UNITED NATIONS

GENERAL ASSEMBLY

Distr.
GENERAL

A/AC.105/PV.3*
7 May 1962

ENGLISH

COMMITTEE ON THE PEACEFUL USES OF OUTER SPACE

VERBATIM RECORD OF THE THIRD MEETING

Held at Headquarters, New York,
on Tuesday, 20 March 1962, at 3 p.m.

Chairman: Mr. MATSCH (Austria)

Programme and organization of the work of the Committee (continued)

---

* This final record includes any delegation corrections received to the original speeches and consequent corrections to the simultaneous interpretations, where appropriate.

62-10239

(55 p.)

PROGRAMME AND ORGANIZATION OF THE WORK OF THE COMMITTEE (continued)

The CHAIRMAN: Before I call on the first speaker on my list, I should like to introduce to the Committee and to welcome the new Under-Secretary for Political and Security Council Affairs, Mr. Kiselev, who will give valuable assistance to our Committee.

Mr. MOROZOV (Union of Soviet Socialist Republics) (interpretation from Russian): May I first be permitted to congratulate the Chairman and also Mr. Haseganu of Romania and Mr. Silos of Brazil on their election as officers of this Committee and to express the hope that they will exert every effort to ensure fruitful work on the part of the Committee.

I should also like to take this occasion to welcome the representatives of Mongolia, Morocco, Sierra Leone and Chad, who have recently been elected as members of this Committee. In their election, everyone sees a recognition of the importance of the participation of Asian and African countries in the work of so responsible a Committee.

The meeting of this Committee is an important event in the activities of this Organization. It is well known that the General Assembly, in its resolution of 20 December 1961, which was unanimously adopted, recognized that mankind as a whole is interested in the exploration of space for peaceful purposes, and it drew attention in that resolution to the importance of strengthening international co-operation in this field. The resolution stressed that the United Nations should and can play an important part in organizing such co-operation. Our Committee was then called upon to lay the groundwork for the further work of the Organization in this field, and we are now facing the task of working out the programme of work of our Committee. The beginning of the activities of the United Nations in this field will be very important because on this will largely depend the further successful co-operation of States in the peaceful use of outer space.

The Committee on the Peaceful Uses of Outer Space is initiating its work at a moment when serious progress and success has been achieved in the penetration and study of outer space. On 4 October 1957, as a result of the efforts of the Soviet people, the first step in the history of mankind was made in the penetration of

(Mr. Morozov, USSR)

outer space. The word sputnik, from the very moment of the launching by the Soviet Union of the first artificial satellite of the earth, became part of the lexicon of all countries, and it requires no translation into other languages. Much time has elapsed since then, but the world has witnessed the considerable progress of science and technology in the field of the penetration of outer space.

For centuries, mankind had been hoping to be able to penetrate the mysteries of the cosmos and the other planets. These dreams had been reflected in legend and in poetry. The old Grecian myth about the unsuccessful flight to the sun of Icarus is well known. The hero of the Indian epic Ramayana also travelled in the skies. The French writer, Jules Verne, sent his heroes to the moon in a cannonball. But it is only now that what had been the object of dreams for centuries has become a reality.

(Mr. Morozov, USSR)

The date of 12 April 1961 has become the date marking the opening of a new era in the history of mankind. On that day the first Cosmonaut, a citizen of the USSR, Yuri Gagarin, circled the earth on his ship "Vostok I" and landed safely at a predetermined spot. Gargarin's flight was soon followed by a new and remarkable success of Soviet engineers and scientists. By the successful flight on 6-7 August 1961 of Major Titov on the Sputnik ship "Vostok II", having covered a distance which is twice the distance between the earth and the moon in twenty-four hours, Major Titov proved the possibility of long flights and also proved the possibility of staying in the cosmos for long periods of time in weightlessness.

Thus the road has been opened for man to penetrate the very depths of the cosmos. In speaking to our people and to the peoples and Governments of the world, the Soviet Government, in assesing this unprecedented success of Soviet technology and science, stated:

> "The new remarkable flight of the Soviet cosmosnaut has shown that the time will soon come when manned ships will be able to reach the moon, Mars, Venus. New vistas are being opened up before mankind to conquer outer space and to communicate with the planets of the solar system."

It is well known that the recent flight of Major Titov was registered by the International Aviation Federation as a world record of distance and duration of flight.

At present, the family of cosmonauts has received another new member, a representative of the American people, John Glenn, whose courage was admired by all the peoples of the world.

A few days ago a new Sputnik was launched in the Soviet Union to study the upper strata of the atmosphere and cosmic space, and to work on the various elements of the construction of space apparatus. According to this programme several launchings of artificial satellites of the earth will take place from various cosmodromes of the USSR in 1962. Maintaining the policy of strengthening friendship and co-operation among peoples, the Soviet Union, from the very first days of cosmic exploration, took the position of encouraging broad equal participation of all countries and their co-operation in the work of space exploration. Let us recall some facts.

(Mr. Morozov, USSR)

At the beginning of 1958 the Soviet Union had proposed to conclude a broad international agreement on co-operation in the field of the exploration and peaceful utilization of outer space,and it had made appropriate proposals to the thirteenth session of the United Nations General Assembly. The same position was taken by the Soviet Union in the years that followed. Having first launched a man into space, the Soviet Union again confirmed its readiness to co-operate and to join forces with the other countries to conquer outer space for peaceful purposes. Always guided by the interests of developing international co-operation in the penetration of outer space, on 21 February 1962 the USSR again submitted an initiative to combine the efforts of the scientists of the whole world, and particularly those of the Soviet Union and the United States, in the field of the peaceful exploration and utilization of outer space.

Mr. Chairman, in opening this session of the Committee you stated that a proposal had been made by the Chairman of the Council of Ministers of the USSR, Mr. Khrushchev, which was incorporated in his cable to the President of the United States, Mr. Kennedy, in connexion with the recent flight of the American astronaut, John Glenn. Mr. Khrushchev stated:

> "If our countries, pooled their efforts, scientific, technical and material, to explore outer space, this would be very beneficial to the advance of science and it would be acclaimed by all peoples who would like to see scientific achievements benefit man and not used for the arms race and for the cold war."

In attaching the greatest importance to the development of cosmic exploration, for the progress of science in the world, the Soviet Union has always considered its own success in the penetration of space as achievements not only of the Soviet people, but also as achievements of mankind as a whole. The Soviet Government has exerted every effort to ensure that the penetration of outer space and the development of international co-operation of scientists should serve the cause of strengthening friendship among peoples and world peace. May we recall that when we welcomed the second Soviet cosmonaut, Major Titov, in August of last year, the head of the Soviet Government, Mr. Khrushchev stated:

(Mr. Morozov, USSR)

"Flying over the continents, the Soviet man has been sending his greetings to all the peoples of the world. The Soviet ship has been flying in the cosmos as a messenger of peace and friendship of all peoples. Our powerful rockets, which have no equal in any ccuntry, are being used to solve peaceful problems, to increase further our knowledge of the universe. The new data which has been received by Soviet science as a result of the new flight into the cosmos" -- this is what was stated in the document -- "will become available to all scientists and to all peoples and thus will serve the cause of progress, of mankind and the cause of peace".

Considering the penetration of outer space to be a matter of concern to all peoples, the Soviet Union, for its part, had been taking and is still taking very practical steps to ensure that the scientific results achieved by Soviet scientists will be put at the disposal of the scientists of the whole world. Let us recall some facts.

We always inform the world of our launching of Sputniks, space ships and of our space rockets into outer space giving information about the orbit on the radio waves and the weight of the objects and some other characteristics. Information which is received as a result of these launchings and also the results of the scientific processings of the data are systematically communicated to the scientists of the world. Considerable material is published in the Soviet Union relating to the penetration of the upper strata of the atmosphere, space celestial bodies and the various other aspects of these explorations.

(Mr. Morozov, USSR)

Soviet scientists in the course of recent years have been establishing businesslike contacts and very successfully co-operating with their many colleagues abroad, and participating in the work of the COSPAR, a representative of which was invited to participate in the work of this Committee from the very first day of our meetings. The same applies to the International Astronautical Federation and other organizations.

At yesterday's meeting a picture was presented to us which shed some light on the steps taken by the United States for the purpose of organizing international co-operation in the exploration of outer space. For my part, I can say that the Soviet Union, through COSPAR, has produced a great range of information on all the results thus far published on the exploration of outer space and the establishment of contacts with other countries for the purpose of developing a system of tracking for satellites and space rockets in their flights. Our scientists, for instance, are extremely grateful to the British scientist Professor Lovell for his co-operation and observations on the moon rockets of the Soviet Union and for his observations obtained from his automatic station directed at the planet Venus. Soviet scientists gave Professor Lovell all the information necessary for the purposes of these observations.

It is important to stress that in order to achieve effective international co-operation in outer space and to make it really serve mankind, it is necessary to do away with certain obstacles which unfortunately have been blocking the path to this noble objective. Of course, international co-operation in the peaceful exploration and the peaceful use of outer space, though it deals with the infinite reaches of the cosmos, is nevertheless carried on by men, by human beings who are inhabitants of this planet, and it is, of course, one of the most important matters we have to deal with on this planet. I wish this Committee to understand this correctly. It was a source of great satisfaction to us to hear the words propounded at yesterday's meeting by the representative of the United States, where he spoke of how pleasant it will be to experience the "weightlessness of mutual confidence and understanding" and expressed the wish that our orbit may "reach the apogee of that international co-operation and friendship which alone can ensure, the survival, in any space, of the particular planet on which we so precariously live". (A/AC.105/OR.2, page 33-35) -- an existence freed of the complications of any dangers or threats.

(Mr. Morozov, USSR)

May we stress, on our part, that the operation of this thesis must be extended in practice not only to problems related to the peaceful utilization of outer space but also to the various other important aspects of international life on which much will depend in the way of implementing the principle of the peaceful coexistence of peoples and countries irrespective of their social and political institutions, a principle which is fundamental, which is indeed the basis of the Charter of the United Nations.

