

REVIEW OF THE SPACE PROGRAM

HEARINGS
BEFORE THE
COMMITTEE ON
SCIENCE AND ASTRONAUTICS
U.S. HOUSE OF REPRESENTATIVES
EIGHTY-SIXTH CONGRESS
SECOND SESSION

JANUARY 20, 22, 25, 26, 27, 28, 29,
FEBRUARY 1, 2, 3, 4, AND 5, 1960

[No. 3]
PART 1

Printed for the use of the Committee on Science and Astronautics



UNITED STATES
GOVERNMENT PRINTING OFFICE
WASHINGTON : 1960

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CONTENTS

Statement of—	Page
Abbott, Ira H., Director, Advanced Research Programs, National Aeronautics and Space Administration; accompanied by Richard E. Horner, Associate Administrator, National Aeronautics and Space Administration.....	291
Allen, George V., Director, U.S. Information Agency; accompanied by Harry Carter, General Counsel; James Halsema, Director of Plans; Oren Stephens, Director of the Office of Research; and Harold L. Goodwin, science adviser.....	35
Betts, Brig. Gen. Austin W., Director, Advanced Research Projects Agency.....	146, 153
Charyk, Hon. Joseph V., Under Secretary of the Air Force.....	426, 450
Dryden, Dr. Hugh L., Deputy Administrator, National Aeronautics and Space Administration.....	175
Finger, Harold B., Chief, Nuclear Engines Division, Space Flight Development, National Aeronautics and Space Administration.....	319
Gates, Hon. Thomas S., Jr., Secretary of Defense; accompanied by Dr. Herbert F. York, Director of Defense Research and Engineering; and Brig. Gen. George S. Brown, Military Assistant to the Secretary of Defense.....	63
Glennan, Dr. T. Keith, Administrator, National Aeronautics and Space Administration.....	167, 269
Horner, Richard E., Associate Administrator, National Aeronautics and Space Administration.....	183
Merchant, Hon. Livingston T., Under Secretary of State for Political Affairs; accompanied by Philip J. Farley, Special Assistant to the Secretary for Atomic Energy and Disarmament; Raymond F. Courtney, Officer in Charge, Defense and Special Projects, Office of Atomic Energy and Disarmament; Joseph Sisco, Deputy Director, Office of United Nations Political and Security Affairs; Leonard Meeker, Assistant Legal Adviser for United Nations Affairs; and Alexander Schnee, Legislative Management Officer.....	2
Newell, Dr. Homer E., Jr., Assistant Director, Space Science Division, National Aeronautics and Space Administration.....	337
Schriever, Lt. Gen. Bernard A., commander, Air Research and Development Command, U.S. Air Force; accompanied by Col. Beryl L. Boatman, executive officer, headquarters.....	496
Sharp, Hon. Dudley C., Secretary of the Air Force.....	424, 452
Silverstein, Dr. Abe, Director, Space Flight Programs, National Aeronautics and Space Administration.....	243
Tepper, Dr. Morris, Chief, Meteorological Satellite Program, National Aeronautics and Space Administration.....	361
Von Braun, Dr. Wernher, Director, Development Operations Division, Army Ballistic Missile Agency, Huntsville, Ala.; accompanied by Richard E. Horner, Associate Administrator, National Aeronautics and Space Administration; and Frank Williams, Assistant Associate Administrator, National Aeronautics and Space Administration....	386
White, Gen. T. D., Chief of Staff, U.S. Air Force.....	459
Wilson, Lt. Gen. R. C., Deputy Chief of Staff, Development, U.S. Air Force; accompanied by Brig. Gen. H.A. Boushey, Director, Advanced Technology, U.S. Air Force.....	479
Yates, Maj. Gen. Donald N., commander, Atlantic Missile Range....	502
York, Dr. Herbert F., Director, Defense Research and Engineering, Department of Defense; accompanied by Brig. Gen. Austin W. Betts, Director, Advanced Research Projects Agency; William H. Godel, Director, Policy and Planning Division, ARPA; and George Sutton, Chief Scientist, ARPA.....	95, 153

REVIEW OF THE SPACE PROGRAM

WEDNESDAY, JANUARY 20, 1960

HOUSE OF REPRESENTATIVES,
COMMITTEE ON SCIENCE AND ASTRONAUTICS,
Washington, D.C.

