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COMMITTEE ON THE PEACEFUL USES OF OUTER SPACE

VERBATIM RECORD OF THE ONE HUNDRED AND NINETY-FIFTH MEETING

Held at Headquarters, New York,
on Thursday, 21 June 1979, at 10.30 a.m.

Chairman: Mr. JANKOWITSCH (Austria)

General exchange of views (continued)

79-70440

The meeting was called to order at 10.45 a.m.

GENERAL EXCHANGE OF VIEWS (continued)

Mr. SANCHEZ PEÑA (Argentina) (interpretation from Spanish): The Argentine delegation is happy, Sir, to be participating once again in a plenary session of the Committee on the Peaceful Uses of Outer Space, and to be doing so under your expert chairmanship. We wish also to thank Mr. Murthy for the effective work he has done as the Expert on Space Applications; we have had his efficient co-operation in preparing for the seminar to be held in Argentina next November. We also welcome the news that Mr. Padang will become the new Expert on Space Applications in the Outer Space Affairs Division.

I should now like briefly to inform the Committee of some of the activities engaged in by my country's National Commission for Space Research, which is the national body responsible for co-ordinating, promoting and planning space activities and for giving advice to the President of the country on all matters relating to the peaceful uses of outer space.

Under the programme for launching stratospheric balloons, experiments have continued in the past year with both national and foreign research groups. Depending on the time of the year and the direction of the high-altitude winds, the launchings take place essentially from two bases: one located in Reconquista, in Santa Fe Province, in the north-eastern part of the country, and the other, at the airport in Mendoza, which is in Mendoza Province, in the western part of the country.

In this connexion, we use equipment of and personnel trained in the National Center for Atmospheric Research in the United States. In the past year there has been a total of 11 successful launchings of balloons with a capacity of about 11 million cubic feet. The two most important experiments took place in December 1978 in Reconquista and April 1979 in Mendoza.

(Mr. Sanchez Peña, Argentina)

With the present equipment, payloads weighing more than 1,000 kilograms can be handled. There are also in operation auxiliary vehicles for the deployment of these stratospheric balloons and the recovery of the payloads, as well as aircraft equipped to monitor and terminate flights, aircraft equipped with telemetric instruments, and so forth.

We should like to point out also that the "EGAMI" experiment in November 1978 was carried out jointly by the National Commission for Space Research; the National Center for Atmospheric Research, in the United States; and the Max Planck Institute, in the Federal Republic of Germany, where the payload was designed and constructed. This experiment is noteworthy in that radiation was observed through the use of a television camera with an image-magnifier and an "all-sky" optical system, carried aloft in a balloon with a capacity of 11.6 million cubic feet.

(Mr. Sanchez Peña, Argentina)

With regard to sounding rocket experiments, we are actively carrying out launchings from the Celpa-Atlantico base of Mar Chiquita on a weekly basis. For several years that base has been under the patronage of the United Nations.

During the course of 1978 we began building the permanent rocket-launching base in the Argentine Antarctic region, the Vice-Commodore Marambio base, which is located at 64° latitude south and 56° longitude west and it is 198 metres above sea level. In 1976 we launched two CASTOR rockets made in Argentina as part of the ionospheric research programme.

That base in principle is intended for launchings under the EXAMETNET Meteorological Programme, and once that is completed it will then be able to be used for any programme requiring rocket launchings in those latitudes. That base has three buildings housing radar, computers and telemetrical and electronic equipment. It will be finally completed in the last months of the year. There are certain problems with the weather in that part of the Antarctic since it is now winter down there. We shall use the first months of spring, from September onwards, to continue the work.

This base is in the Antarctic region and it can be used by a number of countries and people who wish to carry out all types of experiments with sounding rockets and sounding balloons in those latitudes. That is why we are offering it to all interested institutions and countries.

The National Space Research Commission is part of an inter-American network of institutions co-operating in obtaining and analysing atmospheric data concerning the speed of the wind, temperature, density and pressure. This experiment is known by the acronym EXAMETNET. One of the fundamental objectives is to study the existing correlationship in planetary terms between stratospheric circulation and the concentrations of ozone. Each week we have launchings of LOKI rockets with a standard datasonde payload.

The TAURO programme is intended for photographic research on natural resources and to that end we are using a rocket with a 100 kilogramme payload at an altitude of 160 kilometres. That makes use of the aeronautical and Space Research Institute in Cordoba. In the last period, 1978/1979, we carried out analytical studies with regard to the re-entry of payloads of different weights with the purpose of establishing a recovery system.

(Mr. Sanchez Peña, Argentina)

The CASTOR rocket consists of two stages. The first stage has four CANOPUS motors arranged in a cluster. The propulsion for the second stage is provided by a CANOPUS rocket with a stabilizing system in it. The rocket has been used since 1973 for ionospheric and/or atmospheric research.

The last successful experiment done with CASTOR was to study the origin, development and behaviour of the "Spread F" irregularities in the lower part of the F zone of the ionosphere. Those irregularities can be simulated and reproduced artificially by the injection of barium metal into the F layer. An attempt was made to create two artificial ionospheric bubbles so that we could simulate the "Spread F" force phenomenon. In two different instances we have ejected 18 kilogrammes of barium, allowing for a 50 kilometre horizontal separation. The maximum height was approximately 300 kilometres, or a little more, and the two clouds I mentioned formed at 280 kilometres up with a distance of 50 kilometres between them. This physical phenomenon was detected by radar and radio soundings. Similarly we have carried out optical measurements of the luminosity of the air in the 6,300 Angstrom wave-length.

At the beginning of this year between 17 and 28 March, we carried out an experiment entitled CASTOR-PERU. That scientific experiment was part of an agreement between the National Space Research Commission of Argentina and the National Aerospace Research and Development Commission of Peru. The Max Planck Institute of the Federal Republic of Germany also contributed to this; and with the co-operation of several United States institutions, the National Aeronautics and Space Administration (NASA), the National Oceanic and Atmospheric Agency, the Air Force and so on.

The base at Punta Lobos, 60 kilometres from Lima, was the launching site for that. The rockets were made in Argentina. We had radar detection from the Jicamarca Observatory, and also from observation posts in Ancon, Huancayo and Arequipa, and help from ionospheric sounding equipment in the aircraft of the Air Force of the United States Air Force Geophysical Laboratory and Air Force Avionics Laboratory.

That was one of the most important space experiments in the context of technical co-operation among developing countries that Argentina and Peru have ever performed. This was an example of the horizontal co-operation that was emphasized at the United Nations Conference on Technical Co-operation among Developing Countries held last year in Buenos Aires.

(Mr. Sanchez Peña, Argentina)

In the area of remote sensing, we have completed more than 60 per cent of the construction of the image-receiving and image-processing station of the LANDSAT satellite programme. In November 1978 the work was begun and it will be completed towards the end of 1979. The receiving station will be at the Celpa-Atlantico base - a base under the aegis of the United Nations - and the data processing station will be in the city of Buenos Aires.

Constant training goes on in the area of remote sensing. We organized a Latin American seminar on the applications of remote sensing for the assessment of natural resources under the aegis of the Organization of American States (OAS), that was held from 4 to 8 June 1979 in Buenos Aires. Similarly, as members know, between 6 and 23 November of this year, in San Miguel, a suburb of Buenos Aires, there will be a regional seminar which will specifically concern non-renewable natural resources, for the benefit of the ECLA region. The latter seminar forms part of the activities envisaged under the United Nations Programme on Space Applications.

In order to train staff and to improve techniques and analysis, we have made studies on the estuaries of the rivers Negro, Parana, Paraguay and Bermejo. In the Catamarca province we identified ferrous mineral zones and characteristic geological features of the terrain. In the Federal capital we also did work on urban identification and studied the pollution of the Rio de la Plata, among other things.

The most important remote sensing project that is being carried out at present is intended to assess the country's agricultural resources using automatic satellites jointly with the United Nations Development Programme (UNDP) and the United Nations Food and Agriculture Organization (FAO). The contributions of these international organizations exceed $1 million and that project will be under way for a three-year period according to plans. We have great hopes of this being a programme of important future application, not only for our country but also for other countries of the region with similar characteristics.

(Mr. Sanchez Peña, Argentina)

One of the programmes on which we have gained additional experience is the national anti-hail programme, which involves studies on convective cloud storms and the structure of hail, as well as technological developments in radar and the construction and manufacture of rockets to carry an ice-forming mixture called CLAG (Anti-Hail Rockets) I and II.

The results achieved in the protection programme conducted between October 1978 and March 1979 were excellent and showed on the radar screen how, upon ejection of the ice-forming agent, reflectivity increased as a result of the nearly instantaneous formation of nuclei, but immediately diminished because of the induced precipitation, with the consequent falling of small-sized crystals and, in the majority of cases, of water, the product of friction between those crystals and the denser atmospheric layers. In short, it may be said that that programme saw the concrete culmination of years of studies and was a real bonus to planned protection. In that endeavour we had the co-operation of the Italo-Latino-American Institute and we have been in close contact with the similar programme carried out in Europe by Switzerland, France and Italy.