Of course, in respect of co-operation in the exploration of outer space, we are ready to co-operate by deeds in the fulfilment of the high and noble objectives which were outlined. In our efforts to implement the principle of peaceful coexistence of States in the various fields, the Soviet Union -- and we have previously stressed this -- has always favoured measures which would promote international co-operation, and specifically in this particular field, the exploration of outer space for peaceful purposes, which is the task with which our Committee has been entrusted within the framework of the United Nations.

We wish to note that the long period during which efforts were made to organize the work of this Committee on premises which were unacceptable to sovereign and equal Members of this Organization, is now a thing of the past. This is a source of satisfaction. Let us not deal with the past; it is far better for us to note with satisfaction that our Committee at present is more representative and that from the very outset, as was brought out in the Chairman's statement yesterday, the Committee decided to proceed with its work on the basis of agreed solutions and decisions.

We see in the unanimous recognition by members of our Committee of the importance for this Committee of the correct organization of its work as indicated yesterday by the Chairman and adopted by the Committee a very happy augury for the progress of the work of this Committee. It must be underlined that the penetration of man into outer space is such a grandiose achievement, opening up such magnificent vistas, that in this field the co-operation of all countries of the world is indeed a necessity. We believe that in this enterprise countries of Asia, Africa and Latin America will all be involved, not merely the Soviet Union, the United States and certain European countries. We think it should be noted that while the problem of the exploration of outer space in terms

(Mr. Morozov, USSR)

of time is a very young problem, the exploration is carried out at a very fast pace. At present, as things stand, such explorations have been conducted by the Soviet Union and the United States with the participation of many other countries, to the great enrichment of science. Soviet scientists are entitled to feel proud of their achievements which have made it possible to enlarge our knowledge of the structure of the atmosphere and the events which take place in that atmosphere; to extend our data on the density of the atmosphere, the distribution of pressure according to altitude, the analysis of temperatures, and very many other important matters. Much new information has been obtained in respect of the structure of the ionosphere, the analysis of ionization and radio waves. It was only as a result of the launching of these satellites that mankind has become aware of the existence of radiation zones around the earth. And here it is important to point out that the Soviet and American scientists have been co-operating in the supplementing and completing of the information that was obtained. For example, the data first obtained in the Soviet Union at the outer limits of radiation zone has recently been confirmed by the data received by American scientists as a result of the launching of the American artificial satellite Explorer XII. There have been many such examples which we could cite. Important contributions have been made by Soviet researchers on interplanetary space and the magnetic fields of the earth and of the moon, on micrometeorites, and so forth. Biological data have been gathered by Soviet scientists through rocket-flights carrying animals, thus shedding light on the conditions which man will encounter when he travels through outer space. This information was extended by even more important data obtained through the flights of manned vehicles. Great interest was evoked by the first pictures of the far side of the moon, pictures obtained as a result of the first moon-flight of the Soviet Union. Thanks to all this data, we now know far more concerning conditions that man will probably encounter when he attempts to travel to the moon and the other planets. Thus, I repeat, the joint efforts of scientists of various countries inspired by the common aim of science serving to the benefits of peoples will certainly further progress in this field. But even at the present time, knowledge received from outer space and experience already obtained from the first manned flights into outer space have made it possible to solve many additional problems of considerable practical and scientific significance.

(Mr. Morozov, USSR)

The broadening of the horizons of science, the penetration of man into the depths, have opened up new possibilities of raising the welfare of mankind, and are things for the benefit not only of developed countries but also of the young developing countries of Africa, Asia and the other continents.

We should like to say, also, that with the help of sputniks and manned orbital ships, scientific exploration of the earth, as a planet of the solar system, will take place, as well as exploration of the space in the neighbourhood of our planet; also, of the various events which are related to solar activities or which depend on natural processes taking place in space far removed from our planet. And finally, the problem of communications and transportation on rocket ships -- even passenger transportation on rocket ships -- will at last be solved. Doubtless many flights of cosmonauts will be needed; it will become necessary to work out systematically the various aspects of the construction of these ships, the landing techniques, the communications with the earth, and the earth-bound services. It is, for instance, quite an important matter to deal with a problem of rendez-vous of artificial satellites or orbital station in orbit.

The most interesting problem which has been a subject of speculation for centuries is, of course, the problem of reaching the other planets: first, the permanent satellite of our earth, the moon, where a mark has already been planted, which had been hand made by inhabitants of this earth; and then flights to the other planets of the solar system: Mars, Venus, Mercury. Huge problems are faced by mankind in this venture to explore and use the cosmos. The very character of this problem, the nature of this problem, necessitates the organization of the broadest possible international co-operation in that field. The very nature of cosmic exploration makes it a matter of interest to all inhabitants of our planet; and, therefore, indeed indispensable to organize international co-operation in the field of outer space research. This is something which is dictated by life, itself. It is impossible not to take into account the fact that the implementation of this research is extremely complex and expensive, and through co-operation of States, it will become possible to proceed to complex studies and explorations. Such co-operation may have also considerable importance for the economically under-developed countries which are not yet in a position, by themselves, to conduct research in outer space. This is

(Mr. Morozov, USSR)

why the task becomes particularly significant, the task which has been placed before this Committee, and which consists of working out a programme of the work of this Committee, and the implementation of the first organizational steps which would further the implementation of the programme as a whole.

It may be pointed out here that the sixteenth session of the General Assembly had unanimously approved a resolution which contained a programme for the utilization of the latest data achieved in space exploration for peaceful purposes, and the practical needs of mankind. Some steps have already been undertaken in this direction; thus the General Assembly asked the World Meteorogolical Organization to study measures to achieve world co-operation in meteorological research based on the data received through cosmic exploration. May we express the hope that this specialized agency will present a suitable report so that it will become possible to move ahead in this direction.

It is difficult to over-estimate the benefits to be derived by mankind from, for instance, meteorological and weather service to be furnished by artificial satellites. The precise prediction of the weather will be one more step in man's march through space; it will make it possible for him to face the natural phenomena, in predicting them, and will thus be an important contribution to the welfare of mankind.

The Soviet Union will co-operate in this work. The Meteorological Service of the Council of Ministers of the USSR is ready to submit to the World Meteorological Organization the data on meteorological factors obtained through the sputniks and meteorological and geophisical rockets launched in our country; and may we state that the Soviet scientists are already co-operating within the framework of the Meteorological Organization in mapping out practical steps.

Now, let us turn to another very important question, a very interesting one -- the organization of telecommunications with the help of artificial satellites. It is well known that the General Assembly has asked the International Telecommunications Union to prepare a report on the possibilities of developing international co-operation in this field, too. The Soviet scientists believe that, at the present stage of space penetration, scientific and technical possibilities are already available for using artificial satellites for superdistant telecommunications. The implemenlation of such projects might serve as an

(Mr. Morozov, USSR)

excellent example of international co-operation, and would also have huge scientific and practical value. Soviet scientists and specialists are prepared to participate in the consideration and study of any technical projects and programmes for setting up systems of telecommunications with the utilization of artificial satellites.

The Ministry of Communications of the Soviet Union is prepared to submit to the International Telecommunications Union information on the telecommunication systems in operation, on the utilization of artificial satellites of the earth and their use in that field, on the basis of international regional agreements on the principles of the utilization of such telecommunication systems.

It should be stressed that, with the passage of time, the utilization of artificial satellites for setting up radio telecommunications and television systems would link not only countries, but continents, and would facilitate the exchange of cultural, scientific and other values. All this will strengthen the contacts of the inhabitants of the various countries and continents. We feel that the fields of co-operation which have been alluded to, in the decisions of the sixteenth session of the General Assembly, are but the beginning. The Soviet Union believes that, at the present time, conditions have become ripe for setting up a system of co-operation of States in the field of peaceful exploration of outer space, encompassing a broad circle of problems. The scientists of the world are interested, for instance, in the detailed study of the earth's magnetism, measurement and mapping of the magnetic field of the earth, in space, with the use of artificial satellites.

(Mr. Morozov, USSR)

Man's flights into outer space beccme more frequent and the ambassadors of our planet in space will have to overccme many difficulties in their voyages. There are many problems of research and peaceful utilization of space which should be solved and their solution would certainly be facilitated by the joining of the efforts of many countries. Even at the present time all the conditions are available for setting up international co-operation in many areas. Thus, for instance, very important results for the brcadening of scientific experiments in outer space would be achieved through observations with radio and optical facilities existing in a number of countries, observations in orbiting objects either around the earth or moving toward the moon or the other planets of the solar system.

In the penetration of space, wide prospects are being opened in the field of exploration of space which is closest to earth and in the study of the physics of cosmic space and celestial bcdies. The Soviet Union believes it is important to set up international co-operation in that area as well, in order to speed up world progress in science. Important prospects may be opened up in the organization of international exchanges of scientific information and data in space exploration and utilization. In particular, the Soviet Union, on the basis of course of mutuality, would be prepared to submit to the Committee on the Peaceful Uses of Outer Space information on all the artificial satellites launched into orbit and on other objects launched into outer space informing alsc of the purposes of such launchings. We might also speak of some fields of broadening international co-operation in this area.

At the same time, one should bear in mind that in many countries at present projects have been prepared and programmes are already being implemented in the field of space exploration; of course, in participating in an international effort, the States would take action dictated by these international programmes and on the basis of the possibilities which each ccuntry has at its disposal.

It is important to stress here that the further progress of international co-operation in the exploration of space would greatly depend upon the success of our initial steps. Life and the further growth of cosmic science will of course create many more problems which will become important and which will make it necessary to unite our knowledge and resources, the resources and the knowledge of many countries. International co-operation will thus embrace new areas of space

(Mr. Morozov, USSR)

exploration, provided the efforts of all the members of this Committee -- indeed, the efforts of the Members of this Organization as a whole -- would make it possible to create a solid basis now for the development of such co-operation in the future. For the preparation of a programme of co-operation in the field of cosmic exploration within the framework of the United Nations, the Soviet delegation supports the creation of a scientific and technical sub-committee which might be called upon to deal with concrete problems of co-operation in this field. We believe that it is important to organize this work in a manner which would make it possible to use most rationally all available channels of international co-operation and to eliminate, or at least to minimize, duplication of any international activity by any other activity in the same field.

