adjacent islands, Antarctica, New Zealand, a number of Pacific and Indian Ocean islands, as well as from Africa, South America and Indonesia, and from meteorological satellites. The major link for transmission of African and Latin American data to Melbourne via New Delhi and Singapore was put into operation in June 1966.

50. The report of the International Telecommunication Union was also of particular interest to my country where, because of size and geographical situation, we have to consider the feasibility of some day using satellites for internal communications. The Indian report of an experiment in mass communications in an area near Delhi and the planned UNESCO pilot programme involving the use of satellites are very significant.

51. Both the Scientific and Technical and the Legal Sub-Committees give some thought to the question of the definition of outer space and, as can be seen from the full Committee's report, further work has to be done on this question.

52. The Legal Sub-Committee, following the work it did on the outer space Treaty last year, reverted to the drafting of a proposed agreement on liability for damages caused by the launching of objects into outer space and on a draft agreement on assistance to and return of astronauts and space vehicles. On the question of liability, some of the complex and delicate legal questions were examined and some modest progress was made in arriving at points of agreement. In a more propitious atmosphere and with more thought to its working methods, we hope that the Legal Sub-Committee can make further progress on the draft agreement.

53. So far as concerns the draft agreement on assistance to and return of astronauts and space vehicles, we regret that the Legal Sub-Committee did not get very far. Indeed, the lengthy procedural discussions which took place in that Sub-Committee on the scope of this draft agreement showed that disagreement had arisen over the subjects to be included in the draft, notwithstanding the clear scope of the mandate given to the Committee on Outer Space by the General Assembly in its resolution 2221 (XXI). We regret the time lost in debate as to what the Sub-Committee was supposed to be discussing, and we welcomed the statement later in the full meeting of the Committee on Outer Space by the representative of the USSR that he had

“... no objection to completing the draft presented by the Soviet Union on 19 June 1967 concerning the rescue of astronauts in the event of accident or emergency landing, with provisions concerning the return of astronauts and space vehicles, in conformity with the provisions of the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space ...”
[A/AC.105/PV.49].

54. We hope that progress can now be made on this agreement. We understand the interests of the major Powers in seeing the rapid conclusion of an agreement which would elaborate the provisions of the Outer Space Treaty concerning the rescue of astronauts, and we hope that they will be able to agree on formulations elaborating the Treaty provisions on the return of space objects. But the number of Powers which will benefit from an agreement concerning the rescue of astronauts is naturally very limited. The developments in many countries of what are admittedly more modest space programmes, however, create quite widespread international interest in the question of the return of space objects. In association with the delegation of Canada, Australia presented proposals at Geneva suggest-

ing the sort of elaborations which we believed would serve the interests of the large space Powers and others alike.

55. In this connexion we associate ourselves with the remarks of the representative of France who emphasized at our meeting of 17 October that any agreement on assistance and return should “take due account of the sovereignty of States on whose territories the measures stipulated will be implemented”. [1498th meeting, para. 33].

56. The forthcoming Conference on the Exploration and Peaceful Uses of Outer Space to be held in Vienna in August 1968 should help to continue to enlarge United Nations interest in this vast new field. The additional time now available for the preparation of the Conference should make it possible for more countries to be represented. We ourselves would particularly like to see those come who might benefit from the opportunities already available to non-space Powers to apply to some of their practical needs some of the new technical and scientific achievements of the space age. There are aspects of space technology which, in our view, can now be used by countries with limited resources, and we trust that the Conference will help to point the way to that sort of application.

57. So far as concerns Australia itself and outer space activities, the basic question is of course that of finding resources and deciding how much money and trained manpower should be committed to this field of endeavour. This problem is common to all middle and small nations which could not contemplate, for example, trying to organize their own space satellite programmes. We therefore depend on international co-operation if we are to participate at all in space activities.