In the energy field, we are developing a broad programme for the exploitation of unconventional energy resources, particularly solar and wind energy. We are building a 15-kilowatt air generator and another of 20 kilowatt capacity in co-operation with the Ministry of Science and Technology of the Federal Republic of Germany. Also under development is a wind-power thermopile, to be installed in the cold areas of Patagonia, since all along the Atlantic coast of Patagonia we have very important wind resources.

Together with the Organization of American States, we are carrying out the solarimetric network programme, which consists of a network of 40 stations which measure solar radiation on a horizontal surface. This Programme will allow us to make an important evaluation of this energy source in areas of our country abounding in solar resources. To complete this programme, a test series of solar collectors is in the final development phase. It is designed to provide data on specifications, yield, quality control and so on.

(Mr. Sánchez Peña, Argentina)

In an area situated 30 kilometres from the capital of La Rioja Province we are building a solar energy-operated water desalination plant. A considerable part of the research and development for that plant has been done by groups of specialists from my country.

Now being designed and already partially operative is a national network for the collection and exploitation of environmental data via satellites with automatic platforms. Between 5 and 6 June of this year there was a national meeting in the city of Mendoza to define the needs of the country in this particular field.

With reference to all I have mentioned, my delegation wishes to emphasize that we are redoubling our efforts in the area of research on the peaceful uses of outer space.

It is of particular interest to the Argentine delegation that, with regard to outer space matters, progress should be made towards international regulation of the exploration and exploitation of the outer space environment, including the moon and other celestial bodies. The rules of such an international legal order will have to aim mainly at ensuring respect from the international community for the following basic principles:

The rule of international law in all space activities;

The need for exploration and exploitation of outer space, including the moon and other celestial bodies, to be carried out for the benefit of all countries, in keeping with the provisions of the 1967 Treaty, to which the Republic of Argentina is a party;

The indispensability of international co-operation as an element of any space programme;

The training of scientific and technical staff;

The enhancement of regional capability in the field of remote sensing;

The exclusive sovereign right of States to their own national resources;

The responsibility of countries and international bodies which launch space objects;

(Mr. Sanchez Peña, Argentina)

Support for work on the regulation of the geostationary orbit;

Regulation of direct television broadcasting by satellites;

The definition and/or delimitation of outer space in order to narrow down and reduce this problem;

The use of solar energy by space vehicles;

The importance of the draft treaty relating to the moon; and, finally,

Access to space information and its applications, particularly for the developing countries.

With respect to international co-operation, we must emphasize that, in addition to the agreements and programmes already in force, last year my country signed the following co-operation agreements and/or memoranda of understanding on outer space matters: with the Aerospace Research and Development Commission of Peru, within the framework of which we carried out one of the joint experiments to which I have referred; with the Italo-Latino-American Institute of Italy, on co-operation in the field of remote sensing and artificial weather modification; and with the Aerospace Organization of the Federal Republic of Germany, on wide co-operation in outer space matters, particularly in the field of remote sensing and in solar and wind energy.

Finally, my delegation will support any measure likely to promote the early convening of the second United Nations Conference on the Peaceful Uses of Outer Space. We offer our fullest co-operation in this by making available the Secretariat scientific and technical personnel so that we can work as efficiently as possible to attain the goals of that second conference.

Mr. ZACHMANN (German Democratic Republic): Mr. Chairman, let me first express my satisfaction at the fact that you are presiding again over this session of our Committee. Your qualifications are widely recognized; your working style and your experience will certainly guarantee the successful fulfilment of the important tasks facing this Committee. My delegation has taken note with special interest of your statement on 18 June 1979 in which you expressed appreciation of the conclusion of the SALT II Treaty and pointed to the link between disarmament, détente and the peaceful use of outer space.

My delegation would like to thank Mr. Perek, Chief of the Outer Space Affairs Division, for his statement in which he gave an interesting overview of his Division's activities. Our thanks go also to Mr. Murthy for his untiring work of many years as the United Nations Expert on Space Applications. We wish his successor, Mr. Padang, the best of success in his new activities.

This session of the Committee on the Peaceful Uses of Outer Space is being held at a time when further positive changes have taken place in international relations - changes in favour of peace, security and progress. As far as the German Democratic Republic is concerned, it is earnestly endeavouring, together with the Soviet Union and the other States of the socialist community, to strengthen and extend the results achieved on the road to détente. The history of co-operation among States in the peaceful exploration and uses of outer space clearly shows that only under conditions of détente and international relations based on trust can progress along this path be continued successfully.

(Mr. Zachmann, German Democratic Republic)

My delegation would like to congratulate the delegations of the Soviet Union and the United States on the signing of the significant SALT II Treaty. It is firmly convinced that an early entry into force of this important treaty will make peace more secure and give new momentum to arms limitation and disarmament and co-operation between States. We hope that the Treaty will have a positive influence also on the activities of our Committee, to which our delegation attaches great importance.

The German Democratic Republic is among those States which take an active part in the exploration of outer space. It contributes to the peaceful exploration and uses of outer space within the framework of the INTERCOSMOS programme. We have in our annual report for 1978 and at the session of the Scientific and Technical Sub-Committee already referred extensively on these space activities. The long-term research programme of socialist integration is being continued on a large scale also in the field of outer space. The participation of "Intercosmonauts" marks a new stage of socialist co-operation. My delegation sincerely congratulates the fraternal States of the Czechoslovak Socialist Republic, the Polish People's Republic and the People's Republic of Bulgaria on their first manned space flights, which were carried out together with experienced Soviet cosmonauts. We are glad to note that a representative of the Socialist Republic of Viet Nam is also preparing for a space flight together with friends from other socialist States.

We cannot value too highly the readiness of the Soviet Union to give its partners of the INTERCOSMOS programme and other States the opportunity to take part in manned space flights. These examples, as well as the co-operation of the Soviet Union with France, India, the United States and Sweden in the exploration of near-earth space and deep space, show the potential and advantages of peaceful and equal co-operation. For the people of the German Democratic Republic the first joint space flight GDR/USSR, in which our cosmonaut Sigmund Jaehn participated, was a special event. That flight was dedicated to the forthcoming thirtieth anniversary of the German Democratic Republic and symbolized the successful development of the first socialist German State. The people of the German Democratic Republic

(Mr. Zachmann, German Democratic Republic)

are proud of this event of great importance for science and the national economy of our country. It also demonstrated the great potential for friendship and co-operation between the USSR and the German Democratic Republic. We want to express our heartfelt thanks to the Soviet Union on this occasion. We also congratulate our Soviet friends on their successful long-duration flights aboard the SALYUT-6 station. Those flights, which were made possible with the help of a new technology, namely, the establishment of a stable supply system from earth to outer space using the unmanned transport spacecraft progress, have initiated a new stage in the exploration of outer space.

In the peaceful exploration and uses of outer space, complex political and legal questions naturally arise, especially with the participation of States with different social orders. There are differing views, especially as regards the codification of international law in this field, which has to keep pace with technical and technological developments. This is reflected in the report of this year's session of the Legal Sub-Committee. We should like to underline here again the fact that direct television broadcasting by satellite can serve détente and the peaceful co-operation of States and peoples only when it is based on the principles of sovereignty and non-interference in the internal affairs of States and on the binding rules of international law. In order to prevent the misuse of this promising technology, the receiving States will have to participate in any decision. A good basis for such a provision is offered by the negotiating text submitted by Canada and Sweden. We consider it a well-balanced proposal, in particular as regards the principle of consultation and agreement between States. With the efforts and readiness for compromise of all delegations, there should be a possibility of reaching an agreement. We believe that the Legal Sub-Committee should concentrate its activities particularly on this agenda item.

As regards the remote sensing of the earth, there have been a number of proposals in the past. We expressly welcome the most recent proposal made by the USSR on the transfer of data and information. It is a compromise between the two positions expressed here, namely, the unlimited so-called free transfer of data and information and the absolute requirement that an explored State has to give its approval. Each State will have the sovereign right to decide on the use of specific data concerning its territory. In this we do not see any limitation of the outer space activities of other States.

(Mr. Zachmann, German Democratic Republic)

We have on various occasions explained our view on the draft treaty relating to the moon. We should like to suggest that it might be advisable, in view of the quite divergent positions, no longer to give high priority to this issue and think the question over for a while.

My delegation further believes that the question of the definition and/or delimitation of outer space deserves greater attention. A great number of States have supported such a delimitation. We appreciate the draft basic provisions of the United Nations General Assembly resolution on the delimitation of air space and outer space and on the legal status of the geostationary satellites' orbital space, which was submitted by the USSR delegation.

We also see opportunities for drafting legal norms for the distribution of satellite positions in the geostationary orbit. That will have to be based on the principle that the geostationary orbit is part of free outer space and that it cannot be subject to appropriation by nations. The question of the stationing of satellites in these orbits should be settled in a spirit of co-operation.