At the present stage of outer space exploration for peaceful purposes, it would be most proper to organize international co-operation through this Committee, which has been set up by the General Assembly, through the scientific and juridical sub-committees which would have to become so to say laboratories of this main Committee. We believe that in going ahead with this work, the Committee should also have the support of COSPAR in the scientific area. And here we take into account the experience already achieved in the field of international co-operation among countries and scientists particularly. This experience shows that even now the scientists of different countries are already exchanging scientific information and knowledge through COSPAR. The experience of the operation of that international agency in recent years has shown its high prestige and the principles of co-operation which are basic for the work of the COSPAR and are entirely in keeping with the spirit of free exchange of scientific information, and of free discussion at symposia carried out under the auspices of COSPAR.

The active enlisting of COSPAR in the work of this Committee of the United Nations in the field of scientific co-operation will strengthen the role to be played by COSPAR in the future, will make it even more important and will become a stimulus for the close co-operation of scientists throughout the various countries. We believe that to broaden exchange of scientific information and to organize a broad international co-operation in cosmic research, it would be proper to entrust to COSPAR the organization of an

(Mr. Morozov, USSR)

international scientific conference for the exchange of information and experience obtained in the exploration of space. Assistance should be given to COSPAR by this Organization which would make it possible for COSPAR to have more scientists participate in its work, specifically those scientists and countries that are not yet participating in its work. With respect to the conference, there has already been a recommendation by the General Assembly, as I am sure you are well aware.

These are the basic questions which the Soviet delegation felt it was necessary to discuss with regard to the scientific and technical aspects of international co-operation in the field of peaceful use of outer space.

My statement before this Committee would not be complete, however, if I failed to allude to the very important problems which will face this Committee in the field of the study of the juridical problems which are involved in outer space exploration. It has already been stated here that the General Assembly, in the course of its sixteenth session, unanimously approved certain general principles which should guide the States in their outer space operations, such principles, for instance, as the one which states that the international law and the Charter are extended to outer space celestial bodies and a principle according to which outer space and celestial bodies are available for research and utilization for all States, in accordance with the norms of international law, and cannot becme an object of appropriation by any country. The principles which have already been approved by the General Assembly signify in our view, that the activities of the States in outer space research should be conducted in keeping with the recognized principles of peaceful coexistence, sovereignty, equality, non-aggression and non-interference in domestic affairs. These important principles and provisions should be studied and should become a basis for the work of the juridical sub-committee.

(Mr. Morozov, USSR)

It is also important to stress the significance of adhering strictly to the principles according to which all States have equal rights to conduct independent research in space, or research in co-operation with other States, as well as the principle according to which no country or State may be entitled to extend its jurisdiction to any part of outer space. The Soviet delegation feels that it is very timely at this stage of the penetration of man into space to raise the question on a very practical level, namely, the necessity of preparing and concluding an international agreement which would provide for assistance in the searching and salvaging of any space ships, sputniks and containers which might have to effect forced landings. It seems to us that such agreement is indispensable, because it is directly related to the saving of lives of astronauts, the explorers of outer space.

The development of international co-operation in cosmic research doubtless presupposes that the activities of any country in outer space should not become an impediment for studies or research or the utilization of outer space by other States for peaceful purposes, and we believe, at this stage we should point out that no experiments are permissible in outer space, which might in any way make it difficult for other States to conduct cosmic research and exploration.

This is why we believe that the juridical sub-committee and our Committee, too, should and must prepare provisions which would prohibit such experiments as might obstruct or have a negative influence on research conducted by other countries -- research in the interests of mankind -- or which would create any kind of impediment or obstacle to exploration or utilization of outer space for peaceful purposes by other countries.

I would like to voice our support of the statements which have been made here and before the General Assembly, to the effect that in the interests of developing international co-operation in outer space exploration, a principle should be proclaimed according to which the penetration, exploration and utilization of outer space should be exercised by States whose Governments are entirely responsible for any activities in outer space.

(Mr. Morozov, USSR)

We should like to draw attention here to another very important aspect which the juridical Sub-Committee will have to face. I am referring to the well known fact or facts that while scientists are presently busy preparing programmes for using artificial satellites for super distant telecommunications, in the press of some countries, discussions are already being conducted as to how to utilize this remarkable scientific achievement of mankind, in order to harm people, to foster the cold war, and to aggravate international tensions.

Of course, such plans have nothing in common with the interests of developing genuine international co-operation in peaceful space penetration. Such plans can only jeopardize the idea itself, and prove an impediment to international co-operation. Therefore, in our view, it is necessary to work out juridical provisions, which would prohibit any activities in outer space, such as the use of telecommunications or television satellites, which might be used for war propaganda or propaganda of racial animosity and hatred, and among peoples and nations. I believe that this proposal we are voicing is fully in keeping with the spirit which prevailed during the very fruitful discussion initiated yesterday, which dealt with the forms and with the organization of international co-operation in this field of outer space exploration.

Another problem will be raised: inasmuch as more and more satellites and other scientific instruments are being launched every year, and since the number of countries conducting such experiments is bound to increase, it becomes important to establish juridical provisions to ensure the sovereign rights of States with respect to the various objects they are launching. The juridical sub-committee should consider these juridical problems with the view to ensure the rights of the States involved with respect to the objects they are launching into outer space.

The Committee should prepare texts of juridical provisions to the effect that any such objects which might land in the territory of any other State should be immediately returned to the country which launched that object into outer space, provided suitable information has been submitted to the United Nations concerning the launching.

(Mr. Morozov, USSR)

As you see, even in this very brief statement, which relates to the juridical problems of space exploration, the Soviet Union is basing its position on the premise that any State, undertaking such experiments and use of outer space for peaceful purposes, should be guided by the generally recognized humanitarian principles of international law, which have been recognized by all States.
In conclusion, having submitted to you, Mr. Chairman, and to the members of this Committee, our views on the practical steps which might ensure international co-operation, the Soviet delegation would like to express the hope that the views which we have expressed on the programme of the work of this Committee and on the programme of the work of the scientific and technical and juridical sub-committees will be taken into account when the programme of the work of this Committee is finalized.

We have made these statements because we are guided by the desire to organize as speedily as possible broader international co-operation on a footing of equality in the area of outer space exploration and use in order to ensure the welfare of mankind and peace in the whole world. We believe that the other members of the Committee will demonstrate like readiness to take the practical steps to ensure such co-operation.

Sir Patrick DEAN (United Kingdom): Mr. Chairman, my delegation regards it as a happy augury for the future work of this Committee that we should unanimously and by acclaim have re-elected you and our distinguished Vice-Chairman and Rapporteur to preside over us. This, of course, follows the unanimous adoption of the latest General Assembly resolution on outer space, resolution 1721 (XVI). Let us hope that such close agreement marks all the proceedings of this Committee.

I would also like to welcome the newly joined members of our Committee, namely the representatives of Chad, Mongolia, Morocco and Sierra Leone.

The opening paragraphs of our enabling resolution give us a keynote which the United Kingdom delegation hopes will inspire all our debates and projects. In these paragraphs all members of the General Assembly recognized the common interest of mankind in furthering the peaceful uses of outer space and the urgent need to strengthen international co-operation in this important field. They declared their belief that the exploration and use of outer space should be only for the betterment of mankind and to the benefit of States irrespective of their economic or scientific development. Let us, here in this Committee room, keep these words in the forefront of our minds and be guided by them. The task before the Committee is to foster a spirit of collaboration rather than of competition. Only through co-operation among all can we realize the aim set before us. With this in mind, the United Kingdom Government welcomed the exchanges between President Kennedy and Mr. Khrushchev after the recent successful orbital flight of Colonel Glenn. These exchanges seem to foreshadow possible collaboration between the United States and the Soviet Union in space research, collaboration whose benefits would certainly extend beyond the two nations in question.

President Kennedy's letter of 7 March to Mr. Khrushchev, released last Saturday and outlined to this Committee yesterday, sets out specific proposals which are constructive and far-sighted. Their acceptance could lead not only to immediate practical benefits, but also in due time to the realization of the hope that mankind may enter outer space united, and not in rivalry. Of more significance is the possibility that practical co-operation on the lines suggested could make a useful contribution to the improvement of relations between

(Sir Patrick Dean, United Kingdom)

East and West. My delegation has been most happy to note the great emphasis placed by the two speakers before me in this debate on the need for close co-operation among all nations in this matter. It is yet another happy augury for our discussions. Most incerely do we wish the United States and Soviet delegations every success in their discussions and we note with pleasure that the Committee is to be kept continuously informed of their progress.

I might note here that as the representative of the United States said yesterday, some other countries, including the United Kingdom, are already co-operating with the United States in certain aspects of space work, for example in the field of communications satellites. We are confident that any programme of co-operation between the United States and the Soviet Union would not exclude participation by other countries in due course in the joint effort. For our part, we would of course be ready, if invited, to join in any such discussions. It may be of interest to the Outer Space Committee to have some detailed information about the joint United Kingdom-United States satellite programme to which I have just referred.

It will, I think, be remembered that at a meeting in 1959 of the Committee on Space Research (COSPAR), the United States generously offered to launch individual experiments or complete satellite payloads designed by scientists of other countries when such experiments were of mutual interest. The United Kingdom was one of the first to accept this offer and arrangements have been made for the launching of several complete satellite payloads designed and constructed in the United Kingdom. The first will be launched from Cape Canaveral in the spring of this year; design work on the second is well in hand; and the contents of the third are shortly to be decided. We regard this as a very satisfactory development.

For the first joint satellite, the launching rocket, associated ground equipment and the satellite are being provided free of charge by the United States, while the expense of designing and providing the instrument payload is borne by my country. For later satellites, it is expected that the United Kingdom will gradually assume a greater share of the work involved in satellite engineering. The first of these satellites will carry three groups of experimental apparatus to take measurements in the ionosphere, as the satellite follows an orbit ranging between 200 and 550 miles above the earth.

(Sir Patrick Dean, United Kingdom)

Details of another co-operative venture into space research and launcher development will also, I think, be of interest to the Committee. I refer to two organizations which are expected to come into being in the very near future. These are the European Launcher Development Organisation, commonly called ELDO, and the European Space Research Organisation, called ESRO. The purpose of these organizations will be to permit governments which alone could not make a significant contribution to space work because of the prohibitive costs involved, collectively to play an active part in the exploration of this new dimension.