58. Australia is perhaps fortunate in that it occupies a large land mass in the Southern Hemisphere. This has led to the establishment of six major tracking stations which are assisting in the manned space flights, the deep space probes and other programmes of the United States National Aeronautics and Space Administration. These tracking stations are managed and manned by Australians, and the extensive training of technicians has significantly increased our pool of manpower skilled in space technology.

59. From a practical point of view the two major areas of interest to Australia are meteorology and communications. In meteorology, satellite data is most important in supplementing conventional data from areas to the west, south and east of the continent. During 1966 the Bureau of Meteorology Automatic Picture Transmission Equipment received satellite information from the Environmental Survey Satellite, ESSA and Nimbus C satellite providing East-West coverage of about five thousand miles and a similar North-South coverage from New Guinea down to the Antarctic. Stations under construction at Perth and Darwin are expected to add considerably to the Antarctic coverage and will extend north to cover Java, the Philippines and the Coral Sea area. Later a fourth station will be built at Brisbane.

60. Our remoteness and size create problems in maintaining international and internal communications. During 1966 the Australian Overseas Telecommunications Commis-

sion continued to participate in the activities of the Interim Communications Satellite Committee. Construction of an earth station was completed at Carnarvon in Western Australia. Through this station television signals were received for the first time direct by satellite from the Northern Hemisphere on 25 November 1966. This station is now being used to provide services between Australia and North America, Hawaii, Japan and South-East Asia by the second Pacific Ocean INTELSAT 2 satellite. A second earth satellite station is being constructed in northern New South Wales, while plans are in hand for a third earth station to be established on the west coast to serve the proposed Indian Ocean satellite UNTELSAT 3. Although at present these satellites have only been utilized in international communications, Australia is continually reviewing the progress in technology and the related economic aspects, with a view to providing satellite communications within the internal telecommunications network in conjunction with conventional media.

61. In addition to these applications of space technology, Australian scientists have also engaged in various programmes of research in related fields. During 1966, thirty-four firings of sounding rockets from Woomera, South Australia, continued the programme of upper atmosphere research which has been carried on for some years. Details of the experiments performed are given in the latest report on Australian space activities [A/AC.105/L.36] submitted to the Secretariat. Eighteen Skylark rockets, which were finally prepared at Woomera, were fired in support of the United Kingdom space research programme, and details of those trials and their results are contained in the United Kingdom *ibid.*. In addition, a programme of long-distance trans-equatorial radio propagation, which has been carried out over the last few years, was continued in collaboration with Japanese, United States and Australian agencies.

62. Our participation in the European Launcher Development Organization (ELDO) has continued, and successful firings of the EUROPA F.4 and F.5 took place in May and November 1966, respectively. These were the first two of four sub-orbital rounds to be fired under phase II of the ELDO programme. A third launching in the series, however, fell significantly short of the planned impact point in the Pacific several hundred miles north of New Guinea.

63. Preparation of ground facilities at Woomera for the remainder of phase II and phase III programmes have continued. Construction of a down-range guidance and telemetry facility at Gobe in Arnhem Land in the remote Northern Territory was completed during 1967. This facility, for which Belgium supplied and installed the guidance system, while the telemetry transmitting and receiving equipment was provided by the Netherlands, will monitor future launchings in the ELDO programme.

64. In these remarks I have outlined briefly the attitude of my delegation to various aspects of the work which has been carried on over the past year by the Outer Space Committee and some of the tasks which lie ahead. I have also given some examples of the projects in which Australians engage and in which we have tried to participate in international co-operation in the area in which we live. We believe that there will be increasing opportunities for

such international co-operation and these will pose new problems for the Outer Space Committee. While in some respects the achievements of the past year have been modest, we believe that, with the co-operation of the major space Powers, which must continue to make the major contributions in this field, the Committee can respond to its challenge.

65. Miss BROOKS (Liberia): The delegation of Liberia takes note, with appreciation, of the report of the Committee on the Peaceful Uses of Outer Space now before the Committee for consideration, and extends its thanks to the Chairman and members of that Committee for its contents.