The committee met at 10:05 a.m., Hon. Overton Brooks, chairman, presiding.

The CHAIRMAN. The committee will come to order.

This morning we formally open the hearings for the current year.

More than half a year has gone by since the full committee has considered, in substance, the progress of our national space program. In today's swift world, this is a long time. Much has happened in that time. Equally important, much has failed to happen.

Those of us on this committee would be indulging in fanciful thinking if we did not admit to ourselves that the U.S. space effort has reached neither the pace nor the proportions which we had hoped for when we passed the National Aeronautics and Space Act in July 1958. Perhaps we expected too much. But there are definite indications—these have existed for some time—that a true sense of urgency has not constantly attended the American space program.

Those of us on this committee would also be blind to existing facts if we failed to recognize the groundswell of public discontent, uncertainty and—in some cases—dismay which is presently surrounding the space program.

Recognizing that our space scientists, engineers, and technicians have accomplished a great deal and that theirs is a very difficult job, nonetheless, I do not believe we can afford to ignore these danger signals. Nor can we ignore the obvious fact that the U.S.S.R. which was already operating from a superior position, has made relative advances as great as ours, perhaps greater, during this same period.

It also seems clear that the administration is not satisfied with the progress of our space program to date, as evidenced by the President's recent message asking for extensive changes in the Space Act of 1958. Just 2 days ago I introduced a bill embodying these changes at the request of the White House.

For all the foregoing reasons, the hearings we are beginning today would seem to be essential.

It is our intention here to make a thorough and careful review of the U.S. space program, to study the problems it presents with expert assistance, and to recommend to the Congress ways and means of shunting that program onto the fastest possible track.

We are beginning these hearings in a way in which we believe will place them in their proper context. We will be hearing from crucial witnesses whom we have asked to give an appraisal of the importance of the American space effort from the point of view of their particular

departments. It is our hope that in this way we will be able to measure the true significance of that effort as a force—both domestic and international—in the scheme of our affairs as it exists today.

After establishing this broad view, we intend to investigate the details and specifics of the space program with subsequent witnesses and thus endeavor to locate its soft spots and find out what can be done about them.

In this connection, I want to say that we intend to push these hearings forward as rapidly as we can. It may be necessary for the committee to meet in the afternoon. It may be necessary at times to meet late in the afternoon because we have a heavy schedule of witnesses. But if the members of the committee will bear with me, we can get the job done. I know of no more important job this year to be done by our Congress than digging into the space program to see how this committee can constructively help the U.S. effort.

It is a pleasure this morning to open these hearings, gentlemen of the committee, members of the press and spectators, with the testimony of Hon. Livingston T. Merchant, Under Secretary of State for Political Affairs.

Mr. Secretary Merchant, you have a prepared statement. We will be happy to have you read it and then we would like to ask you a few questions.

STATEMENT OF LIVINGSTON T. MERCHANT, UNDER SECRETARY OF STATE FOR POLITICAL AFFAIRS; ACCOMPANIED BY PHILIP J. FARLEY, SPECIAL ASSISTANT TO THE SECRETARY FOR ATOMIC ENERGY AND DISARMAMENT; RAYMOND F. COURTNEY, OFFICER IN CHARGE, DEFENSE AND SPECIAL PROJECTS, OFFICE OF ATOMIC ENERGY AND DISARMAMENT; JOSEPH SISCO, DEPUTY DIRECTOR, OFFICE OF UNITED NATIONS POLITICAL AND SECURITY AFFAIRS; LEONARD MEEKER, ASSISTANT LEGAL ADVISER FOR UNITED NATIONS AFFAIRS; AND ALEXANDER SCHNEE, LEGISLATIVE MANAGEMENT OFFICER

Mr. MERCHANT. Mr. Chairman and gentlemen, I am appearing before your committee this morning in place of the Secretary of State who regrets as much as I do that it was impossible for him to be with the committee today. I will be followed by a distinguished group of witnesses including Mr. Allen Dulles, Mr. George Allen, Dr. Keith Glennan, and Secretary of Defense Gates.