A convention for the formation of ELDO has been prepared for signature in the very near future by the United Kingdom, France, the Federal Republic of Germany, Italy, Belgium, the Netherlands and Australia. This is intended to be an organization for the development and construction of space vehicle launchers for peaceful purposes. It is planned that ELDO should undertake an initial programme of work for the development of a launcher using a first stage based on the United Kingdom Blue Streak rocket, a French rocket as the second stage, and a third stage to be developed under the leadership of the Federal Republic of Germany. The first series of satellite test vehicles is to be developed under the leadership of Italy; long-range telemetry links are to be developed under the leadership of the Netherlands; equipment for the down range ground guidance stations is to be developed under the leadership of Belgium.

The programme provides for the first firing of the complete three-stage launcher to take place from Woomera, in Australia, in early 1966. An attempt will be made in this trial to place a satellite test vehicle in orbit. It is estimated that this initial programme will cost some £70 million and that its duration will be five years. The convention establishing ELDO will, it is expected, also provide for a programme of advanced studies to be carried out in the first two years of the initial programme, looking towards the formulation of proposals for a second programme to be carried out by the organization.

(Sir Patrick Dean, United Kingdom)

Arrangements will be made for technical information acquired in the course of the organization's work to be freely exchanged among member States. All participating countries will be given an opportunity of joining in the scientific, engineering and other activities of the organization. This will enable all countries joining the organization to enjoy the scientific and commercial benefits arising from the development of satellite launchers for peaceful purposes. Dissemination of technical information and knowledge will be facilitated by the employment of nationals of each member State in the work being undertaken on behalf of the organization in Government establishments and industrial firms. Members of ELDO will undoubtedly wish to keep in close touch with the United Nations Outer Space Committee, as with other bodies engaged in work relating to space exploration.

The second organization I mentioned is the European Space Research Organization, whose draft convention, it is hoped, will be signed, subject to ratification, during May 1962. The membership differs somewhat from that of ELDO, including, as it does, Austria, Belgium, Denmark, the Federal Republic of Germany, France, Italy, the Netherlands, Norway, Spain, Sweden, Switzerland and the United Kingdom. The proposed European Space Research Organization is essentially an organization for undertaking research in space science; it has been agreed that the results of its work in the scientific field shall be published or otherwise made generally available. It will not be responsible for designing or building its own launching vehicles, which will in general be procured from other sources, for example, ELDO. ESRO will have no connexion whatever with work for military purposes or with the development of communications satellites.

The essential idea is that ESRO will provide facilities to help the participating countries in carrying out scientific space research, and will not act primarily as an organization carrying out scientific research in its own right. ESRO will not, therefore, be in competition with European universities and other research institutes. Present plans are that ESRO should be responsible for the engineering development of satellites for scientific research purposes, space probes and the associated technological research and development, to enable participating countries to carry out scientific work in space by these methods. The organization will therefore co-operate to the fullest possible extent with the

(The Chairman)

willingness to pool their efforts for further exploration of outer space. This holds auspicious prospects for collaboration with regard to concrete projects, the realization of which would be for the benefit of all mankind, but, beyond that, it also justifies the hope that this co-operation in space might also lead to co-operation on earth, and that those countries which will find it possible to be partners in space will also become partners on earth. It is a source of particular satisfaction to us that this agreement on space co-operation was possible in spite of obstacles and present difficulties in important issues of a political and military nature. We hope to see here a breakthrough of a new spirit of co-operation in new fields. May it not be possible that the favourable climate of these new ventures will bring about a change also in the climate of other regions of the political panorama, and turn tense passive co-existence into hopeful active co-operation?

As to the scientific and legal aspects of our Committee's task, the Austrian delegation shares the view expressed by all the other representatives who have spoken in our Committee, namely, that the discussion of the relevant details should more conveniently be left to sub-committees. We are convinced that such a procedure would facilitate our task, and therefore we support this suggestion.

As has frequently been pointed out, the nature of the work we have to perform would indicate the necessity of establishing two sub-committees, a sub-committee for the consideration of scientific and technical problems and another for the examination of the legal questions connected with outer space. My delegation would hope that all countries which are members of the Outer Space Committee will also be members of the two sub-committees, in order to give the sub-committees the benefit of the universal representation of this Committee. This would be particularly important for a sub-committee on legal aspects, so as to have all systems of law reflected in the elaboration of universal doctrines and standards of extra-terrestrial law. It would also appear to us that the terms of reference of the sub-committees for laying the ground-work should be held as flexible as possible, so as to place no a priori restriction or limitation on the work of these bodies.

(Sir Patrick Dean, United Kingdom)

Part A sets out two principles of basic importance for the development of a legal regime governing man's exploration and eventual exploitation of outer space. The United Kingdom fully subscribes to the principles that international law, including the United Nations Charter, applies to outer space and celestial bodies and that outer space and celestial bodies are free for exploration and use by all States in conformity with international law and are not subject to national appropriation. These principles will guide us in our approach to the legal problems of outer space. I suggest that the most appropriate way for this Committee to proceed on these legal aspects would be to establish a Legal Sub-Committee, which can itself explore the legal areas of outer space and decide on the scope and subjects and the order of priority of its own studies. This Sub-Committee might hold a series of meetings to allow time for this general exploration, for the presentation of detailed papers on any topics chosen, and for reference to governments of any papers presented so that these may be given full and careful consideration.

Part B of resolution 1721 concerns the exchange of information about the peaceful exploration and use of outer space. The United Kingdom Government has noted the request in operative paragraph 1 that States launching objects into orbit or beyond furnish information promptly to this Committee, through the Secretary-General, in order that these launchings should be registered here. We have already informed the Acting Secretary-General that we will be glad to comply with this request at the appropriate time. We have, of course, already seen the first report from the United States Government and we hope that the Soviet and other Governments will follow suit as appropriate. As to paragraph 3 of this part of the resolution, I suggest that it would be convenient for this Committee to charge a Technical Sub-Committee with the examination of the various categories of activity there set out. It will, naturally, be of prime importance, given the over-all shortage of resources for space research to which I have already alluded, to ensure that there is no waste and no overlapping in pursuing these activities. Both the Committee and the Secretariat will, I am sure, be conscious of the need to proceed carefully for this reason.

(Sir Patrick Dean, United Kingdom)

Part C of the resolution deals specially with the development of international co-operation in weather research and analysis. I understand that the World Meteorological Organization has already begun the preparation of its report in response to this part of the resolution. The World Meteorological Organization is, in our view, indeed the proper body to deal with international co-operation in meteorology irrespective of whether the relevant information is obtained from space vehicles or from more traditional, perhaps more prosaic, sources.

Part D of the resolution concerns communications. The Secretariat of the International Telecommunication Union has already begun work on its report. The function of the International Telecommunication Union is not legislative or operational, but regulatory. The International Telecommunication Union could not, for example, operate an international communications satellite system, but its work in allocating radio frequencies for space systems is essential and must not be in any way impeded. One of the problems which will have to be worked out in connexion with communications is that of making the best possible use of the funds available for technical assistance. The urgent needs of the developing countries themselves must determine how far these funds should be diverted from what might be called the traditional forms of technical assistance to "outer space" uses.

Finally, there is Part E of resolution 1721, which reaffirms as the mandate for this Committee resolution 1472 of the sixteenth session, as well as adding the review of the activities envisaged in the resolution now before us. As I have already indicated, the United Kingdom delegation sees a need for a legal and technical sub-committee to assist in the detailed work facing this Committee. The value of such expert sub-committees was proved by the Ad Hoc Committee in 1959. I have also offered some comments as to the sort of work they might undertake. We would expect that the report prepared in 1959 and contained in document A/4141 would be of great value in their work. Experience has shown that the scientific experts concerned must be expected to wish to get through their work as expeditiously as possible, so that careful preparation will be necessary for the sub-committee's meeting perhaps, we suggest, in mid-May. The first of the Legal Sub-Committee's meetings, though possibly less urgent, should also not, in our view, be unduly delayed. As to the main Committee itself, it seems probable that we shall need to meet again during the course of the summer. Perhaps it is not necessary at this

(Sir Patrick Dean, United Kingdom)

point to be too specific, since you, Mr. Chairman, can of course convene the Committee whenever it seems to you necessary, but there will doubtless be work arising from the World Meteorological Organization and International Telecommunication Union reports, and I imagine that it will be convenient for the Committee to meet again shortly before the seventeenth session of the General Assembly.

That is all that I have to say at the present on this subject. I am truly grateful for the Committee's patience in following this rather long intervention. I think that it will be apparent from what I have said that Her Majesty's Government in the United Kingdom continues to attach importance to effective international collaboration, both in the United Nations and elsewhere, in the exploration of outer space and its exploitation for peaceful purposes in the interests of all. In addition, a number of legal issues involved need to be considered and to be discussed between governments. Her Majesty's Government considers the United Nations Committee on the Peaceful Uses of Outer Space a suitable forum for the international discussion of these matters. We will accordingly study carefully the full and informative statements already made by the representatives of the United States and the Soviet Union. We shall do all in our power to assist this Committee to proceed with its work in a spirit of harmony and realistic co-operation.

Mr. BERARD (France) (interpretation from French): It is a pleasure for my delegation to note that after so many vicissitudes the Committee on the Peaceful Uses of Outer Space can finally meet in a constructive atmosphere. I apologize for this involuntary pun.

Just as the preliminary difficulties have been overcome, those that we may meet in our path will not fail to be done away with also, I am sure, in the light of our common will to co-operate. I know that we are greatly helped in this by our Chairman, whose wisdom and skill we have already been able to appreciate in the First Committee of the General Assembly during the thirteenth session of the General Assembly.

Mr. Chairman, you will be assisted in this task by a particularly competent Bureau to whom I wish to extend, as well as to you yourself, the sincere congratulations of my delegation. You can count on the co-operation not only of the former members of the Committee, but also on that of the new members whom we are particularly happy to welcome and to see seated here among us.

(Mr. Berard, France)

The very immensity of space presupposes international co-operation. This is an obvious truth which is not in dispute today. The more advanced countries scientifically and technically recognize the need for them to co-operate with other countries, and this need grows as progress becomes greater.

The efforts must be shared as well as the benefits. The adventure of space must be a common undertaking or it is obvious that there will be none. Numerous countries already engaged in this field have to various degrees recognized this fact, countries engaged in the exploration and utilization of outer space.