66. It would not be amiss to recall that at the end of the first decade of man's entry into space the United Nations reached one of its greatest achievements in international co-operation when the General Assembly, on 19 December 1966, adopted the text of a Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies. The depository Governments were requested to open it for signature and ratification. The Treaty was signed in Moscow and Washington, D.C. on 27 January 1967, and today there are eighty-eight signatories thereto. While one must concede that not all existing rules of international law could automatically be applied to outer space, it might be said that with the adoption of the Treaty international law acquired a new dimension.

67. We recognize that there is still so much to be learned about outer space. It is true that the Treaty is not without imperfections. There are doubts that the drafting of the Treaty entirely excludes military activities in outer space; however, as has been previously mentioned, the Treaty is not an end in itself, but the necessary beginning—a direction for international co-operation in space activity. What is to be borne in mind is that it contains a basis for future agreements so that the principles might be broadened and loopholes avoided in political instruments. Further, because of the rate of scientific progress in space activities, it is my delegation's hope that the experience gained by co-operation in space may point the way to liquidating the long-nursed suspicions and to the healing of ancient wounds, here below, thereby encouraging disarmament.

68. The Outer Space Committee's report indicates a number of major events and technological achievements in the exploration of outer space. My delegation notes with interest the success in analysing the composition of the lunar surface by the American Surveyor 5 spacecraft. It may be that the time is not too far distant when answers can be obtained to such questions as whether man's establishment on the moon's surface is possible and whether there is life already existing elsewhere than on the planet Earth.

69. May I take this occasion, on behalf of my delegation, to congratulate the Soviet Government and people for the latest space achievement in landing an instrumented capsule on the surface of Venus. It is my hope that in the not too distant future the Soviet Union and the United States will jointly explore and undertake space activities for the benefit of mankind.

70. The importance of education and training in the peaceful uses of outer space to enable countries not engaged in space activities—especially the developing nations—to benefit from such a venture, cannot be over-emphasized. It is interesting to note, therefore, that training and research will be given in connexion with satellite communications at the Indian Station. I should like, on behalf of my delegation, to pay a tribute to the Government of India for its achievement in this field. My delegation also supports the suggestion that the International Directory of Facilities for Education and Training in Basic Subjects Related to the Peaceful Uses of Outer Space be given wide distribution, making use of UNESCO for the purpose as well.

71. My delegation attaches particular importance to the development of space technology as it relates to economic development. We therefore take note of the communique contained in document A/6668 submitted by the socialist countries, and express the hope that through the United Nations the smaller countries will benefit from the satellite communications media, as well as from the advantages to be derived in connexion with maritime navigation and civil aviation, and/or the secondary results as they relate to industry and agriculture and the protection of life and property.

72. My delegation looks forward with interest to the convening of the Vienna Conference in 1968, where, as stated by the Chairman of the Committee on the Peaceful Uses of Outer Space [1497th meeting, para. 74], knowledge of the achievements made and how they can benefit directly the economic and social progress of all nations will be the theme and purpose of the Conference.

73. On a point of special humanitarian interest, I should like to record my delegation's hope that a speedy agreement will be reached concerning assistance to and return of astronauts and space vehicles, and the sovereign rights of States in such circumstances.

74. The delegation of France rightly stated [1498th meeting, para. 34] that the question of agreement on the responsibility for damages resulting from the launching of space vehicles is of interest to a greater number of countries. As the pace in launching space vehicles is ever-increasing, I hope that the super-Powers will double their efforts and assist the Legal Sub-Committee on Outer Space in arriving at an agreement on liability for damages caused by launching objects into outer space. While we would not wish the necessity to arise for application of the rules that are established, it is nevertheless important that there should exist the proper basis on which liability for damage may be established if and whenever it should occur.

75. Lastly, there is the question of a definition of outer space. Ten years have elapsed and space launching activities and research are growing daily; a Treaty has been adopted and yet there is not an agreed definition of outer space. We are aware that the learning process regarding outer space is far from being complete but, as a lawyer, I cannot but conceive of the necessity to define outer space. But here I ask my colleague from Italy to pardon me if I differ from his opinion. It does seem somewhat awkward for an international organization such as the United Nations to

continue to discuss outer space without a common definition for the understanding of its Members, in spite of its great importance. We believe that a definition could be sufficiently flexible to include whatever is found necessary for further clarity in the future.