The CHAIRMAN. Mr. Secretary, Mr. Herter sent us word that if we needed his testimony later on, he would be most happy to come before the committee at a later date and we thank him very much for that courtesy.

Mr. MERCHANT. Thank you, sir.

Most of the questions which I imagine this committee is most interested in will, I am sure, be answered by the testimony of those who follow me. I am equally sure that the committee understands that the Department of State, interested as it is in the exploration and use of outer space, has no technical competence or operational responsibility in this field. The Department's interest is substantially con-

cerned with how our position in this field bears on our relations with other countries.

The exploration and use of outer space have introduced a new element into the complex of factors governing relations among Nations. What we do in this new field and the manner in which we do it have both actual and symbolic significance.

Although the practical potentialities of outer space activities cannot now be fully foreseen, outer space clearly represents a field from which man may derive substantial benefits, into which man may strive to extend his power and influence, and about which conflicts may arise. All nations have an interest in the opportunities and problems thus presented.

Besides this fact, the achievements of a nation in outer space may be construed by other nations as dramatically symbolizing national capabilities and effectiveness. The challenge to the imagination has been great. Equally great have been the skills and resources needed to respond to this challenge. Consequently, achievements in outer space have been both startling and impressive.

The connotations of those achievements are inescapable. The sending of a manmade object into orbit around the earth or beyond the claim of the earth's gravity requires a very high order of scientific knowledge and skill supported by extensive technological and industrial capabilities. Furthermore, a flight into outer space which itself has no direct military importance may have military implications since the performance of space vehicles is indicative of missile capabilities in thrust and, to an extent, guidance.

By being first to achieve success in space flight, the Soviet Union has reaped great prestige. Continuing achievements have made this gain an enduring one. It has become apparent to all that the Soviet Union is capable, where it chooses to concentrate its efforts, of pioneering work in advanced and difficult fields of science and technology. It has been demonstrated that the Soviet Union is not limited to following and imitating the achievements of Western science and technology.

Although this new and justified view of Soviet capabilities is greatly to the credit of the Soviet Union, Soviet spokesmen would like the world to draw even more far-reaching conclusions. The Soviet Union would clearly like the world to conclude from its successful satellites and lunar probes that the Soviet Union has drawn abreast and even ahead of the United States in all of the broadly related fields which contribute to or derive advantage from such accomplishments. Further, the Soviet argument runs that these successes portray overall capabilities, including military strength, and, therefore, that the Soviets ride the wave of the future.

The spectacular character of Soviet achievements has undeniably overshadowed the accomplishments of the United States, and it would be dangerous to regard as insignificant the effects of Soviet claims based on its achievements.

It is not within the competence of the State Department to attempt to compare the United States and the Soviet space programs. I believe, however, that later witnesses appearing before your committee will show that while the United States is behind the Soviet Union in total outer space achievements, a balanced appraisal indicates sub-

stantial and significant achievements on our own part. I also believe that these witnesses will testify that our program of space science and its practical applications appears to be sounder and broader than that of the Soviet Union.

Furthermore, what we have done and are continually doing in the many fields of modern science and technology, in addition to outer space, makes absurd any contention that scientific and technological leadership on any broad front has passed to the Soviet Union.

Finally, insofar as military aspects are concerned, I think I should properly leave this aspect to be dealt with by later witnesses.

My purpose is to place in perspective the fact that in response both to Soviet outer space achievements and to relentless Soviet propaganda exploitation of them, the world image of the general standing of the Soviet Union has been enhanced. This is not to say that we have lost the confidence of our friends in our strength or our scientific and technological capability. There is no doubt, however, that our friends are watching our own future progress and achievements in this field.