An important task at this session is to prepare the United Nations Conference on the Exploration and Peaceful Uses of Outer Space. My delegation believes that the provisional agenda of the Conference contained in the report of the Scientific and Technical Sub-Committee corresponds to the expectations of a broad majority. We believe that it would be good for such a Conference to concentrate its work consistently on an exchange of scientific and technological experience with regard to the problems involved. For my country's part, preparations are being made to report at the Conference on experiences and the benefits of the exploration of outer space.

We should like to thank the delegation of the USSR for the invitation to hold the Conference in Moscow, and we would welcome it if this offer were accepted.

(Mr. Zachmann, German Democratic Republic)

As regards the pending questions on the composition of the Bureau, it should be possible to achieve a speedy solution when all States are ready to agree to a compromise. We assume that regional aspects, as well as the experience of States in the exploration and uses of outer space, and personal capabilities will be taken into consideration.

The question of the organization of the work of the Conference should not be a major problem either. A balanced relationship between plenary meetings and Committee meetings, complemented by evening lectures, appears to be suitable.

The agenda which is before us shows how manifold are the issues which we are going to discuss. A constructive approach, co-operation and mutual understanding will be needed. My delegation will endeavour to work in this spirit and to contribute to the successful conclusion of this session.

The CHAIRMAN: I thank the representative of the German Democratic Republic for the kind words he addressed to me and the Secretariat.

Mr. SUNARYO (Indonesia): It is indeed a privilege and pleasure for my delegation to see you, Sir, once again presiding over our deliberations. We are confident that you will discharge the duties of Chairman with your customary skill and dedication and that, under your guidance, the Committee will deal expeditiously with the matters confronting us during the current session.

My delegation would like to take this opportunity to express its appreciation of the contributions made to the work of this Committee by the Chairmen of its two Sub-Committees, Mr. Carver of Australia and Mr. Wyzner of Poland. My delegation would also like to express its gratitude to the United Nations Expert on Space Applications, Mr. Murthy, for the years of dedicated service that he has rendered to the developing nations and for the efficient manner in which he has conducted the Space Applications Programme. We also offer our felicitations to Mr. Padang, who will take over as head of the Space Applications Programme.

(Mr. Sunaryo, Indonesia)

Before turning to the items on the agenda, I should like briefly to mention a few of the activities in Indonesia's space programme. As in the past, Indonesia's space programme is designed to derive the maximum benefit from the applications of space technology, particularly in the fields relating to remote sensing and communications satellites. Significant progress has been made recently in the acquisition and utilization of remote-sensing data for meteorology and agriculture.

The first generation of Indonesian domestic communications satellites, that is PALAPA-1 and PALAPA-2, is now in its fourth year of successful operation; while the second generation of PALAPA satellites is scheduled to be launched in 1982. In the context of co-operation within the Association of South-East Asian Nations (ASEAN) in the field of telecommunications, the Philippines has utilized the PALAPA satellite for its communications system, to be followed soon by Malaysia and Thailand, the other two ASEAN countries which will use Indonesia's domestic satellite system. In this regard, use of the PALAPA as the ASEAN regional satellite system was approved by the INTELSAT Extraordinary Meeting of the Assembly of Parties in Manila last April.

Over the years, co-operation with other countries has been an important part of Indonesia's space programme. For instance, in the fields of remote sensing, solar energy research and development and upper atmosphere research, co-operation with the United States of America, the Netherlands, France and the Federal Republic of Germany has been progressing for many years. A number of similar endeavours involving other countries are also being considered.

I turn now to the agenda. We note that remote sensing of the earth by satellites has been one of the items most widely discussed at previous sessions in both the Legal and the Scientific and Technical Sub-Committee.

As far as the legal aspect of remote sensing is concerned, the Legal Sub-Committee has discussed it at length on the basis of 17 draft principles. Nevertheless, it has not yet achieved any concrete results. In fact, certain proposed principles now contain more brackets than at earlier sessions.

(Mr. Sunaryo, Indonesia)

Those issues concern in particular the concepts of State activities in outer space, the freedom of dissemination of remote-sensing data and State sovereignty over natural resources. My delegation remains of the view that the principle of permanent sovereignty over natural resources and the principle which would restrict the dissemination of information thereon acquired through remote sensing should be recognized.

The United Nations can play a useful role in this regard by receiving notifications and disseminating remote-sensing data and results, thus enabling States lacking in technology to participate in remote-sensing applications. Co-operation should also be broadened through the establishment of regional centres. In this connexion, Indonesia would like to renew its offer to play host to one of the regional centres for processing and analysing remote-sensing data.

With regard to direct television broadcasting by satellites, extensive discussions on the draft principles continued during the last session of the Legal Sub-Committee with a view to further elaboration. Though the clean text submitted by Canada and Sweden could have provided a sound basis for compromise between the two contending concepts of freedom of information and sovereignty of States, it did not lead to a consensus. However, we are happy to note that those principles upon which agreement could be reached through slight modifications in positions have already been resolved, and we hope that the key principles will be further elaborated in order that we may come to an agreement.

My delegation is pleased to note that members have realized the need to complete work on the question of the definition and delimitation of outer space, including the issue of geostationary orbit.

(Mr. Sunaryo, Indonesia)

The importance of this issue cannot be over-emphasized when we consider the legal and other implications of the increase in activities in outer space by a growing number of States. Furthermore, any delay in reaching agreement on this issue may further blur the distinction between air law and space law, and thus needlessly complicate our task. The need, therefore, for a definition of outer space must be apparent to all those concerned.

Many States have expressed their support for efforts to determine a boundary. However, many also recognize the arbitrariness of selecting a criterion for such a boundary and recommended that other criteria should also be examined.

During consideration of the related question of the geostationary orbit, positions expressed at the previous meetings included the assertion of the equatorial States that the geostationary orbit as a limited natural resource was subject to the sovereignty of the subjacent States. As members are aware, no formal recommendations concerning this issue have so far been made.

My delegation is of the view that, bearing in mind the unique and specific nature of the geostationary orbit, its *sui generis* character should be taken into account in any definition of outer space whose limits have not yet been established. In addition, article 33 (2) of the 1973 Convention of the International Telecommunications Union (ITU) has recognized that the geostationary orbit is a limited natural resource.

As stated by several other delegations during the previous sessions, in accordance with established facts that orbit embodies a specific legal régime resulting from its exclusive nature and characteristics, which therefore should be accorded recognition. Furthermore, it has become a reality that at present most of the geostationary orbit is crowded with various satellites launched by States. As a result of the limited life-time of these satellites, the question arises as to whether the geostationary orbit should continuously be occupied by such a considerable number of spacecraft. Such continuous occupation would represent a *de facto* appropriation by a State that is contrary to article II of the 1967 Outer Space Treaty.

As to the moon Treaty, my delegation continues to support the very useful Austrian proposal and hopes that it will prove possible to reach a consensus

(Mr. Sunaryo, Indonesia)

during the current session. It is to be regretted that those issues on which agreement was possible in the past have now been returned for reconsideration. My delegation, like many other delegations, feels that the two key issues of the natural resources of the moon and other celestial bodies as the common heritage of mankind and a régime for their exploration should be resolved expeditiously.

I turn now to the programmes and activities relating to outer space within the United Nations. My delegation is of the view that this body could and should assist developing countries in defining their needs for space application in their economic development plans. In the context of the forthcoming United Nations Conference on Outer Space, it could render assistance to the developing countries in preparing national papers that will make a significant contribution to the success of the Conference. In this connexion, my delegation would like to express its appreciation of the dedicated and competent service rendered by the members of the Outer Space Affairs Division.

Concerning a space transportation system, we have noted with satisfaction that progress is being made in the various related programmes. In order to facilitate the work of the Scientific and Technical Sub-Committee, the study undertaken by the Secretariat on this question - in particular, its scientific, technical, economic and social implications - should be continued.

Indonesia in the past has expressed its support for the inclusion of the item on the use of nuclear power sources in outer space in the agenda, both in its legal and technical aspects. Consideration of this issue during previous sessions has proved useful and productive. The preliminary assessment by the Working Group of experts, which has sought to focus on the risks involved, needs further elaboration. We believe that the outcome of these efforts will lead to an agreement on a legal régime to govern the use of nuclear power sources in outer space.

With regard to the second United Nations Conference on the Exploration and Peaceful Uses of Outer Space, my delegation would like to reserve its right to speak again when the matter is taken up.

(Mr. Sunaryo, Indonesia)

Finally, we hope that the Committee will successfully conclude its work on at least some, if not on all, of the issues to which the General Assembly has requested it to accord priority. Given the complexity of the issues that still remain outstanding, Indonesia does not wish to underestimate the difficulties facing us. None the less, compromise is the essence of our task of enhancing co-operation in the peaceful uses of outer space.

The CHAIRMAN: I thank the representative of Indonesia for the kind words he addressed to me and to the Secretariat.