76. Finally, it is the hope of my delegation that the United Nations will be able to play an effective rôle in having the conquest of space as a common cause and in the interest of all the peoples of the world.

77. Mr. KABANDA (Rwanda) (*translated from French*). Mr. Chairman, it is my pleasant duty to offer you my delegation's warmest congratulations on your unanimous election to preside over the work of our Committee. We also congratulate your distinguished fellow officers who have already given proof of their competence in the matters before the First Committee.

78. As we gather to consider the question of international co-operation in the peaceful uses of outer space, the Soviet Union has just accomplished a new feat in the field of peaceful space exploration. The landing of Venus 4 on the planet Venus is no doubt a source of legitimate pride to the Soviet Union; but so it is for all of us, since we believe that any new discovery in the scientific field is a further step along the path towards progress and liberation. On behalf of the delegation of Rwanda, I extend very hearty congratulations to the Soviet Union on that achievement, which opens up new vistas in the field of space exploration. We are also hopeful that the American capsule which left the earth yesterday will meet with complete success.

79. The developing countries are of course concerned today with things other than entering the space contest; however, that does not make them indifferent to that contest, since after all, our children's lives or deaths may well depend on these new discoveries and the use to which they are put as time goes on.

80. At the 1497th meeting, the United States representative suggested that the developing countries had most to gain from the technology of space. Although for the moment I find it hard to share that view I nevertheless agree with the United States representative that the developing countries have a considerable part to play, even at the present time, in the realm of space exploration. Their role is becoming increasingly clear, especially when we think of the opportunities being opened up by this new field for overcoming the difficulties of economic, social and cultural under-development. Their role is also foreshadowed in the measures to be taken to assist the return of astronauts or cosmonauts and of space vehicles, and to make good damages incurred.

81. We are therefore happy to note the increase in the number of developing countries—India, Kenya, and many others—that are taking concrete measures towards co-operation in the realm of space research.

82. The Republic of Rwanda is convinced that international co-operation must also extend to outer space, and it is prepared to give its fullest support to space research programmes. Rwanda is greatly interested in the progress made in that area. It was among the first States to ratify the

Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, because it is convinced that world peace is bound up with that branch of human activity and hence that developing countries cannot shirk any effort to prevent a possible space war.

83. My delegation places great hopes in the Conference on the Exploration and Peaceful Uses of Outer Space to be held next August at Vienna. The Conference must establish solid bases for large-scale co-operation between space and non-space Powers.

84. We are glad to see that up until now space research has been directed towards areas that will promote—such is my hope, at least—speedy *rapprochement* between developed and developing countries, and not towards the creation of a new restraining force.

85. Several countries are already benefiting from the fruits of space exploration. For example, I am thinking of the programmes transmitted via telecommunication satellites. These programmes are set up on a commercial basis, and they would be of value to developing countries if access to them was easier.

86. We feel it would be a sound move to put the results already obtained in space exploration at the disposal of all countries, and in particular, to pass on to the developing countries information useful to them in agriculture, navigation, education or information.

87. With regard to programmes broadcast via telecommunication or meteorological satellites, I wonder whether the space Powers might not consider setting up regional telecommunication networks or meteorological receiving stations in developing countries. Very few developing countries, taken individually, can support the cost of such installations. There can be no doubt that installations of that type would promote the organization of programmes for education and exchange of information, and at the same time improve telephone and telegraphic communications in the regions involved.

88. In conclusion, my delegation wishes to emphasize that the lack of a definition of outer space could create problems, as my friend and colleague the French representative pertinently noted two days ago. In my opinion, the sub-committees should be requested to pursue the study of this matter in order to arrive at a definition that would enable the Committee to proceed in its work with greater assurance.