I have dealt extensively with the symbolic significance of outer space achievements because I believe we must all recognize these facts of life in the early space age. It is equally important, however, to examine the actual opportunities and problems arising from outer space activities, and I wish now to turn to certain objectives and characteristics of the U.S. outer space program which I believe have been recognized abroad and which we, ourselves, should fully appreciate. These matters relate in particular to the manner in which the United States as a free society and a willing member of the international community has gone about its outer space effort, and to the relationship between our approach and the substance of our program.

In contrast with the Soviet Union, the United States has taken an active lead in seeking international cooperation and consultation regarding the new opportunities and problems which are arising. Our approach has recognized two aspects of these matters. The first is that of consulting and cooperating in an effort to find means of assuring the use of outer space for peaceful purposes only. The second is that of consulting and cooperating in the conduct of outer space activities and in the establishment internationally of an orderly basis for their accomplishment.

With respect to the first of these matters, our approach has been consistent. Even before the launching of the first earth satellite, the President of the United States invited the Soviet Government to join in an effort to find ways to assure that outer space be used for peaceful purposes only. Ambassador Lodge has reiterated this proposal on appropriate occasions in the United Nations. The United States has thus made clear its desire, either as a part of or separately from the more inclusive efforts to establish control of armaments, to study and explore together with the Soviet Union and other nations what might be done to accomplish this objective.

Meanwhile we have sought to proceed with more immediately attainable consultative and cooperative activities related to peaceful uses themselves. In doing so, we have recognized that outer space, by its very nature, is not the concern of one nation or of only a few. It is of interest to all.

Accordingly, as one indispensable measure to foster international consultation and cooperation, we have taken the lead in United Nations activities related to outer space. In the 13th General Assembly, with the support of a number of other countries, we succeeded in having established a United Nations Ad Hoc Committee on the Peaceful Uses of Outer Space. This Committee was requested by the General Assembly to study and report on appropriate areas of cooperation, the nature of emerging legal problems, and future organizational arrangements to facilitate cooperation.

The Soviet Union and certain other countries refused to participate in the pioneering work of this Committee. Nevertheless, a constructive study was carried out and reported to the 14th General Assembly in the fall of 1959. This study has provided an informed basis on which the General Assembly can better approach the new matters with which it will have to deal. The Department wishes to express its thanks to the Members of the Congress who served as advisers to the United States delegation to the Ad Hoc Committee of the United Nations.

They played a helpful and constructive role and we regard the Ad Hoc Committee's meetings as highly productive.

Following submission of this initial study to the General Assembly, we again actively sought the continuance of United Nations efforts and succeeded in reaching unanimous agreement among members of the General Assembly on establishment of a committee to examine practical measures to follow up the initial study and, in particular, to work out proposals for convening an international scientific conference for the exchange of experience in and peaceful uses of outer space. The Soviet Union agreed to take part in the work of this new Committee, and, indeed, proposed the international conference to which the Committee will first turn its attention. I believe the ability of the United States and the Soviet Union to reach agreement on these matters is of the utmost importance.

We are now engaged in working out specific proposals and plans for the international conference and for other promising activities of the new Committee. We believe strongly that the proposed conference will serve as a valuable meeting ground for people engaged in outer space activities or interested in the results of these activities. It would usefully supplement exchanges thus far carried out in the international scientific community and should, we believe, be broader in its scope than the normal exchanges through purely scientific channels. We have welcomed as a hopeful sign, the Soviet Union's willingness now to share its experience and to participate in future activities.

In addition to these efforts to insure that the United Nations is appropriately organized to consider the problems and opportunities of the space age and is fully informed about them, one other aspect of our work within the framework of the United Nations is particularly significant. The allocation of radio frequencies represents the first practical problem of a regulatory character which confronts us in the outer space field and constitutes an important component in providing internationally a basis for the orderly accomplishment of outer space activities. In a meeting held during the fall of 1959 with over 80 other countries in the International Administrative Radio

Conference of the International Telecommunication Union, the United States called attention to the need for reserving radio frequencies for space communications and radio astronomical research. Although the Conference accorded some recognition to this problem and made minimal provision for frequencies for these services, the results of the Conference can be regarded as only a first step toward resolution of a problem which will become increasingly pressing in the future and toward the general goal of adopting useful regulatory measures.