Mr. HOLLAI (Hungary): Mr. Chairman, let me start with a word of welcome to you and say that you are missed here. I think it would be superfluous for me to speak about your qualities and diplomatic skill. Instead, let me say that I welcome you as being an old faithful, in spite of your youth, and as one dedicated to the cause of the United Nations, to this Committee and to the subject that we are dealing with.

I shall start by expressing my delegation's deep satisfaction that the session of our Committee has coincided with one of the most important events of recent times: the signing of the SALT II Agreement between the USSR and the United States. Let us hope that we are not mistaken in our expectations that the signing of the SALT II will give impetus to the process of détente that has suffered much of late. We are fi mly convinced that one of the far-reaching implications of that Agreement will be a great contribution to international co-operation in the peaceful uses of outer space.

The current achievements in the peaceful uses of outer space and their reflections in public opinion mark time and again the continuous interest of mankind in the exploration of outer space. In the period since our Committee's last session, we have been able to witness further outstanding results from the various naticnal programmes as well as from the increasing international co-operation in this regard. We particularly have in mind the manned space programmes carried out by the Soviet Union along with cosmonauts from the socialist countries. My delegation would like to pay a tribute to the two Soviet cosmonauts,

(Mr. Hollai, Hungary)

Vladimir Ljahov and Valerij Rjumin, who have currently been working on the SALYUT-6 space station for well over 100 days, and the cosmonauts of the People's Republic of Bulgaria and the USSR, Georgi Ivanov and Nikolai Rukasnikov, on their performance on board SOYUZ-33. We look forward to the extended manned space programme of the Soviet Union and other socialist countries. We believe that our Committee should pay appropriate attention to that programme since the wide variety of results deriving from these flights are of significant value to the international community as a whole. By the same token, we wish to express our appreciation to those delegations which have provided us with the most useful details on the programme.

(Mr. Hollai, Hungary)

Before turning to some specific points of the comprehensive reports of our two Sub-Committees, I wish briefly to review some of the national space activities of my country during the past year. Hungary intends as in the past, to contribute within its modest means to international co-operation in the peaceful uses of outer space that is fruitful as well as useful to all. During the past year there has been a reorganization of the main national direction and co-ordination of space research in Hungary, since the former Governmental Committee for Space Activities has been superseded by the formation of the INTERCOSMOS Council of the Hungarian Academy of Sciences. We can expect more scientific and academic guidance in this new form of organization.

In the manned space programme of INTERCOSMOS, Hungary is proud that it will provide future astronauts to be carried on a Soviet spaceship. We are looking forward with great expectations and confidence to this undertaking. Hungarian space research programmes continue to be carried out in the fields of biomedical research, cosmic radiation biology, protection from radiation, and cosmic physiology.

In our space applications programme, remote sensing of earth resources and the environment is in the forefront of our efforts. Test areas have been designated for research, and substantial work has started, to make use of satellite surveys for corrections to be made in small and medium-scale maps.

In meteorology, one of our main tasks appears to be the measurement of solar radiation energy absorbed in various atmospheric zones in clear weather and in different conditions of cloudiness as well. In this area we have found it possible to determine, from satellite-transmitted data, the radiation energy gain or loss for the atmosphere and the earth's surface respectively.

The question of communications has become more and more important in our national space activities, particularly since the Hungarian ground station of the INTERSPUTNIK space telecommunications system has been operating successfully. Special emphasis is put on studies of questions relating to the ground reception of direct satellite broadcasting and the compatibility of ground and satellite communications systems.

Hungary has continued to provide a wide range of instruments to be used in the various programmes of the INTERCOSMOS and INTERSPUTNIK organizations.

(Mr. Hollai, Hungary)

These two international organizations of the socialist countries have remained in the focus of the Hungarian space research. On the other hand, our participation with COSPAR, the International Astronautical Federation (IAF), the World Meteorological Organization (WMO), and other international organizations should be properly recorded.

I now turn to the reports of the two Sub-Committees on their work this year.

Before doing so, I cannot fail to express my delegation's deep appreciation to the Chairmen of the two Sub-Committees, Mr. Wyzner of Poland and Mr. Carver of Australia, for their dedicated contribution to the work accomplished during the last sessions this year.

The report of the Scientific and Technical Sub-Committee reflects a serious and responsible approach to the complex issues facing the Sub-Committee. Regarding the questions relating to the remote sensing of the earth by satellite, my delegation had hoped that the Sub-Committee would be able to agree on the proposal to classify remote sensing data into three categories - global, regional, local - on the basis of spatial resolution. Since this has not yet been the case, we should make determined efforts to achieve an agreement on this matter.

With respect to the dissemination of primary data, we feel somewhat discouraged that a few delegations insist on an unrealistic approach to this issue and seem unwilling to realize that the method of unrestricted dissemination is the reflection of ill-advised thinking. We strongly believe that the compromise formula of a regulated nature supported by many delegations - as reflected in paragraph 14 of annex I of the report of the Sub-Committee - is the logical solution to this problem. We concur with the view that an appropriate limit would be a photographic resolution of 50 metres.

Another agenda item that is of particular interest to us is the question of the second United Nations Conference on the Exploration and Peaceful Uses of Outer Space. We commend the work done in this respect, and we are looking forward to a constructive debate at this session. In our judgement quite remarkable progress has been achieved in the preparation of the Conference by the Sub-Committee. In this context, as we have already indicated, Hungary whole-heartedly welcomes the invitation extended by the Government of the USSR to hold the Conference in Moscow. That invitation was reaffirmed yesterday by

(Mr. Hollai, Hungary)

the Permanent Representative of the Soviet Union. We are confident that that invitation will receive favourable attention in the Committee.

My delegation wishes to express its satisfaction with the responsible and businesslike way in which the Sub-Committee has tackled the complex question of the use of nuclear power sources in outer space.

Turning to some of the items dealt with by the Legal Sub-Committee, we should like to express our appreciation regarding the outcome of the session of the Sub-Committee. We realize that a number of issues have reached a point where hard and maybe painful decisions are due to be made in order for us to reach consensus on them. We are prepared patiently to look forward to the stage of this session of the Committee, when we are expected to give impetus to the Legal Sub-Committee's future work.

Regarding the question of the elaboration of draft principles governing the use by States of artificial earth satellites for direct television broadcasting, we wish to express our deep appreciation to the Canadian and the Swedish delegations for the contribution they have made by providing a joint working paper on this subject which in our view is clearly designed to facilitate the reaching of a possible consensus. We share the view that that working paper represents a fair balance of the different points of view. We hope that those delegations which have advocated outdated arguments against a solution on the basis of this working paper of the complex issue of direct television broadcasting will be more forthcoming. For our part, we are ready to go along with the main lines of the Canadian and Swedish text.

We welcome the discussion of matters relating to the definition and/or delimitation of outer space, and in this regard we wish to support the proposal for the establishment of a conventional boundary between outer space and air space at a certain altitude. In our view the working paper of the Soviet Union on this question represents a constructive effort, and we are prepared to seek an agreement on its merit. We hope that the Committee will study this working paper carefully. In the light of the debate on the question of the geostationary orbit, the Hungarian delegation reaffirms its position as follows. The geostationary orbit is inseparable from outer space. Consequently, its use falls under the relevant provisions of the 1967 Outer Space Treaty. We strongly believe, therefore, that

(Mr. Hollai, Hungary)

use of the geostationary orbit is free for all States without discrimination of any kind, in accordance with the established rules of international law.

In conclusion we wish to express our gratitude and appreciation to the Outer Space Division of the Secretariat, which, under the effective guidance of Mr. Perek, has continued to help us in our work in an extremely efficient way.

The CHAIRMAN: I thank the representative of Hungary for the warm words he addressed to me and to the Secretariat.

Mr. RYCHLEWSKI (Poland): Mr. Chairman, the Polish delegation wishes to extend to you a very warm welcome in our midst in connexion with the current session of the Committee. Indeed, your brilliant chairmanship is good testimony of the advantages which the practice of well-conceived continuity can have for the work of an important body like ours. We listened with great attention to your introductory statement last Monday. The deep and precise evaluation of the present stage of the Committee's work as well as the pertinent suggestions you made concerning our work certainly deserve our most careful consideration.

Poland continues to attach great importance to peaceful co-operation in the exploration and exploitation of outer space. Engaged as we have been for the last 35 years in the effort to provide a happy and peaceful life for our present and future generations, we view international co-operation in outer space as one of the means of achieving that lofty objective.

Since the very beginning of the space age, we have consistently advocated the use of outer space exclusively in the interests of peace and the strengthening of international security. Contributing to the maintenance of international peace, in whatever form, boils down to promoting the most sacred right of all human beings - the right to live in peace. An outstanding contribution to the cause of that right has been made lately by the signing of the SALT II Treaty between the Soviet Union and the United States. It does not take much political foresight nor imagination to realize how measures like that contribute to promoting broader international co-operation, also in outer space. Only a few days ago the feelings of the Government and the people of Poland about the momentous event in Vienna last week-end were conveyed in special congratulatory messages addressed by the First Secretary of the Central Committee of the Polish United Workers' Party, Edward Gierek, to the General Secretary of the Communist Party of the Soviet Union, Leonid Brezhnev, and to the President of the United States, Jimmy Carter.