We noted with interest the concrete offers of co-operation made by President Kennedy in his recent correspondence with Premier Khrushchev. Such co-operation,which is open to all countries,could be established by good working relations between the two great Powers most advanced in this field, and this would mean valuable encouragement for the future of our work.

In fact, international co-operation has already begun, and the speakers who preceded me have given examples of such co-operation. France, for its part, parallel with a national programme of space research, has for several years been associated with European programmes and international programmes of co-operation in this field. In due course our experts will be able to inform the Committee about these activities. For today I will only mention some of them:

1. France is conducting an operation for the study of the dynamics of the ionosphere which is to include thirty simultaneous launchings in twelve countries.

2. The French Committee on Space Research is studying, together with the NASA, the methods of an agreement which will permit a joint undertaking of a series of experiments.

3. The decision to proceed in co-operation to test trans-Atlantic communications by satellites was announced jointly on 4 April 1961 by the United States, France and the United Kingdom.

4. Under the terms of the agreement reached at Meyrin in February 1961, eleven European countries -- today they have become twelve -- have bound themselves to study jointly a programme of co-operation to be established in the field of space research in Europe. The European space research organization -- the ESRO -- will be entrusted with the establishment of joint technical services such as technical laboratories, launching fields, etc., and the organization of common research among the participating nations.

(Mr. Berard, France)

5. The establishment of a European organization for building space vehicles. France, the United Kingdom and several European industrial countries have joined together in order to ensure for Europe direct access to space.

6. Besides these agreements among Governments, I should like to mention a plan for private co-operation in which a series of French and British industrial enterprises are participating as contracting parties. In particular, they are planning the development of communication and navigation satellites.

This spirit of co-operation of which I have mentioned several examples will likewise inspire the work, I am convinced, of the United Nations Committee on the Peaceful Uses of Outer Space. We have already lost too much time and, as has been rightly indicated, scientific and technological progress has outstripped international co-operation. This is yet another reason why the members of this Committee, aware of their responsibilities, must resolutely set to work; and for its part, my delegation will leave no stone unturned in contributing to the success of our undertaking.

The present session of our Committee is in the main called upon to draw up and organize our programme of work. It is therefore out of the question for us now to embark on the substantive examination of the questions arising from the competence of the Committee and the various proposals which may be submitted to it. This will be the task of the Sub-Committees which it is our job to set up. Therefore, for the time being I shall limit myself to stating that my delegation takes note with interest of the suggestions put forth by the representatives of the United States, the Soviet Union and the United Kingdom with regard to the problems to be dealt with by the Sub-Committees. We wish to reserve our right, at the appropriate time, to make known to our experts whatever observations we have to make on these proposals. The approximate date of 15 May which has been suggested, I believe, for the meeting of the Sub-Committees seems to us well chosen, and my delegation is ready to support this suggestion. Among other advantages, this date would allow the experts sufficient time to study the suggestions made at this session and enable them to be prepared for discussion of those suggestions.

The task of the Sub-Committees has been defined in broad outline in resolutions 1472 (XIV) and 1721 (XVI). We are sure we can trust our experts, who will represent us on the Sub-Committees, to interpret the terms of reference in most judicious fashion; I therefore shall not comment on the relevant provisions

(Mr. Berard, France)

of the resolutions to which I have referred, but shall instead merely call attention to the following points.

On the technical level, it would be desirable to take up again the work done in 1959 by the Committee which preceded us and to bring up to date the status of the organizations that are competent in outer space as well as the inventory of space activities and possible subjects for international co-operation in this field which had been dealt with at that time. This would be a matter of basic documentation the utility of which is unquestioned and the need for which would surely be felt.

The role of the Technical Sub-Committee cannot, in our view, be that of providing guidance and directives for scientific organizations of the kinds that already exist. Rather would it be incumbent on it to define the general principles, while study of the problems themselves could be advantageously entrusted to a working group. In putting forward this suggestion, the French delegation is inspired by the precedent of the composition of the Scientific Advisory Committee of the United Nations, the members of which are the same as those of the Advisory Committee of the International Atomic Energy Agency. Following the example of what has been done in the atomic field, could not our Committee, if it decides to set up such a working group, choose the officials of COSPAR, whose scientific qualifications are indisputable and whose distribution by nationality is equitable?

There is another point on which my delegation would wish the Technical Sub-Committee to focus its attention, and that is technical co-operation, particularly in the field of vehicle propulsion. COSPAR does not deal with this form of collaboration which is at present contemplated only within the European organizations which are in the process of being set up. My delegation believes that there is everything to be gained if this Technical Sub-Committee devotes itself to filling this gap, and we will support any proposal favouring such co-operation.

In accordance with the indications available to us, it seems to me that the Technical Sub-Committee, at its May session, will not be in a position to consider the replies from the various States and the reports expected from the World Meteorological Organization and the International Telecommunications Union. It would have seemed normal to my delegation and in accord with the provisions of resolution 1721 (XVI) that our experts should have the opportunity to examine

(Mr. Berard, France)

these reports before they are submitted to the Economic and Social Council at its July session. If we are faced with something wholely impossible, we can only bow before this impossibility; but since we have the privilege of having present among us observers from these two specialized agencies, I am sure the Committee will be happy to hear from them a statement on the broad lines of action contemplated by the World Meteorological Organization and the International Telecommunications Union for the implementation, by each on its part, of the provisions of resolution 1721 (XVI).

While in its present composition it may appear difficult to the Committee for it to deal with scientific and technical questions, it would appear, on the other hand, desirable for the United Nations to act in laying down the legal standards which are to govern the exploration and utilization of outer space. The report prepared in 1959 by the first Space Committee remains valid to some extent, and it would be useful to refer to it; but in our view, certain problems should be looked into first by the Legal Sub-Committee.

The first of these problems obviously is to define the limits of outer space with relation to atmospheric space, which is already subject to legal standards. As regards the exploration and utilization of outer space, the principles which the General Assembly recommended for the guidance of States do call for certain clarifications and give rise to some doubts.

At first sight it is difficult to understand what is meant by the rule according to which international law, including the Charter of the United Nations, applies to outer space and celestial bodies. It would no doubt be desirable to state this rule in greater detail and with all prudence. As for the principle of freedom of exploration and exploitation of outer space and celestial bodies, immediately after the definition of these rules it will be necessary to regulate their application. In particular, one cannot stress too much the imperative and urgent necessity for measures designed to prevent any contamination, either by microbes or radioactivity, of outer space and celestial bodies.

My delegation would like to reserve its right to intervene again in this debate if it seems necessary. Allow me for the moment to conclude these brief remarks by expressing our hope that the Committee on the Peaceful Uses of Outer Space will fulfil the hopes centered upon it by the General Assembly. Situated

(Mr. Berard, France)

as it is between Governments and the specialized agencies, the Committee can -- and should -- without duplicating already existing activities, serve as a co-ordinator and as a stimulant. Thus all countries, small and large, will be associated in the common undertaking in this new and immense domain which is now being opened up to the activities of mankind.

Mr. JHA (India): Mr. Chairman, I would like the opportunity to offer to you and our Vice-President and Rapporteur our heartiest congratulations on your unanimous election. It was, indeed, a very good beginning for the work of this Committee, as we could not have chosen a Bureau of a better calibre, or one enjoying more universal acceptance.

Like other speakers, my delegation would also desire to extend its welcome to the delegations of Chad, Mongolia, Morocco and Sierra Leone. Their presence certainly makes this Committee more representative and is especially welcome to us, as they come from the great continents of Asia and Africa. It is desirable and indeed imperative that any discussion, any consideration, of matters looking so far into the future should be with the co-operation and assistance of the countries from Asia and Africa which, if I may say so, are also the countries of the future and which will make a great impact upon the future history of the world.

At long last, the United Nations, through this Committee, is ready to launch international co-operation in the peaceful uses of outer space. This Committee, itself, has come into being and convened for serious work after many vicissitudes. It is, however, a matter for great satisfaction that the stage is now set for a large measure of international co-operation in this field with the essential element of co-operation and goodwill of the countries which are most advanced in space research and exploration, namely, the Soviet Union and the United States.

Man is just beginning to probe the mysteries of the universe. As the universe is limiteless, the potentiality of man's achievement in outer space knows no limit. As was succinctly stated by the representative of the United States, Mr. Stevenson, in his statement in the First Committee on 4 December 1961:

"This is Year Five in the Age of Space. Already, in four short years, scientific instruments, then animals, then men, have been hurled into space and into orbit around the earth. Within a few more years, satellites will bring vast developments in weather forecast and in radio and television communications. More than that: Rocket booster capacity will become sufficient to launch teams of men on journeys to the moon and to the nearest planets. And, after that, one can only speculate on what may come next." (A/C.1/PV.1210, page 2)

(Mr. Jha, India)

Here is a field, then which provides the greatest challenge, both to man's imagination and to his capacity for mutual co-operation.

This Committee is beginning it work under most favourable auspices. In the first place the achievements of the Soviet cosmonauts and the American astronauts have been hailed throughout the world and have spurred the desire for international co-operation in the conquest of outer space and in its use for the benefit of humanity. The achievements of Gagarin, Titov and Glenn are thought of, not in terms of their particular nationalities, but as symbols of the universal man; and their exploits symbolize man's ability to shake off the shackles of earthly gravity, and the capacity of the human spirit to soar above and beyond the narrow concepts and prejudices which unfortunately prevail on earth in plenty. Man on earth, physically speaking, is circumscribed by his environment. His horizon does not extend beyond the confines of his own country. Both physically and mentally, he is conscious -- perhaps too conscious -- of the barriers between States and nations. From a capsule in orbit, and from the farther reaches of outer space, however, he looks on earth as a whole a planet gyrating rather precariusly in the cobweb of space. The frontiers set between State and State, the physical barriers, along with mental reservations and prejudices, melt away, and man has a vision of one world. That is -- or ought to be -- our vision of man in space and our understanding of the spirit in which international co-operation should begin in the conquest of outer space. But if that is not the case, the follies and madness of men and nations on earth are bound to be carried in outer space and magnified a million-fold.

Secondly, we have the assurance of the two greatest Powers of their great desire to co-operate with each other and with the international community, through the United Nations and other international bodies.