89. We are aware that there are several factors to be considered in seeking such a definition. However, in view of its practical and legal importance, it is worth while making an effort in that direction.

90. My delegation, and perhaps many others, would have liked to have verbatim records or full summary records of meetings of the Legal and Scientific and Technical Sub-Committees which would have enabled us to make a greater contribution to our Committee's work. We are hopeful that next year this view will be taken into consideration.

91. Mr. YANGO (Philippines): More than ever, the Philippines is deeply gratified to note that international co-opera-

tion in the peaceful uses of outer space is moving ahead at an appreciable pace. We are pleased to see the prevailing favourable atmosphere for further co-operation and collaboration among the space Powers in the exploration of outer space and its peaceful uses.

92. This favourable atmosphere, to our mind, is traceable to the approval of the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and other Celestial Bodies, which was signed on 27 January 1967 by the United States, the Union of Soviet Socialist Republics and the United Kingdom. Since then a total of eighty-eight Governments, including that of the Philippines, have signed the Treaty, and thirteen of these have indicated their ratification thereof. The Treaty came into force on 10 October 1967.

93. To us the significance and far-reaching importance of the Treaty lies in its purpose and spirit: the common interest of all mankind in the progress of exploration and use of outer space for peaceful purposes and in the exploration and use of outer space for the benefit of all peoples irrespective of the degree of their economic or scientific development. We also attach great importance to the belief underlying the Treaty, that international co-operation in the exploration and use of outer space for peaceful purposes will contribute to the development of mutual understanding and to the strengthening of friendly relations between States and peoples.

94. In the light of the foregoing, the Philippine delegation notes with interest and optimism the report of the ceremony which took place at the White House in Washington, D.C., last Tuesday, 10 October, when the Treaty came into force after thirteen nations deposited instruments or notices of ratification. In his speech during the ceremony, President Johnson invited other Governments to help end the waste of "competitive spaceman-ship" by co-operating with the United States on at least some aspects of space exploration. President Johnson offered United States co-operation in exploration of the planets and the solar system, in the use of tracking facilities that monitor space flights from earth, in the exchange of certain scientific information, in mapping the earth from space and in communications through space satellites. The invitation of the President was confirmed and reiterated by the representative of the United States who, in his statement before this Committee on 17 October, renewed on behalf of his Government the offer made by President Johnson.

95. In his opening statement at the forty-ninth meeting of the Committee on the Peaceful Uses of Outer Space on 13 September 1967 [A/6804, annex I], the Chairman of the Committee referred to further progress in the various national and co-operative international space programmes and new achievements in the exploration and use of outer space when he mentioned, among other things, the launching of scientific space craft to the planet Venus last June both by the Soviet Union and by the United States of America.

96. The news reports of yesterday and today indicate that the Soviet space craft achieved a soft-landing on Venus, a most significant and historic event in space exploration.

Radio signal reports were received after the space craft's landing, and Soviet scientists have analysed and interpreted those first reports. Indeed, this is another first in space technology to the great credit of the Soviet Union, a milestone as spectacular as the orbiting in space of its Sputnik in 1957. For this reason my delegation avails itself of this opportunity to extend its warmest congratulations to the Soviet delegation and to the scientists and engineers of the Soviet Union who made possible this fantastic feat of the Venus landing.

97. At the same time, having heard the announcement made by the representative of the United States this afternoon, my delegation expresses its felicitations to the United States for the achievement of its own scientific spacecraft which was launched towards the planet Venus and which apparently has accomplished its objective.

98. Of equal significance to the Soviet achievement is a report in *The New York Times* of 17 October, a report that was previously referred to by the representative of the Netherlands [1498th meeting, para. 8], to the effect that space scientists of the Soviet Union had asked Britain's Jodrell Bank Radio Observatory to help receive information from the Soviet spacecraft. This was done by the Observatory. To us, this is a signal example of international co-operation and is a testimony on the part of the Soviet Union of its wish for such international co-operation in space exploration.