(Mr. Rychlewski, Poland)

Benefits arising from broad international co-operation in outer space can precisely help to enhance mankind's interests and solve a number of problems facing the world today. With this in mind, we have always actively participated in the work of this Committee and pursued efforts aimed at the elaboration of international instruments governing outer-space activities.

For a medium-sized country like mine, truly effective participation in space ventures can be possible only in the framework of international co-operation. We are happy to be members of one of the most successful and fruitful programmes of such co-operation, INTERCOSMOS. In the last few years the most significant stimulus to a further advance in the programme in question has been the USSR initiative to have cosmonauts of other socialist countries participate in manned space flights on board Soviet space vehicles and stations. A year ago, during the twenty-first session of our Committee, we witnessed the flight of the first Polish cosmonaut, Mirosaw Hermaszewski. The flight took him into space together with his Soviet colleagues, Pyotr Klimuk, Vladimir Kovalonok and Aleksander Ivanchenkov. All of them performed important scientific experiments, as part of the comprehensive INTERCOSMOS space programme. As the Committee is aware, so far cosmonauts from Bulgaria, Czechoslovakia, the German Democratic Republic and Poland have made ventures into space. Others will be coming to prove what benefits can be derived from the integrated co-operation of the socialist States.

Intensive preparation of the cosmonauts and a scientific programme for the Polish flight had started as early as 1976. Its successful completion made possible the realization of 11 scientific experiments. Five of them were prepared exclusively by Poland. Others were the result of a joint effort of the Soviet Union, Czechoslovakia and the German Democratic Republic.

The first Polish experiment was in the field of space technology. Its purpose was to study microgravity influence on the crystallization of the three-component semiconductors. Initial investigations proved the excellent quality of crystals obtained during a long period of crystallization. Inner homogeneity proved to be about six times better than that obtained under laboratory conditions.

(Mr. Rychlewski, Poland)

The other four experiments prepared in Poland covered space medicine. In an experiment coded "TASTE", the degree of taste under microgravity conditions was tested by means of electronic equipment, specially constructed for the purpose. Dynamic checking of cardiovascular-system responses under conditions of a load effort was the object of the "CARDIOLEADER" experiment. The results obtained will serve to prepare methodology and equipment to carry on programmed training. The purpose of the experiment "HEALTH" was to assess cosmonauts' physical efficiency.

There were also experiments devoted to studies of different phenomena on the surface of the earth and in the atmosphere. Pictures of Poland's territory were taken by a multispectral camera which provided rich data for remote-sensing purposes to be used in agriculture, geology and other branches of the national economy.

One of the other Polish achievements in space research in the last year was the experiment "IONOSOUND", successfully conducted aboard the INTERCOSMOS-19 spacecraft, launched this year. Its purpose was measurement, in different frequencies, of the intensity and natural noises in the ionospheric plasma. A study of these phenomena in the ionosphere proved important from the point of view both of practical applications in telecommunications and of theoretical investigations of plasma physics.

One of the important scientific results we achieved was preparation of the photochemical model of the ionosphere which, for the first time, takes into account the chemical reactions among 38 types of ions.

Besides the already-mentioned important achievements of last year, considerable successes have been obtained in space physics, the earth's field of gravity and geodynamic phenomena.

(Mr. Rychlewski, Poland)

Poland's activity in space research is first of all based on our membership in INTERCOSMOS. We also participate in the work of international organizations, such as COSPAR, the International Astronautical Federation and other scientific unions. We have good bilateral relations with different institutes in the United States of America, France, Austria, the Federal Republic of Germany and Finland, to mention but a few.

The programme of the intensification of space research in Poland, now under preparation and so greatly stimulated by our first space flight, provides for a concentration of efforts on space physics, space technology and development of remote sensing and telecommunication systems.

One of the important items on the agenda of the present session of our Committee deals with preparations for the second United Nations Conference on the Exploration and Peaceful Uses of Outer Space. We highly appreciate the work accomplished in this regard by the Scientific and Technical Sub-Committee. However, some questions still remain unresolved. We strongly believe that at least some of them can be decided during this session. First and foremost, the Soviet proposal to hold the Conference in Moscow would create extremely favourable conditions for a most successful outcome. The Polish delegation wishes to lend its full support to the proposal and we are ready and willing to take an active part in all the preparatory work for the Conference.

Another problem on our agenda is the remote sensing of the earth from outer space. In our opinion, there are scientific and technical questions still to be resolved and therefore the issue should be further discussed by the Scientific and Technical Sub-Committee. Nevertheless, we believe that the dissemination of data should in no way be detrimental to the economic or political rights of States. Likewise, the problem of spatial resolution is of crucial importance.

In so far as nuclear power sources in space are concerned, we have no doubt that, under certain conditions, this kind of energy can be safely used in outer space. I wish also to underline in this context the fact that all too many important undertakings in outer space which could not have been carried out without the utilization of nuclear power sources. In the view of the Polish delegation, the Scientific and Technical Sub-Committee is the only proper forum for a consideration of all the problems related to that question. The inclusion of all pending issues in the agenda of the Legal Sub-Committee which

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already has a very heavy workload would in no way serve any useful purpose. My delegation will address itself to the subject of the Legal Sub-Committee in a separate statement.

In concluding my remarks, Mr. Chairman, I rest assured that thanks to your wise and competent leadership, it will prove possible to make significant progress in solving the problems before us. The Polish delegation will spare no effort to bring that goal still closer to reality.

The CHAIRMAN: I thank the representative of Poland for his kind words.

Mr. FUJITA (Japan): Mr. Chairman, since this is the first time my delegation has spoken, I wish to join with previous speakers in expressing great pleasure at seeing you once again presiding over this Committee. I should also like to express my delegation's appreciation to you, Sir, for your lucid and enlightening remarks at the beginning of the current session of this Committee. We hope that, under your experienced and wise guidance, this session of the Committee will have fruitful discussions on the various items now before us.

Our Committee is now approaching a new era in the 1980s. Throughout the 1970s we witnessed a long series of advances in the fields of the exploration and utilization of outer space, not only on the part of the United States and the Soviet Union, whose dramatic achievements have thrilled the world for more than two decades now, but also on the part of a growing number of other countries, including my own. Through these efforts, the world community has not only obtained enormous knowledge about outer space but also realized great practical benefits for the whole world. With the further development of space technology that may be anticipated in the 1980s, human activities in outer space will continue to grow, and international co-operation in the peaceful uses of outer space will be increasingly necessary. My delegation hopes that this Committee, with the support of all the Member States will be able to meet the new requirements of the coming age as effectively as it met those of the past, thereby making a still greater contribution to promoting the peaceful uses of outer space for the benefit of all mankind. My country is determined that, by

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developing its own space technology, it will assume a more active part in this vast international undertaking to promote the peaceful uses of outer space.

Before commenting on substantive items on our agenda, I wish to make some brief remarks on the latest developments in Japan's space activities.

(Mr. Fujita, Japan)

Japan has now entered the tenth year of its artificial earth satellite launching programme. Japan's first satellite, OSUMI, was launched in February 1970 by an L4-8 rocket launched from Kagoshima Space Centre.

During the succeeding decade Japan has launched a total of 18 satellites, which have carried out various useful observations and experiments. In these space development programmes, Tokyo University's Institute of Space and Aeronautical Science (ISAS) has played a central part in the development and launching of scientific satellites: of the 18 Japanese satellites orbited so far, it has launched 10 scientific satellites; the other satellites, intended mainly for practical use in meteorology, communications, broadcasting and technological tests, have been sent up by the National Space Development Agency (NASDA). The launching of these satellites for scientific or practical purposes has been, and is still, contributing substantially to Japan's space development efforts. The latest of these satellites, the HAKUCHO, or Swan, was launched into orbit on 21 February this year for research in radio astronomy. Its full astronomical observations began early in March, and its continuous observations will be helpful in discovering and locating new radiation bursts and sources.

With the completion of its nearly two-decade-old first stage of space development programmes, aimed at laying the foundations for its future space activities, Japan is now entering a second stage of promoting various projects in both scientific research and practical applications. In the light of the aforementioned developments at home and of the ongoing efforts for peaceful uses of outer space in various countries, Japan's Space Activities Commission has decided to initiate a wide range of studies and surveys in preparation for the second phase of Japan's space development programme, as well as to begin developmental work on an earth observation satellite, a communication satellite for practical use and so on. Consequently, intensive efforts are now under way for the development and launching of new satellites for various purposes, including a marine observation satellite (MOS-1), a geostationary meteorological satellite (GMS-2), an experimental communications satellite (ECS-b) and so on.