The representative of the Soviet Union, Mr. Zorin, in his statement in the First Committee, on 4 December 1961, made this remarkable statement:

(Mr. Jha, India)

"... Allow me to give asssurance to all members of this Committee that the Soviet Union will continue to bend every effort in order to set up the widest possible and most fruitful international co-operation on the basis of equality of rights in the field of the quest of outer space in the interest of peace and the whole of humanity." (A/C.1/PV.1210, page 43-45)

The representative of the United States in the First Committee, at the same time, also assured United States' co-operation toward international efforts directed at ensuring the peaceful uses of outer space.

Striking evidence of the desire of both these great countries to co-operate in the matter of space exploration and reasearch has been provided in the exchange of letters between Premier Khrushchev and President Kennedy that took place last month. Said Premier Khrushchev in his letter of President Kennedy:

"I should like to hope that the genius of man who penetrated the depth of the universe would be able to find a road to an enduring peace and to ensure prosperity to all peoples of our planet earth which, in the space age, though it does not seem so large, is still dear to all its inhabitants. If our countries pooled their efforts, scientific, technical and material, to explore outer space, they would be very beneficial to the advance of science and would be acclaimed by all peoples who would like to see scientific achievements benefit man, and not be used for cold war purposes and the arms race."

In his reply, President Kennedy said:

"I welcome your statement that our countries should co-operate in the exploration of space. I have long held the same belief and, indeed, put it forward strongly in my first State of the Union message. We, of course, believe also in strong support of the work of the United Nations in this field, and we are co-operating directly with many other countries individually, but obviously, special opportunities and responsibilities fall to our two countries."

Further striking evidence of the desire for co-operation between the United States and the Soviet Union is given in a series of concrete proposals made in President Kennedy's letter of 7 March to Premier Khrushchev. These developments

(Mr. Jha, India)

and assurances of co-operation which, I may add, have been repeated before this Committee by the representatives of the United States and the Soviet Union before our Committee, and which have been so heart-warming to all of us have put the subject of international co-operation in the peaceful uses of outer space in the correct and proper perspective. Both the scope and opportunities for international co-operation in the peaceful uses of outer space appear, even at this initial stage, to be limitless. Vast new possibilities are admitted to have opened up by the communication satellites. The development of communication satellites, international co-operation in their launching and in the collection and processing of data transmitted by them will revolutionize the world-wide communication system.

(Mr. Jha, India)

Telephone and television services on a global basis are likely to benefit immensely from that exploration. In the field of weather, the development of weather satellites is expected to permit more precise short-range weather forecasts as well as world-wide reliable long-range prediction, and it is said that this could be done at least a season in advance. Studies in outer space are likely to provide the basis for understanding various factors that control the weather and add to the development of theories regarding weather. The improvement in weather forecasting, both short-range and long-term, is expected to revolutionize many aspects of life and economy, particularly agricultural economy, throughout the world. International co-operation provides the best assurance for rapid development in these fields and in many others, the outlines of which are only now beginning to emerge. There are others who are more qualified to speak on this subject, particularly the representatives of those States which have advanced far in this field and the scientific organizations whom we have the pleasure of having in our midst. But the very enumeration of the more important aspects of international co-operation that are open to us shows that as an important part of the activities of the United Nations, it is to these that all of our energies should be directed.

Apart from the great Powers, many of us have realized the potentialities of the future. In India, an Indian Committee for Outer Space Research, INCOSPAR, has recently been constituted to advise the Government on the promotion, research and peaceful utilization of space exploration, to promote international activities in these fields and to provide liaison with COSPAR and with the ICSU and other similar national and international bodies. The services of this Committee are naturally available for co-operation with our Committee, the United Nations Committee on the Peaceful Uses of Outer Space, and to other international organizations.

We must consider the organization of the work of this Committee. The basic resolutions of the General Assembly which, for our present purposes, are resolution 1472 (XIV) and resolution 1721 (XVI) are both live resolutions representing the United Nations approach to the question of international co-operation in the peaceful uses of outer space. The texts of both these resolutions must be borne in mind and our work should be arranged in such a manner as to bring about the highest and most practical fulfilment of our mandate embodied therein.

(Mr. Jha, India)

I would like to indicate the general approach of my delegation to the Committee's task. As the Committee is embarking on a most unusual work without any precedents to guide it, I might add that my delegation's approach at the present stage can only be regarded as tentative. Two basic assumptions govern our thinking on the scope of the task entrusted to the Committee and its execution. First, while co-operation between the two most advanced countries in the field of space exploration and research must form the cornerstone of the structure of international co-operation and is welcome in every way, bilateral co-operation between these two great countries does not constitute the totality of international co-operation envisaged by the United Nations. Such co-operation must be one in which there is active participation on the basis of mutual help by all Members of the United Nations. Even more important, other nations must have a sense of participation, and I am thinking in this connexion particularly of the less developed countries of Asia and Africa. We are glad to note that, broadly speaking, this is also the approach of the big Powers and this approach has been expressed in the statements which we have heard at our meetings today and the other day. It seems to us that overemphasis of one at the expense of the other will not serve the purposes of the United Nations, to which expression is given in the two resolutions before us. What we wish to see is that the Outer Space Committee be instrumental in bringing about international co-operation in the broadest sense. This means not merely exchange of information, registration of space launchings, fixation and determination of inter-relationship between this Committee and the specialized agencies and scientific organizations connected with outer space research, although these are most welcome and necessary, but that this Committee itself become the spearhead and centre for the co-ordination of all activities in the sphere of international co-operation in outer space, more particularly co-operation between Governments on behalf of the United Nations. It should, inter alia, serve as an instrument for facilitating the dissemination of knowledge and techniques in this new field of science and exploration. Secondly, the keynote for our Committee should be peaceful international collaboration and co-operation in place of wasteful competition.

(Mr. Jha, India)

It is well to recall the words in the preamble of resolution 1472 (XIV):

"Believing that the exploration and use of outer space should be only for the betterment of mankind and to the benefit of States irrespective of the stage of their economic or scientific development,

"Desiring to avoid the extension of present national rivalries into this new field,". (A/4354, p. 5)

These make it incumbent upon us to help secure the freedom of outer space from exploitation and use for purposes harmful and destructive to man. It seems to my delegation that our deliberations and conclusions must be imbued by these high principles.

Let us try to assess the nature of our task in the light of resolution 1721 (XVI). Part A of the resolution relates to the legal problems arising from the exploration and use of outer space and the application of international law to outer space and celestial bodies. At a later stage, I would wish to make some observations on this part of the resolution. Part B is, from our point of view, the most important part of the resolution, as requiring action to be taken by the United Nations towards effective international co-operation in the peaceful exploration and use of outer space. The preamble to this part of the resolution reads:

"Believing that the United Nations should provide a focal point for international co-operation in the peaceful exploration and use of outer space,". (A/RES/1721 (XVI), p. 2)

This coincides with the views of my delegation, to which I have just given expression, namely, that this Committee should be the spearhead of international co-operation and of co-ordination in the field of peaceful exploration and use of outer space. I might say here parenthetically that we are very glad to note that this broad interpretation has also been given by the representatives of the United States, the USSR, France and the United Kingdom, who have spoken before me.

Part B of the resolution, however, having declared the over-all purposes of in its operative paragraphs, might appear to fall short of the broadest application of the preamble. It provides for the furnishing of information by States launching objects into orbit or beyond, requests the Secretary-General to maintain a register of information so furnished -- and we are glad to see that the Secretary-

(Mr. Jha, India)

General has already established a registry -- requests the Committee to maintain close contact with governmental and non-governmental organizations to provide for the exchange of such information relating to outer space activities as Governments may supply on a voluntary basis, supplementing but not duplicating existing technical and scientific exchanges, and to assist in the study of measures for the promotion of international co-operation in outer space activities. These are the words of operative paragraph 3 and might well be taken as giving this Committee a somewhat auxiliary role. Fortunately, however, if this resolution is read in conjunction with resolution 1472 (XIV), the perspective is set right to a great extent. Paragraph 1 (a) of Part A of resolution 1472 (XIV) asked the Committee to review as appropriate the area of international co-operation and to study practical and feasible means for giving effect to programmes in the peaceful uses of outer space which could properly be undertaken under United Nations auspices. Resolution 1721 (XVI), read with resolution 1472 (XIV), in our view makes it clear that the intention of the United Nations is to give this Committee a great deal of initiative in the task of bringing about the broadest possible co-operation in the organization and co-ordination of programmes. In this view, my delegation regards the enumeration of the functions of the Committee in the operative paragraphs of part B of resolution 1721 (XVI) as illustrative and not exhaustive.

(Mr. Jha, India)

My delegation also regards it as of great importance that among the functions of the Committee is the encouragement of national research programmes and the rendering of all possible assistance and help in that direction, which will have the supreme value of giving a sense of participation to the less-developed countries, and make the acquisition of knowledge and scientific and technical skill in the matter of space exploration and co-operation a truly international venture.

The Committee should attempt to organize its work in such a way as to give effect to the operative paragraphs of part B of resolution 1721 (XVI), and the operative paragraphs of part A of resolution 1472 (XIV). It is obvious for this reason that close links should be established with governmental and non-governmental organizations concerning outer space matters, as envisaged in paragraph 3 (a) of resolution 1721 (XVI).

Fortunately, over the past several years, a great many scientific organizations, such as the International Council of Scientific Unions, the Committee on Space Research, which was originally established by the International Council of Scientific Unions, and the International Geophysical Year, have done splendid work in the field of exchange of scientific information and data in the field of outer space. The International Astronomical Union and the International Astronautical Federation have also been greatly interested in developments in regard to outer space. It seems to us desirable that their representatives should be invited to attend the meetings of the Committee as observers -- and I mean not merely those bodies that I have mentioned, but all such organizations that are in a position to help us -- entitled to participate at their request in the deliberations of this Committee and/or its technical sub-committee. Likewise, specialized agencies including the World Meteorological Organization and the International Telecommunications Union, who have already been invited to have representatives at meetings of the Committee, and others, should be with us in this Committee and in the appropriate sub-committees as Observers.