99. We wish to point out also that this Soviet desire for international co-operation was reiterated in the statement of the representative of the Soviet Union, who said before this Committee that his country was in favour of co-operation in space exploration and wished to see practical results become the common achievement of all States, including the younger States. This is most encouraging to my delegation, especially if it is considered with the offer of President Johnson for co-operation in the exploration of outer space. This would truly be in keeping with the spirit and purpose of the Treaty on outer space. All in all, these events foreshadow an era of fruitful collaboration in outer space for the benefit of all mankind.

100. I should like now to refer to the report of the Committee on the Peaceful Uses of Outer Space. We wish to express our appreciation to the Committee for that report, and we congratulate the Committee on its accomplishments at its tenth session this year. Similarly, we wish to commend the work done by the Scientific and Technical Sub-Committee at its fifth session and by the Legal Sub-Committee at its sixth session. We note that the Scientific and Technical Sub-Committee was able to arrive at agreed findings regarding the exchange of information, the encouragement of international programmes, of international sounding rocket launching facilities and of education and training. We note with satisfaction the progress achieved by the Legal Sub-Committee in its deliberations on the draft agreement on liability for damages caused by the launching of objects into outer space and on the draft agreement on assistance to and return of astronauts and space vehicles. However, we also note that the important question of definition of outer space was left for further consideration.

101. It is our opinion that both Sub-Committees worked hard, and we strongly support the continuance of the work

being performed by the Committee on the Peaceful Uses of Outer Space and by its two Sub-Committees.

102. The report of the Committee also mentioned that a Working Group deliberated on the need, feasibility and implementation of a navigation services satellite system. We believe that as this effort progresses it will attract greater attention from the International Civil Aviation Organization and the Inter-Governmental Maritime Consultative Organization as well as other specialized agencies and interested international governmental and non-governmental organizations in the field of navigation. The benefits that will be derived from a navigation services satellite system are too obvious to require further elucidation.

103. As we pursue with interest the international co-operation on the peaceful uses of outer space, as Members of the United Nations, we should look forward to the forthcoming United Nations Conference on the Exploration and Peaceful Uses of Outer Space which will be held in Vienna from 14 to 27 August 1968. It will be the first United Nations conference of this nature and is bound to be very encouraging, coming as it does on the heels of the Treaty on Outer Space. As the Conference will be a review of the achievements of space technology in the past ten years and the practical benefits therefrom, we expect that much will be accomplished by the Conference of particular relevance to the progress of the developing countries.

104. We say again that the time is indeed propitious for further co-operation in the exploration of outer space for peaceful purposes. The Philippine delegation expresses the hope that the space Powers, and particularly the United States and the Union of Soviet Socialist Republics, will assume the leading rôles in promoting such further co-operation, not only for their mutual advantage but also for the benefit of non-space Powers. If this is done, those two nations will be keeping faith with the Treaty on Outer Space which was the result of their joint efforts after many months of negotiation.

105. Mr. FAULKNER (Canada): As this is the first time I have spoken in this Committee I should like to take the opportunity to add my good wishes to those which Mr. Beaulieu has already extended on behalf of the Canadian delegation and to congratulate you personally on your unanimous election as Chairman of this Committee. I also consider it a privilege to be able to congratulate personally Mr. Tchernouchtchenko and Mr. Örn on their unanimous election as Vice-Chairman and Rapporteur respectively. I believe that the Committee can consider itself fortunate to have a bureau composed of such able and experienced diplomats and under your wise guidance, Sir, we may hope that the important items before this Committee will be dealt with in a prompt and effective manner.

106. It is traditional in the discussion of item 32—and it is a tradition which I should like to follow—to begin by paying tribute to the latest successful endeavours in outer space exploration and research. In the past year both the United States and the Soviet Union have achieved spectacular results. For example, only this week a USSR capsule reached Venus and transmitted valuable data back to earth about atmospheric conditions on Venus. This very afternoon the United States Venus probe, Mariner 5, is flying

past Venus and it is to be hoped that the results obtained will complement the information gathered by the Venus 4 capsule. Remarkable steps have also been taken by France and Italy in the past year, while a large number of other countries, including Canada, have continued their already active space programmes, benefiting increasingly from international co-operation.