With regard to the future operational satellites for telecommunications and broadcasting, Japan is preparing for launching communications satellites CS-2a and CS-2b for domestic use in fiscal 1982 and 1983 and, later, broadcasting

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satellites. For the operation of these satellites, a new organization is scheduled to be established in August this year.

I now turn to the question of international co-operation in Japan's space activities. The Japanese satellite KYOKKO, launched in February of last year for the purpose of observing the density, temperature and composition of plasma, is sending back useful data that is being directly received by Canada as well. On the other hand, the valuable data sent back by a Canadian satellite, ISIS, is being received by a ground station in Japan and at the Showa Base in Antarctica, which we maintain for peaceful research purposes.

Japan's satellite, HIMAWARI, is operating in co-operation with the Global Atmospheric Research Programme (GARP) being carried out by WMO and the meteorological data obtained therefrom is being disseminated to many countries in Asia and the Western Pacific region. Further, in accordance with the agreement concluded between Japan and Australia, Japan is to provide Australia with weather information, most often in cases of unusual or severe weather conditions.

In the area of remote sensing, in February of this year the National Space Development Agency (NASDA) began receiving data from LANDSAT at its newly established ground station and providing such data to various users. The Japan International Co-operation Agency (JICA) has been providing five-week training programmes on remote sensing to approximately 10 experts concerned with that field, who are invited from the countries in the region of the Economic and Social Commission for Asia and the Pacific (ESCAP). These programmes are for analysis of remote sensing data and its application to land utilization, forestry, fishery, meteorology, environmental protection and so on. Another such programme has been under way since 14 June and is expected to be concluded in August.

I should now like to turn briefly to some of the main items this Committee is dealing with. The first item is nuclear power sources.

It is a source of satisfaction to my delegation that a Working Group on the Use of Nuclear Power Sources was established at the last session of the Scientific and Technical Sub-Committee and that it has started considering the technical aspects of safety measures relating to the use of nuclear power

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sources in outer space, as recommended by our Committee last year. My delegation appreciates all the constructive efforts made by the Working Group in its consideration of this most difficult, but important, issue and in the preparation of its report, which appears as annex II to the report of the Scientific and Technical Sub-Committee (A/AC.105/238).

My delegation took particular note of the fact that the Working Group called for further studies in four subject areas, as referred to in paragraph 40 of the annex, though it concluded that nuclear power sources could be used safely in outer space, provided certain safety considerations, specified in the report, were met in full. In the view of my delegation it was quite natural for the Working Group not to have concluded its consideration of this most difficult issue at its first one-week session. Therefore, my delegation wishes strongly to support the recommendation of the Working Group, which the Scientific and Technical Sub-Committee adopted unanimously, that arrangements be made for the Working Group of experts to meet for one week during the next session of the Scientific and Technical Sub-Committee with a view to providing some basis for the consideration of legal aspects of the question by the Legal Sub-Committee.

The question of nuclear power sources in outer space was also discussed by the Legal Sub-Committee at its last session, and the Sub-Committee suggested that the parent Committee should consider whether a separate item on the matter should be included on the agenda of the 1980 session of the Legal Sub-Committee.

As members are well aware, during the course of the general exchange of views at the last session of the Legal Sub-Committee, many delegations referred to this issue. When the debate was held under the agenda item "other matters", a number of delegations again intervened simply to speak about the question of the use of nuclear power sources in outer space. No delegations spoke on matters other than that question. This fact, in my delegation's view, represents a concern widely held among Member States about the use of nuclear power sources in outer space, as well as their belief that consideration of the legal aspects of this issue, although it may be of a preliminary nature, should be initiated in the Legal Sub-Committee as soon as possible. Accordingly, my delegation wishes to support the view that the Legal Sub-Committee should include a separate item dealing with the use of nuclear power sources in outer space on the agenda

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of its next session. We should make every possible effort to reduce the risks involved in space activities to a minimum.

The second item is the United Nations Conference on Outer Space. My delegation considers that this question is one of the most important ones which our Committee has to deal with effectively at the current session. Our Committee, in its capacity as the Preparatory Committee for the Conference, has to consider the related work of the Scientific and Technical Sub-Committee contained in section III of its report (A/AC.105/238) with a view to working out a consensus on various questions relating to the preparation of the Conference.

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On this occasion my delegation wishes to express its particular appreciation to Mr. Yash Pal of India and Mr. Carlos Moreira Garcia of Brazil, who presided over the Working Group established by the Scientific and Technical Sub-Committee and an informal drafting group, respectively. Many delegations, including my own, are convinced that the United Nations Conference on Outer Space could be of considerable benefit to all the countries of the world, both developed and developing, if it were well prepared in advance. Therefore, my delegation hopes that this Committee, through constructive deliberations and consultations, both formal and informal, will be able to carry out its task of submitting to the thirty-fourth session of the General Assembly its recommendation on the date and the venue of the Conference, together with initial recommendations on preparations for the Conference as requested by General Assembly resolution 33/16.

The third item is remote sensing. Again this year the Scientific and Technical Sub-Committee had detailed discussions on the question of remote sensing of the earth by satellite. However, it is noted that the Sub-Committee could not agree on the classification of primary data, the dissemination of primary data and information, and the establishment of a remote sensing panel of experts. My delegation has carefully studied the relevant part of the report of the Sub-Committee, though its position on these questions remains unchanged.

As for the legal implications of remote sensing of the earth from outer space, the Legal Sub-Committee continued its consideration of the question at its last session with the aim of formulating draft principles. Although the Sub-Committee, contrary to what had been hoped, could not make much progress, such continued consideration was quite helpful for a clearer understanding of the positions of respective delegations, which, we trust, will facilitate the Sub-Committee's future efforts in formulating a generally acceptable set of principles on remote sensing.

The fourth item is direct television broadcasting by satellite. Strenuous efforts were again made at the last session of the Legal Sub-Committee for the elaboration of draft principles on the basis of the texts already formulated and the clean text submitted to the Sub-Committee by the delegations

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of Canada and Sweden. Some other proposals and suggestions which were presented during the course of the discussions were also considered. The Sub-Committee could not, however, reach agreement on some outstanding issues and recommended that this Committee consider whether the elaboration of draft principles on this subject could be concluded or whether further progress could be achieved at the current session of this Committee.

In view of the importance of this subject, which requires careful and detailed consideration by legal experts, my delegation considers that our Committee should renew its recommendation to the Legal Sub-Committee to make further efforts at its next session with a view to working out a generally acceptable solution. We should not be discouraged by the scale of the difficulties involved in the elaboration of draft principles for direct television broadcasting by satellites.

The fifth item is the draft treaty relating to the moon. At its last session the Legal Sub-Committee continued its work on drafting a treaty relating to the moon with a view to completing its work on this topic. However, its work proved to be far from encouraging. In other words, no progress was made in resolving the three main outstanding issues, including the question concerning the natural resources of the moon. We are convinced that, in order to achieve consensus on an international instrument relating to the moon and other celestial bodies, this Committee should decide to recommend once again that the Legal Sub-Committee make further efforts at its next session.

The sixth item is the United Nations Space Applications Programme. The significance of the Space Applications Programme being carried out by the United Nations Expert, Mr. M. G. S. Murthy, particularly for the benefit of developing countries, cannot be over-emphasized. We wish to express our deep appreciation to Mr. Murthy, who has in co-operation with some States Members of the United Nations made every possible effort in promoting the provision of panels, seminars, training workshops and so on relating to remote sensing. We hope that the proposed United Nations Space Applications Programme for 1980, which was already approved by the last session of the Scientific and Technical Sub-Committee, will be endorsed by this Committee.

(Mr. Fujita, Japan)

Finally, I should like to refer very briefly to the question of SKYLAB, which will be re-entering the earth's atmosphere in the very near future. Unfortunately, the uncertainty surrounding the questions of when and where fragments of SKYLAB might fall to earth has been a cause of considerable concern to all countries, including my own, and has once again reminded us of the necessity of bending every effort to keep the dangers involved in man's space activities to a minimum. Therefore, I wish to express my delegation's appreciation to the United States for presenting to this Committee yesterday a detailed report on SKYLAB. My country is also appreciative of the United States efforts to keep the world public and Governments informed on the changing status of SKYLAB. In the view of my delegation, it is this sort of openness and co-operation that we need for the success of our common undertaking to promote the peaceful uses of outer space in the future, while avoiding a recurrence of this sort of problem. My delegation shares the strong hope that the United States will keep the world community well informed on the changing status of SKYLAB in the coming weeks.

The CHAIRMAN: I thank the representative of Japan for his kind words.

Mr. YANGO (Philippines): Mr. Chairman, it is a pleasant duty and a distinct privilege for me to speak in this Committee today. Your excellent stewardship of the twenty-first session of the Committee led to constructive deliberations on the various items on its agenda, and that is why my delegation is indeed pleased to see you once again presiding over the current session of our Committee. I am confident that, under the guidance of your demonstrated leadership and unflagging commitment to the promotion of international co-operation in outer space, the difficult tasks before this Committee will be made much easier.