As I said, it is our pleasure to see representatives of the World Meteorological Organization, the International Telecommunications Union and COSPAR with us. The Committee might find it useful also to invite other such organizations, and this is something which we might consider at a later stage of

(Mr. Jha, India)

our work. Links need also to be established in a suitable manner with national governmental and non-governmental organizations engaged in space research or the peaceful exploration of outer space.

It should also be the aim of this Committee to either organize under United Nations auspices or stimulate the organization under the auspices of an appropriate specialized agency or an international scientific organization, joint programmes participated in by several countries, of research and of exploration of outer space.

We also believe that the proper function of this Committee would be to bring about the establishment through international co-operation of institutions for training -- and I emphasize the word "training" in this connexion -- and research in outer space, the facilities of which should be available to scientists and scholars from all over the world. An important part of the work of this Committee should be to work out arrangements for holding an international conference, as decided by the United Nations General Assembly resolution 1472 (XIV). Part B of that resolution decided to convene under the auspices of the United Nations an international scientific conference of interested members of the organizations and members of the specialized agencies for the exchange of experience in the peaceful uses of outer space. This decision was to be implemented in 1960 or 1961.

My delegation considers that maximum good can result from such a conference. We only regret the delay which has occurred in this matter, for reasons beyond control. We trust that this Committee will decide without delay to proceed to a consideration of the organization of such a conference as early as possible.

Parts C and D of resolution 1721 (XVI) asks the WMO and ITU in the fields respectively of international co-operation in weather research and analysis, and aspects of space communication through the use of communication satellites, in which international co-operation will be required, to submit appropriate reports. We are keenly aware that their reports will open up concrete avenues and means of co-operation and implementation of the resolutions before us.

(Mr. Jha, India)

Part A of resolution 1721 (XVI) appropriately invites the Committee on the Peaceful Uses of Outer Space to study and report on the legal problems which may arise from the exploration and use of outer space. Such a study will be among the most important and complicated tasks of our Committee. My delegation approves the idea of a legal sub-committee to be established for such study. We also consider it essential that the most extensive interpretation be given to the mandate of the Committee set out in Part A of resolution 1721 (XVI).

In other words, the study of legal problems should be a comprehensive one, the keynote of such a study being, as the preamble to part A of resolution 1472 (XIV) states: "...that the exploration and use of outer space should be only for the betterment of mankind;" and further "... to avoid the extension of present national rivalries into this new field".

Operative paragraph 1 of part A or resolution 1721 (XVI) commends to States for their guidance in the exploration and use of outer space the following principles:

"(a) International law, including the Charter of the United Nations, applies to outer space and celestial bodies;

"(b) Outer space and celestial bodies are free for exploration and use by all States in conformity with international law and are not subject to national appropriation;".

In our view, this paragraph does not provide, and should not be regarded as providing, the totality of the framework of the study of the legal problems. The principles embodied in paragraph 1 are, no doubt, commendable. We entirely agree with the principles of the United Nations Charter, which are the highest expression of moral principles and truths, are universally and should appropriately be applicable to outer space. But we are not sure that international law, as we know it on earth, can or ought, mutatis mutandis, to be extended to outer space. My delegation cannot contemplate any prospect other than that outer space should be a kind of warless world, where all military concepts of this earth should be totally inapplicable. The limitative connotations inherent in the imperfections of our present-day international law should not be transported into outer space. International law is based on the

(Mr. Jha, India)

concept of the sovereignty of national States. From this, naturally, many consequences follow. Since national sovereignty is barred from any part of outer space or the celestial bodies, international law in large part becomes inapplicable, although its essence of peace and co-operation must prevail in outer space.

(Mr. Jha, India)

A large part of international law is built around the concept of legitimacy of war in certain circumstances, such as self-defence, collective defensive measures, and so on. If outer space is to be banned for all war-like purposes, surely this part of international law can and ought not to have application, particularly in the context of the very salutary principle enunciated in paragraph 1(b), namely that outer space and celestial bodies are not subject to national appropriation.

It seems to us that many of our concepts of international law and those based on national considerations which have necessarily become a part of the mental make-up and attitudes of men and nations should be radically revised. When the day comes that men of various nations, through interr.tional co-operative efforts, journey into outer space and celestial bodies, many old concepts will have to be forgotten and will, indeed, be out of place in outer space. There should be only one governing concept, that of humanity and the sovereignty of mankind. My delegation feels strongly that there can be no other way in which outer space can be dealt with in so far as the problems of war and peace are concerned. A corollary to these considerations might be a declaration outlawing the use of outer space for direct or indirect military purposes. This is both desirable and possible.

These are the preliminary general observations on behalf of my delegation. As I said earlier, the nature of the task before the Committee is of tremendous importance. It needs to bring out the best in all of us, particularly the great Powers which have the resources and the capacity for exploration and use of outer space. We consider it necessary that the Committee should get down to its work earnestly and in a spirit of co-operation and harmony, which has already manifested itself in the statements of the representatives of the big Powers in this Committee, and I underline in this connexion the excellent statements of the representatives of the United States and the Soviet Union. Our task will be best carried out through detailed examination of the scientific

(Mr. Jha, India)

technical and legal problems respectively by appropriate sub-committees. We also consider it essential that this Committee itself, or through a subsidiary body, should take up very soon the consideration of the organization of an international scientific conference on outer space in the very near future.

On other points raised so far and that might be raised in subsequent statements in the Committee, particularly on the question of the composition of the Scientific and Technical Committee and the timetable of the Committee's work, I reserve my right to ask for this Committee's indulgence to intervene again.

The CHAIRMAN: I have no other speaker representing a member of the Committee on my list, but the Secretary-General of the World Meteorological Organization, Mr. Davies, has asked to address the Committee. In accordance with the Committee's consensus of yesterday, I now call upon Mr. Davies.

Mr. DAVIES (Secretary-General, World Meteorological Organization): The launching of the first artificial earth satellite Sputnik I on 4 October 1957 aroused the intense interest of the whole world. Scientists were particularly interested and not least those engaged in the study of the atmosphere. The interest of these latter arose from the fact that while their field of study was the atmosphere itself rather than outer space, for the first time a platform from which the earth's atmosphere could be observed from outside the atmosphere became feasible.

Interest changed to hopes and aspirations with the successful launching of the first working meteorological satellite Explorer VII on 13 October 1959. Subsequently the outstanding success of the American Tiros series of satellites, as well as other satellites of the Soviet Union, took matters to the stage where hopes and aspirations were becoming reality.

With these and other related successes in mind, the sixteenth session of the General Assembly of the United Nations on 20 December 1961 adopted, as representatives will be aware, resolution 1721 (XVI) entitled "International co-operation in the peaceful uses of outer space". This resolution deals with many aspects of outer space development and includes a specific section on the

(Mr. Davies, WMO)

question of atmospheric sciences, weather forecasting and related problems. This same section requests the World Meteorological Organization to prepare a report for distribution to Member countries and to the Economic and Social Council at its July session this year, as well as to the seventeenth session of the General Assembly. The resolution also requires that the report be submitted to this Committee for comments.

I therefore welcome the opportunity of making a statement to the Committee on the action which WMO has so far taken in the preparation of the required report and the general approach of WMO to this problem; in other words, to make a kind of verbal progress report. I was thus very happy to receive from you, Mr. Chairman, your permission to address the Committee on this important subject.

It is, I think, worthy of note that WMO had had the general question of meteorological satellites under study for some time before the United Nations resolution was adopted. As far back as 1958, the WMO Executive Committee, realizing the potential value of this new technological development to the science of meteorology and its applications, appointed a rapporteur to prepare a report for consideration by the WMO Congress in 1959. Subsequently, a resolution was adopted on the subject of meteorological satellites. The resolution noted the great potential value of data received from satellites and decided that WMO's policy in this field should be:

"(1) To encourage the development and use of artificial satellites as a means of providing valuable meteorological data;

"(2) To collaborate as required with the United Nations, other specialized agencies and scientific organizations, in particular the Committee for Space Research, in artificial satellite programmes which may lead to results of interest to meteorologists or on which the advice of meteorologists may be useful."

The Congress resolution also:

"Requested the Executive Committee to arrange for a continuing review to be made of the uses of artificial satellites for meteorological purposes and to keep Members informed of interesting developments in this field."

(Mr. Davies, WMO)

Subsequently the Executive Committee at each of its annual sessions in 1959, 1960 and 1961 gave consideration to this matter and in particular studied the reports of a panel of experts which the Committee established to advise it on this subject. I will not enlarge on the decisions taken at these sessions of the Committee except to say that they involve the encouragement of all activities relating to meteorological satellites and the steps necessary to keep the Member countries and the various constituent bodies of the Organization fully informed of developments.

(Mr. Davies, WMO)

As regards the composition of this panel, I may mention that it has from the outset comprised four experts, one from the United States and one from the USSR, these countries having been chosen for obvious reasons. The other two members are experts who represent two of the WMO Technical Commissions most concerned with this subject. This panel has been studying the problems involved since 1959; it has held some meetings and, as already mentioned, has submitted reports to the Executive Committee.

Representatives will therefore see from this brief description of the action taken by WMO prior to the adoption by the General Assembly of resolution 1721 (XVI) that WMO was not unprepared to meet the request addressed to it by Part C of that resolution, and the preparatory work which WMO has taken in the preceding four years or so certainly greatly facilitates the completion of the task now presented to WMO in the resolution.

Turning now to the resolution itself, there are two broad aims. The first is to advance the state of atmospheric science and technology so as to provide greater knowledge of basic physical forces affecting climate and the possibility of large-scale weather modification. The second is to develop existing weather forecasting capabilities and help Member States to make effective use of such capabilities through regional meteorological centres.

While these two aims are of course related one with the other, they nevertheless form convenient compartments into which the required studies may be divided. The first -- that is, the advancement of the state of atmospheric science and technology -- may, for convenience, be referred to as the research aspects. The second -- that is, the development of existing weather forecasting capabilities -- may, for convenience, be referred to as the operational aspects.

In their broadest sense, these aims involve a reappraisal of the atmospheric sciences and their applications in the light of this new observational device -- the artificial satellite. Such a reappraisal will touch upon almost all aspects of WMO activities. Moreover, as the resolution itself points out, consultations with other organizations -- governmental and non-governmental -- are desirable if a fully satisfactory report is to be prepared. Thus, the report

(Mr. Davies, WMO)

to be prepared is one which is very wide in scope as regards its substance and one which requires detailed internal discussions within WMO as well as external discussions with many other organizations.