107. We have before us the report of the Committee on the Peaceful Uses of Outer Space on its own work and on that of its subordinate bodies. In the meetings of this Committee held from 13 to 15 September, some delegations, including the Canadian delegation, had an opportunity to express their views on the Committee's activities over the past year. It is not our intention, therefore, to enter into great detail here but rather to limit our remarks to some general observations.

108. We believe that the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies, which was opened for signature on 27 January 1967, is an excellent starting point for our observations. It is gratifying to see that more than eighty States have already signed this Treaty, and we strongly urge all States which have not done so yet to accede to it in the near future. As my colleagues undoubtedly recall, it was only a very short time ago that the ceremonies took place which marked the official coming into effect of the Treaty, and we hope that this solemn affirmation of important principles relating to international co-operation in outer space will give renewed impetus to our efforts to develop practical legal arrangements in respect of such questions as assistance to and return of astronauts and space vehicles and liability for damage. We must draw hope from the points on which agreement has been reached and work to expand those points into a comprehensive set of rules so that the principles embodied in the Treaty may achieve their full potential for the orderly and lawful exploration and use of outer space.

109. In particular, the humanitarian aspects of the Treaty engage our attention. The tragic deaths of United States and Russian astronauts in the past year have underlined again the fact that man's efforts to explore outer space cannot be carried out without risk. We know that everything within the power of human ingenuity and foresight is done to prevent accidents, but we have to be prepared for the possibility that in spite of all precautions they will occur. It would be unforgivable if in the case of accident or emergency legal or political considerations should prevent the swiftest and most effective possible help within our technological capabilities being extended to any astronauts or their vehicles. Article V of the Treaty describes astronauts as "envoys of mankind", and all mankind therefore has a clear obligation to make every effort to ensure adequate protection for them.

110. Some delegations may express their disappointment that greater progress has not been made in the Legal Sub-Committee on an agreement regarding assistance to and return of astronauts in distress. Of course, we too would have liked to see more substantial agreement in this area, but we do not feel that we should yield to pessimism. If the spirit of co-operation so evident thus far continues to

prevail we hope that our continued efforts will lead to the solutions we all seek. We realize that the issues are complex and we should not be discouraged by the slow pace of our work. This should not be taken to mean, however, that we are complacent about our accomplishments in this area or satisfied at our rate of progress. Indeed, the speed at which space exploration develops should imbue us with a very real sense of urgency lest our efforts be overtaken by events. We hope, therefore, that in the coming year the Legal Sub-Committee will be able to proceed more quickly and we are encouraged in our hopes by the statement by Mr. Morozov in the Committee on Outer Space on 13 September of this year that the USSR is willing "to examine, within the framework of the treaty, not only questions of rescue of astronauts but also the return of astronauts and space vehicles in cases of accident or emergency landing" [A/AC.105/PV.49]. The Canadian delegation for its part will do everything in its power to bring us closer to this goal.

111. The other difficult issue facing the Legal Sub-Committee concerns liability for damages caused by the launching of objects into outer space. Here again progress is slow but some areas of agreement have been staked out, in particular on the definition of damage, in which the Canadian delegation has played an active part. The importance of obtaining agreement on liability becomes immediately apparent when we realize how many objects are launched into outer space every year. Launchings of artificial satellites and inter-planetary probes have become so commonplace that they do not create headlines any more, and it is a tribute to the scientific genius of the space Powers and to their careful preparations that no major accidents have occurred yet.