On behalf of the Philippine delegation, I should like to express our profound appreciation for the valuable contribution made to the work of the Committee by the Chairmen of the two Sub-Committees, Mr. Carver of Australia, Chairman of the Scientific and Technical Sub-Committee, and Mr. Wyzner of

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Poland, Chairman of the Legal Sub-Committee. I should also like to convey my delegation's appreciation for the excellent job done by the Secretariat and, particularly, the Outer Space Affairs Division in providing the Committee and its technical subsidiary bodies with the needed support and assistance.

The possibility of utilizing the services of the United Nations Outer Space Affairs Division to assist developing countries in defining their needs for space applications and in preparing national papers offers an excellent opportunity for wide and informed participation by Member States at the second Outer Space Conference and should be fully discussed at the current session. It is our hope that the machinery and expertise of the Outer Space Affairs Division will be strengthened to enable it to cope with increasing outer space activities within the United Nations system.

(Mr. Yango, Philippines)

Allow me also to extend through you, Mr. Chairman, our congratulations to the delegations of those countries which made significant contributions to the advancement of space science and technology during 1978. The Philippines, although only in its second year of membership in the Committee, reiterates its full support and co-operation with respect to the evolution of a régime relating to the peaceful uses of outer space which will open new frontiers in international co-operation and understanding.

Our own activities in the applications of outer space technology have been conducted on a modest scale, judging by the standards of achievement of the progressive countries in the field of outer space. Nevertheless, our activities reflect the high regard with which our Government views the role of outer space science and technology in the socio-economic development of our country.

Our Government has taken initial steps to integrate and co-ordinate all activities relating to outer space technology in anticipation of a greater participation in its benefits. Our principal concerns at the moment are in the areas of remote sensing, direct broadcast communication and meteorology. We believe that the impact of developments in outer space science and technology in a developing country like the Philippines will be most beneficial in those areas.

Our country continues to support and participate in the outer space programmes of the United Nations and of non-governmental organizations. In April 1978 the Philippines acted as host to an international seminar on remote sensing in Manila. Very recently, last April, we again participated in this continuing exercise, with the United States as host. Studies are being conducted on the establishment of a cartographic centre. The Philippines participated actively in the Tropical Cyclone Project of the World Meteorological Organization (WMO), a project which promises to generate lasting benefits to a country which is a frequent victim of destructive typhoons. We are seeking to expand and improve our communications system through co-operative arrangements with our Association of South-East Asian Nations (ASEAN) neighbours, utilizing the spare capacity of the Indonesian satellite PALAPA.

(Mr. Yango, Philippines)

Major research and applications programmes of the Philippines completed in 1978 through satellite remote sensing included a national forest inventory, determination of water hyacinth infestation, land use classification, mangrove area inventory, coral reef studies, mineral and geothermal exploration, bathymetry, crop monitoring and watershed studies.

We take note of the enormous task facing the Committee in resolving the many complicated technical and legal issues relating to the peaceful applications of outer space. Remote sensing by satellites continues to draw mixed and diverse opinions on the technical definition of terms. No clear consensus has crystallized on the long drawn-out question of the co-ordinating role of the United Nations in remote sensing. The legal aspects are deeply intertwined with the technical problems of remote sensing, a situation which underscores the importance of co-ordination in the work of the corresponding Sub-Committees in this field. We hope that interchange of ideas during the current session will lead to some fruitful results.

In this connexion, my delegation awaits with keen interest further progress in the formulation of draft principles on remote sensing, the elaboration of draft principles governing the use of artificial earth satellites for direct television broadcasting and the thorough examination of a draft treaty relating to the Moon. While realizing the sensitivity with which some delegations regard matters relating to the definition and delimitation of space and outer space activities, and bearing in mind, inter alia, questions relating to the geostationary orbit, my delegation hopes that the divergent views with regard to this item will be resolved with a view to reaching a satisfactory compromise.

We commend the preliminary work of the Working Group on the Use of Nuclear Power Sources in Outer Space at the sixteenth session of the Scientific and Technical Sub-Committee as a positive and forward step towards resolving the technical and safety problems relating to the use of nuclear power sources in space. Our delegation shares the feeling expressed by other delegations that the outright banning of nuclear sources in space would constitute a negative approach that would severely limit the flexibility

(Mr. Yango, Philippines)

of outer space exploration. We feel confident and optimistic that this Committee will be able to establish in its future work an acceptable, technical criterion that could serve as a guide in the design and use of nuclear power sources in space, while at the same time taking cognizance of the safety of the human environment. We expect to elaborate further on this particular item of the agenda at the appropriate time.

We take note of the progress on the convening of the second Conference on Outer Space. We look forward to a profitable exchange of ideas and fresh opportunities for international co-operation that will be responsive to the aspiration and needs of the developing countries. In this connexion, my delegation appeals to the members of the Committee to give serious consideration to the items on the agenda so that we may achieve concrete results at this current session.

The establishment of an international space agency structured along the lines of the International Atomic Energy Agency (IAEA), as proposed by the representative of Pakistan, deserves serious consideration by the Committee.

We are on the threshold of establishing a framework for international co-operation in outer space. We should now cross the threshold with vision and renewed determination, lest our modest gains be eroded by passivity and indecision.

The CHAIRMAN: I thank the representative of the Philippines for the kind words he addressed to me.

Mr. BYATT (United Kingdom): Mr. Chairman, I should like to begin by welcoming you once more to the chair of this Committee and congratulating you on a concise and lucid opening statement at the beginning of our session. Perhaps I could take up two points from your opening statement. First, my Government shares your hope that this Committee will make a real effort to break the log-jam that seems to have developed recently in some areas of its work. We hope that under your wise and experienced chairmanship the current session will result in progress in what are admittedly difficult issues. Certainly we trust that the tendency to which you drew attention in your statement to unpick the degree of consensus already achieved and thus move backwards will not be repeated. Secondly, my delegation shares your view that if it does not prove possible to bridge the gaps that exist, particularly in some of the subjects dealt with by the Legal Sub-Committee, then we may have to leave those issues to one side for the present and concentrate on other areas where it may be possible to make progress.

More generally, given the very modest achievements of recent meetings of the Committee and its two Sub-Committees, which together take up some 10 weeks of United Nations time each year, it may be that we should take a fresh look at our working methods. There may be scope for greater co-ordination of meetings with a view to reducing wasteful duplication - not least, duplication of general statements. There may be ways of bringing together scientific and legal experts where their areas of expertise overlap. I note that the representative of France made similar suggestions in his statement before the Committee yesterday. I also have in mind the statement made by the Secretary of this Committee on the financial and other pressures on Conference Services. My Government will be ready to consider sympathetically any proposals for reorganization of the Committee's working methods that may be made. Meanwhile, we welcome the fact that the agenda for this session points up the key issues in the reports of the Scientific and Technical and the Legal Sub-Committees. This new approach could provide a more constructive basis for the Committee's deliberations.

Before concluding my introductory remarks, I should like to pay a tribute to the retiring United Nations Expert on Space Applications, Mr. Murthy, for his devoted services to the United Nations over many years and to welcome his successor, Mr. Padang, whose sterling work in the Outer Space Affairs Division is already well known to many.

(Mr. Byatt, United Kingdom)

The world has begun to capitalize on space technology, adapting the spectacular United States and Soviet achievements in this field to applications that meet the stringent test of economic and commercial cost-effectiveness. For example, we welcome the entry into force on 16 July of the International Maritime Satellite Organization, which will operate on a world-wide basis for the benefit of the whole maritime community. Another example is the provision by the European Space Agency (ESA) of a European Telecommunications System to be operated by European posts and telecommunications authorities to supplement terrestrial communications networks.

The United Kingdom continues to regard the European Space Agency as its focal point for investment in space activities. OTS-2 has now completed its first successful year and has been used for pre-operational activities and demonstrations. The United Kingdom continues to make use of data from METEOSAT for weather forecasting purposes and in the context of the Global Atmospheric Research Programme. British astronomers have welcomed the flow of data from the International Ultra-Violet Explorer, a joint NASA-European Space Agency-United Kingdom project.

In June, ARIEL-6 was successfully launched by NASA to be used to study high-energy astrophysics, X-rays and cosmic rays. Experiments on board are provided by four British universities and by the Royal Aircraft Establishment at Farnborough in the United Kingdom, under the direction of the British Science Research Council. In the context of the ESA Earthnet Programme, we have provided ground facilities for the reception and processing of data from the NASA Nimbus-A satellite. Oceanographers and geophysicists in Europe have been able to study the wealth of data that has been fed back.