As regards the research aspects, it should be noted that the Convention of WMO specifically requires that the organization shall encourage research in meteorology and shall assist in co-ordinating the international aspects of such research. Thus, this part of the responsibility which the General Assembly has given to WMO falls within the formally adopted purposes of the organization. The fact that the General Assembly has demonstrated the importance of this new development, and the interest it has taken in it, provide a most welcome stimulus to WMO's activities in this field, which will, I feel sure, be reflected in the future activities and programme of the organization.

Nevertheless, it is recognized that there are other organizations whose interests may directly or indirectly touch upon this subject, and it is certainly the wish of WMO to consult with all such organizations, whether governmental or non-governmental, and to devise appropriate channels for collaboration now and in the future. The main non-governmental body is the International Council of Scientific Unions, which is known as ICSU and which is, of course, the parent body of COSPAR, and which is specifically mentioned in the resolution of the General Assembly. Collaboration with this body is proving to be a very simple matter, since working arrangements between ICSU and WMO were formally adopted some time ago and these arrangements establish the policy of mutual collaboration in all fields of common interest as well as the machinery for ensuring such collaboration. As regards the governmental agencies, notably UNESCO, the International Telecommunication Union, the International Atomic Energy Agency, and the World Health Organization, the respective arrangements for collaboration long since established between WMO and these sister agencies in the United Nations family, as well as the good relations which have at all times existed between WMO and these agencies, should ensure effective collaboration.

(Mr. Davies, WMO)

As regards the nature of the proposals on research which WMO will put forward in its report, it is premature to attempt to give any detailed information at this stage, but it is clear that the vast range of new observational material from meteorological satellites will offer tremendous scope for research projects, many of which, it is thought, will need to be conducted on an internationally co-ordinated basis. With a view to exploring these possibilities, WMO has convened a meeting in Geneva in two weeks' time for the sole purpose of discussing this aspect of the report. Experts from ICSU, UNESCO, ITU and other bodies have been invited, as well as, of course, experts from various technical bodies of WMO. Not only will the broad lines of future research projects be discussed but also the machinery necessary for ensuring co-ordinated international planning and execution of such projects.

Turning now to the operational aspects of the report, that is, the utilization of the satellite data for immediate practical purposes, particularly weather forecasting, from an organizational point of view this is in its simplest form an extension of existing activities of WMO, activities which have indeed constituted the raison d'être of WMO and its predecessor IMO for nearly a century. Appropriate technical commissions of WMO have the matter under study, as have also several working groups and panels of experts of the organization.

Here again, WMO has invited all other organizations that may be able to contribute to the study of this aspect of the report or that may, directly or indirectly, stand to benefit from developments in this field, to collaborate in the preparation of the report.

Having dealt with the question of international collaboration in the implementation of the resolution, I would like now to say something about the other steps taken which more directly relate to the drafting of the report. As already explained, most aspects of the required studies fall not only within the terms of reference of WMO but also within the scope of its present activities and its long experience. One vital aspect, however, involves scientific and technical knowledge which only two countries in the world so far possess -- the United States and the USSR. I therefore addressed an appeal to both countries to assist the organization by enabling the services of high-level scientists to be

(Mr. Davies, WMO)

made available as consultants to me as Secretary-General of WMO, to work for a period in the WMO Secretariat. I felt this was the only way to ensure that the report to be presented to ECOSOC and to the General Assembly later this year would be completely sound both as regards scientific accuracy and as regards the potential of meteorological satellites in the development of the atmospheric sciences and the realization of this potential.

I am happy to report that both countries responded favourably to this appeal and at this moment experts from these two countries are now working side by side in the WMO Secretariat in Geneva, assisting the Secretariat in the preparation of the report. Moreover, this assistance is being given by both countries at no cost whatsoever to the organization -- a striking example of co-operation and goodwill. The representative of the USSR made reference, in his remarks earlier this afternoon, to this assistance which Soviet scientists are giving to WMO.

I have so far in my remarks avoided discussions of the more scientific studies which have to be undertaken to prepare the required report. This is partly because I felt that this Committee would wish to concern itself more with the broader and less specialized questions involved. It is also partly due to the fact that these studies are still in progress and it would be premature to report on them at this stage. For example, a most important stage in studying the research aspect will be the meeting, to which I referred earlier, which will take place in Geneva in a few days' time. Nevertheless the Committee may be interested in a brief explanation of the sort of data which satellites can provide in the present context.

(Mr. Davies, WMO)

As I mentioned at the outset the significant feature of satellite meteorology is that for the first time man has the possibility of observing the earth's atmosphere from beyond the atmosphere. At the moment, and no doubt for many years to come, such observations will be confined to the type in which technical devices take automatic readings and relay them to the ground and indeed astonishing ingenuity has been shown in developing and perfecting such devices. With the remarkable achievements in the field of manned satellites accomplished By the USSR and the United States of America still so fresh in mind, it may not perhaps be too much to hope that at some future time manned meteorological satellites for maintaining a watch on the world's weather, or at least for special research projects, may become possible.

Returning now to the type of observations which have become possible, probably the best known is that of photographing the earth's surface, storing the photographs on a magnetic tape and then transmitting the information to the appointed read-out station.

Already remarkable success has been achieved by the satellites in this respect. In the photographs, the cloud systems are clearly visible and these enable much information on the overall weather situation to be deduced. While these photographs will not replace the present techniques of preparing and analysing weather maps which are built up from the study of observations at individual stations, they undoubtedly mark a major step forward in this branch of meteorology which we call synoptic meteorology. Weather forecasting will be correspondingly improved especially in those areas for which information from surface reporting stations is very scanty -- for example the ocean areas of the world, the polar regions and many tropical regions. Indeed tropical meteorology, which has so far tended to lag behind the temperate regions in the development of forecasting techniques, mainly due to the comparative paucity of meteorological stations, may well take an important step forward. When we consider that many of the less developed countries lie in tropical and sub-tropical regions and that in many of these countries the application of meteorological knowledge to economic development is particularly important, we get an insight into the potential value of satellites to these countries.

(Mr. Davies, WMO)

The great success of the TIROS satellites in providing photographs which have enabled certain hurricanes and other severe tropical storms to be detected and to be tracked a considerable time earlier than was possible by orthodox techniques is but one striking example of the value of the cloud photographs in providing warnings of such dangerous storms.

In addition to giving information on the general weather situation such photographs give information of snow and ice over land areas, which will be of great interest to the hydrologist. It will also give information on the ice over sea areas, which will be of great interest to shipping. Then again the study of these photographs in conjunction with ground observations are showing that much information may be gained on the wind structure of the atmosphere as well as on many problems related to atmospheric processes in general.

Another important type of observation is that of infra-red measurements of various kinds. Among the kind of observations which infra-red sensors make possible are the temperature of the earth's surface, including sea-surface temperature, temperature of cloud tops, ozone measurements, atmospheric moisture and density measurements and so on. There is also a possibility that radar systems may be introduced which may enable precipitation to be detected on a world scale.

The availability of these types of observations and, no doubt, the other types still to be evolved, will have a great impact on both the research and operational aspects of the atmospheric sciences.

It must be realized, however, that the full utilization of these observations will require certain organizational and financial arrangements. This was indeed foreseen in the resolution which specifically mentions these points. These arrangements are of course now being actively studied. They involve such questions as the establishment of regional centres throughout the world, also foreseen by the resolution, improved telecommunications facilities for the distribution of the satellite information to all countries, the training of personnel, arrangements for making satellite data available to research workers and in a form suitable for their purposes, the establishment of machinery for the development of internationally co-ordinated research projects, and so on.

(Mr. Davies, WMO)

The report which WMO will submit will include a plan of action covering all these items. In many cases full implementation of the plan will inevitably take some time. Moreover, we are dealing with a subject in which developments are taking place at an almost breath-taking rate. We therefore envisage a plan of action covering the ten-year period from 1963 to 1972. During this period we envisage a phased implementation of the plan -- possibly using three phases, the first two, of three-years duration and the last, of four-years duration. The plan of action for the first phase will, we hope, be precise in every detail and, if given the necessary support, be capable of immediate implementation. The two later phases will be as detailed as possible but inevitably somewhat less precise, but the plan of action for the first phase will include arrangements for studies and the convening of meetings which will enable the plans for the later phases to be completed in detail so that they will be ready for implementation at the appointed times.

These ideas are still tentative and I mention them to show our general approach to the problem rather than to anticipate what will finally appear in the report.

Before concluding my remarks, I should like to answer the question raised by the representative of France regarding the timing of the preparation of the WMO report. It will, I feel sure, be readily appreciated that the preparation of a report of this kind cannot be achieved in a short time nor without many meetings and discussions of experts. Our plans are that there will be a meeting to discuss the research aspects on 3 to 6 April. I referred to this meeting earlier in my remarks. A further meeting will be held toward the end of April to discuss a first complete draft of the report. The WMO Executive Committee will then finalize the report at its session in May and June of this year, giving barely enough time for preparation of the report for consideration by the Economic and Social Council in July. It will, therefore, be extremely difficult for the WMO report to be ready for consideration by this Committee before the next session of the Economic and Social Council. I hope that this gives the information requested by the French representative.

I fear I have already taken up too much of the time of the Committee and I will now bring my remarks to a close. May I in conclusion say that the advent of the era of meteorological satellites will undoubtedly mark a turning point in the

(Mr. Davies, WMO)

science of meteorology and its applications. The timely decision of the General Assembly to call for a report and the comprehensive approach to the problem contained in the General Assembly's resolution on this subject will do much to ensure that full advantage is taken of the satellite era in improving our fundamental knowledge of the atmosphere in which we live and of applying this knowledge in practical ways to the benefit of all peoples of the world. I need hardly add that WMO welcomes the responsibility given to it by the United Nations and the opportunity which the General Assembly resolution presents to the Organization in making a major step forward in attaining the aims and purposes as prescribed in its basic Convention.

The CHAIRMAN: The next meeting will take place tomorrow afternoon at 3 o'clock.

The meeting rose at 6 p.m.