112. But again it would be unrealistic to expect that accidents can for ever be prevented. The number of launchings is bound to increase as ever more States, either unilaterally or through international co-operation, join in the exploration and use of outer space, and sooner or later we must be prepared to deal with the consequences of an accident. Our work must be done thoroughly, but that does not imply that it must also be done slowly. Careful consideration must be given to all aspects of the problem, and at the same time the need for international agreements becomes ever more pressing. An early convening next year of the Legal Sub-Committee would be desirable to deal with outstanding issues, so that when the twenty-third session of the General Assembly considers the work of the Legal Sub-Committee some significant progress will have been made.

113. Little need be said here about the utilization and the still elusive definition of outer space. It is by no means easy to define outer space in a form which can be both legally and technically acceptable to all. Perhaps the matter could be reviewed regularly so that when additional data increase the possibility of reaching such a definition, this question could be taken up again.

114. In all the remarks we have made thus far there is implicit the conviction that space research and exploration should be for the benefit of all nations. Clearly, the United States and the Soviet Union are pre-eminent and will continue to be pre-eminent in matters of space research and

exploration, but that does not mean that other nations cannot, or should not, directly or indirectly, seek to make valuable contributions.

115. Several other nations, including Canada, have their own space programmes showing that good results can be obtained with limited resources. In particular, the successful Canadian satellite programme for ionospheric research, begun five years ago and still fully active, has led to the Alouette-Isis programme in which Canada and the United States co-operate very actively with agencies in Great Britain, France, Australia, Norway, Japan and India. The Thumba project in India has shown what can be accomplished by international co-operation, and a number of experts will be going to Argentina soon to determine the eligibility for United Nations co-sponsorship of a sounding rocket launching facility at Mar del Plata.

116. Apart from the contribution which these and all other space projects obviously make to our understanding of the universe, they also have, and may increasingly have, a profound effect upon the daily lives of all of us. For that reason, the forthcoming Conference on the Exploration and Peaceful Uses of Outer Space, which is to take place in Vienna from 14 to 27 August 1968, is of the greatest significance. It should give substance to the feeling that there are many practical benefits to be derived from space research and exploration, and that by using proper methods these benefits could be widely disseminated.

117. Sometimes it is very difficult to see the connection between sending a man to the moon and hunger, illiteracy and poverty on earth, and yet the scientific research required to do the former can produce side benefits which could be relevant to the latter problems. The importance, for instance, of improved weather forecasting by means of special weather satellites need hardly be stressed. In many areas of the world, crop failure means starvation for millions of people and often deals a crippling blow to the economy of a developing country. Better methods of weather forecasting can improve the efficiency of agriculture, which is one of the most pressing problems that face the world today. Communications satellites will also no

doubt be able increasingly to play a key role in the promotion of universal education.

118. There is clearly much to be done in the fields of education and training in the peaceful uses of outer space, and we should like to suggest that the forthcoming Conference should provide a unique opportunity for developing countries to determine what possible benefits exist for them and how their needs can best be met. The Conference, therefore, should place a heavy emphasis on the practical aspects of space research and exploration, particularly in a way that can be helpful to developing nations. We should like to stress that the Conference can only have real meaning and fulfil its primary purpose if there is effective participation by developing countries. It is most important for Member States to note, when considering the question of participation in the Conference, that the Committee on the Peaceful Uses of Outer Space recommended that the Conference papers should be meaningful to both scientists and non-scientists concerned with the welfare of their peoples in many fields.¹

119. To ensure that all technical papers delivered at the Conference receive the expert attention they deserve, the Canadian delegation considers it desirable that the Scientific and Technical Sub-Committee of the Committee on the Peaceful Uses of Outer Space be convened during or immediately after the Conference, so that these papers can be discussed in this forum of experts as well, before the Committee on the Peaceful Uses of Outer Space reports to the twenty-third session of the General Assembly.

120. The preparations for the Conference cannot be successful unless delegations are adequately prepared as well. I should like to conclude by urging all Member States, and in particular the developing countries, to prepare now to attend the Vienna Conference on Outer Space in August of 1968.

¹ See *Official Records of the General Assembly, Twenty-first Session, Annexes*, agenda items 30, 89 and 91, document A/6431, annex IV, para. 3.

The meeting rose at 5 p.m.