I turn now to specific items on our agenda. Remote sensing has the potential, as the science develops, to provide considerable benefits for the management of world resources. The United States LANDSAT programme, for example, has provided the world and this Committee with a great deal of practical experience and knowledge of the operation of an experimental remote sensing system. My delegation is not aware of any harmful consequences to States whose territory has been the object of remote sensing by LANDSAT. Quite the contrary. We therefore continue to oppose any limitations on remote

(Mr. Eyatt, United Kingdom)

sensing or on the dissemination of remotely sensed data, and information derived therefrom, so that the maximum benefit may be obtained from remote sensing by as many people as possible. We have noted that some progress was made in the Legal Sub-Committee, and we hope that it will be maintained at this session.

On the subject of direct television broadcasting by satellites, my Government's approach is governed by our attachment to the concept of free dissemination of information across frontiers and the right of the individual to receive and to impart it. We consider that the Canadian-Swedish "clean text", as it is styled, is a suitable reconciliation of the differing attitudes on this issue. The Committee is not far from agreement on a text of principles, and we urge all concerned to work for this.

My delegation favours working towards a multilateral legal régime governing the use of nuclear power sources in outer space. We welcomed the Canadian proposals presented at the last session of the Legal Sub-Committee. We attach importance to a free and open discussion of this subject, which concerns all countries with an interest - whether direct or indirect - in outer space. We wish to talk about all aspects of nuclear-powered spacecraft, and not to focus attention on any particular incident. We commend the work done by the Working Group on Nuclear Power Sources to identify the scientific and technical items that need to be considered. Our firm view is that the Legal Sub-Committee should be instructed to continue studies on this subject in parallel, to examine the adequacy of existing international legal instruments and to formulate reasonable and practical international measures relating to the use of nuclear material in space. We should, therefore, like to see nuclear power sources inscribed as a separate item on the agenda of the next session of the Legal Sub-Committee.

The drafting of a moon treaty has been under way for a number of years. Thanks to the efforts of the Austrian delegation to reconcile diverging views, a draft text has been worked out that can, in our view, form the basis of an acceptable moon treaty with little further amendment. We very much hope that progress will be made at this session towards its general acceptance.

(Mr. Eyatt, United Kingdom)

Finally I turn to the preparations for the forthcoming United Nations Conference on the Peaceful Uses of Outer Space. The Scientific and Technical Sub-Committee has already succeeded in preparing the way by agreeing on a draft agenda. It will now be for the Working Group that meets on the margins of this Committee to try to agree on recommendations about the date, venue, form and secretariat of the Conference. My delegation intends to play a full part in the Working Group. Meanwhile, I should like to emphasize once again the need for the Conference to concentrate clearly on the scientific and technical aspects of outer space technology.

My delegation will wish to address the Committee further and in more detail on this and on other subjects as they come up in the agenda of this session.

The CHAIRMAN: I thank the representative of the United Kingdom for the kind words he addressed to me and to the Secretariat.

Mr. HOLAN (Australia): Mr. Chairman, I wish to take this opportunity on behalf of the Australian delegation to join with other delegations and express pleasure at seeing you back in the Chair. We look forward to a constructive and fruitful session under your experienced guidance.

At the same time I should like to express the Australian delegation's appreciation for the contribution to our work of the Chairmen of the two Sub-Committees and for the important part played by the members of the Outer Space Affairs Division of the United Nations. We are truly indebted to those officers.

At the last session of the Scientific and Technical Sub-Committee, the Australian delegation took the opportunity to outline recent events in Australia's space programme. However, we should like to use this forum again briefly to inform members of events and to bring them up to date with the most recent developments.

In December last year a memorandum of understanding between NASA and the Australian Department of Science and the Environment was signed. The memorandum covered the establishment and operation of the Australian LANDSAT station, which will comprise two facilities - the Data Acquisition Facility in Alice Springs, and the Data Processing Facility in Canberra. The station will produce high-quality photographic products and computer-compatible tapes that will be sold to users in government, private industry, and research and education. It is planned that the station will commence operation early in 1980.

Australia, as a country with a large area, a small population and extensive resources, is well placed to benefit greatly from the advantages of remote sensing. Australian scientists and resource managers have for some time been making extensive use of satellite-acquired data in, for example, mineral exploration, mine siting and construction, crop monitoring and assessment, land-use studies, crop disease identification and bush fire and flood studies.

Earlier this year the Australian Government announced that arrangements were being made to use INTELSAT IV to bring television services to 76 remote communities in Australia's outback for the first time. Some 41 earth stations will be built in the next two years, enabling viewers in those remote communities simultaneously to receive the national television programmes being shown in major cities.

(Mr. Holan, Australia)

It is relevant to mention that the Australian Department of Science and the Environment operates three major tracking stations in Australia for NASA, stations that are used in support of space missions of the United States and other countries. In addition, a turn-around ranging station is maintained as part of the control system for the Japanese geostationary meteorological satellite.

I now turn to the agenda items before us. We regard the work of the Committee, its two Sub-Committees and related groups as of utmost importance in the rational and peaceful development of the benefits of outer space. The work of the Committee over the past years has, we believe, contributed considerably towards the achievement of that goal. However, representatives will be aware that at the two lengthy sessions of this year's Sub-Committees only mixed results were achieved. On the one hand, important progress was made on preparations for the second United Nations Conference on Outer Space, and on nuclear power sources in outer space. On the other hand, difficulties, often considerable difficulties, have been experienced over the important issues of remote sensing, direct television broadcasting by satellites and the moon treaty. While there are a number of other important issues which the Committee is to consider, I shall confine my remarks now to the aforementioned items.

At the last session of the Scientific and Technical Sub-Committee we came to an agreement on a number of contentious issues related to the convening of the second United Nations Conference on the Exploration and Peaceful Uses of Outer Space. A few issues still remain outstanding. Australia continues to support the convening of such a Conference, and appeals to representatives, in an effort to expedite the commencement of substantive preparations, to come speedily to agreement on the outstanding issues during this session. In this respect it is important that we not attempt to go back over areas agreed on during the last session of the Scientific and Technical Sub-Committee.

The work of the Scientific and Technical Sub-Committee on the use of nuclear power sources in outer space was commendable, and the constructive spirit evident in that Committee was seen to spill over into the Working Group of Experts on Nuclear Power Sources at its first session. This is an important area of this Committee's work, and much remains to be done within this Committee and its two Sub-Committees and its Working Group. We are optimistic that the spirit of compromise that now exists will continue during the consideration of all aspects of nuclear power sources.

(Mr. Nolan, Australia)

Over a number of years considerable time has been spent on the question of direct television broadcasting by satellites. At the last session of the Legal Sub-Committee, thanks to the constructive approach of Sweden and Canada, there emerged the real possibility of substantial progress being made on draft principles. The Australian delegation then, as now, considered the clean text submitted by Canada and Sweden to be acceptable. We were disappointed with the outcome of the debate, and we now urge representatives to reconsider the reservations they expressed on the clean text, thus enabling the Legal Sub-Committee to demonstrate that it is capable of constructive work.

As to the draft moon treaty, on previous occasions we have commended the Austrian delegation on its contribution towards the attempt to find an acceptable formulation for a treaty relating to the moon. Unfortunately, at the last session of the Legal Sub-Committee, that contribution proved not to be the breakthrough a number of us had hoped for. We now wonder if it will be possible to conclude a moon treaty at this time.

I do not want to dwell on those areas of our work in which progress has been lacking, and I shall therefore avoid specific reference to other areas such as remote sensing, in this respect. However, I feel it is relevant to ask whether much of our work could not be streamlined and thus made more effective. Representatives know of the large number of meetings this year devoted to outer space matters and the degree of duplication between the Sub-Committees and this parent Committee. Yesterday the representative of France proposed that sessions of this Committee and the two Sub-Committees be held at the same time, with the Committee meeting in plenary at the commencement and conclusion of the joint session. While it is appreciated that each Sub-Committee has a real and often independent role to playin the consideration of the various items, the Australian delegation sees merit in this proposal. Perhaps as a modification it may be useful to consider simply having an overlap of, say, one week for the sessions of each of the Sub-Committees. That way, working groups could be more evenly staggered, thus avoiding additional strain on the smaller delegations. The respective experts would still have the advantage of observing and participating in the over-all work of the Sub-Committees. The parent Committee would then meet at the commencement and conclusion of the sessions of the Sub-Committees, or Sub-Committees, or even during them. The Australian delegation commends this proposal to the Committee.

(Mr. Nolan, Australia)

In conclusion, and on a positive note, may I express the Australian delegation's optimism that this Committee will, as in the past, work constructively towards achieving more rational and equitable régimes for the peaceful uses of outer space. Preceding speakers have also expressed the view that we should perhaps be looking for ways of enhancing the progress made by this Committee and its Sub-Committees.

Allow me simply to say that the Australian delegation wonders whether serious consideration should not be given to leaving aside for the moment those items upon which progress clearly has faltered. In this way, the valuable time of the Committee and its Sub-Committees could more fruitfully be spent in areas, perhaps new areas, on which agreement could more readily be reached.

The meeting rose at 1 p.m.