In the conduct of our own space program, moreover, we have also carried out in practice the principles of consultation and cooperation which we have supported in the United Nations. In doing so, we have been assisted by three "operational" characteristics of the U.S. program.

First, the U.S. program, by its nature and by virtue of our geographic position, requires a worldwide system of ground support facilities. A worldwide tracking and communications network plainly depends upon the participation of other nations and opens the way to direct cooperation. The number of countries involved in such cooperation in various degrees, is now approaching the figure of 20.

Second, our national tradition of "openness" has provided the basis for free and prompt dissemination of the results of our scientific activities, a matter in which we have been more consistent and conscientious than the Soviet Union, and also for bringing scientists of other countries actively into the planning and conduct of scientific experiments. We have, for example, explored possible cooperative programs with the British and look forward to completing an agreement to this end. We are undertaking similar discussions with Japan and with certain other countries. In recognition of the fact that the interests of NATO go beyond defense matters, we have offered through the NATO Science Committee to incorporate in future satellites scientific experiments which may be proposed by scientists of NATO countries.

Of particular importance is the support which we have given to nongovernmental scientific organizations which are active in the field of outer space and which, indeed, represent the traditional channel for scientific cooperation. The Committee on Space Research of the International Council of Scientific Unions is prominent in this regard. We have offered to place in orbit individual experiments or a complete scientific payload recommended by COSPAR.

The openness of our outer space program thus enables us to make possible mutually beneficial participation in outer space activities and to benefit from results achieved by scientists of countries which are not, themselves, actively launching earth satellites and space probes. It has the further advantage of widely informing the international scientific community of our own progress and achievements in the field of outer space. Although security considerations may affect some aspects of outer space programs, I believe that "openness" should continue to be a keynote of the U.S. effort.

A third characteristic of our effort has been our natural interest in the development of what may be called service or utilitarian applications of space vehicles. I refer to such information gathering and transmitting satellites as those for communications, meteorology, and

navigation. The benefits of such satellites, when they become practical, will be widespread and should be widely shared. Such activities may, of course, add to the strength of our military position as well as contribute usefully to civilian activities. Furthermore, we should not overlook the possible usefulness of service satellites in contributing to the stability of international relationships and to maintaining the peace by providing information which will, for example, serve to discourage attempts at surprise attack. Closely related is the potential use of service satellites in enforcing international arms control agreements.

I mention these characteristics of our outer space effort because they promise to be of growing significance in facilitating the role of the United States in those international consultative and cooperative activities which give substance and meaning to outer space insofar as other countries are concerned and which, in turn, form a valuable support of our own effort. I have mentioned them also because they represent fundamental differences in the approach of the United States and the Soviet Union. These differences have not gone unrecognized by other countries, and our cooperative and consultative efforts have gained increasing recognition abroad. We feel that these efforts have strengthened our own position in an area where, by virtue of our free society, we enjoy greater flexibility than the Soviet Union.

The performance of the United States and the Soviet Union in outer space will inevitably be compared by the rest of the world, and I wish to leave no doubt in the committee's mind that the Department of State fully supports a strong and vigorous outer space effort. As much as developments in any other area, the events in outer space of the past 2 years have made it clear to all that the Soviet threat is neither purely political nor short term. The Soviet accomplishments in this field are witness to strong scientific, technical, and industrial capabilities, organizational effectiveness in concentrated effort, and they reflect growing military strength. These are sobering facts. But the danger to ourselves would come not from recognition of these facts, but from refusal to recognize them.

The international power position of the United States by no means rests on activities in the field of outer space alone. These have, however, because of their dramatic impact, assumed a special significance. We are responding in the traditions of a free society. I am sure that by maintaining a broadly based, imaginative scientific and technological effort in the exploration and use of outer space, we shall find proof of the capabilities and effectiveness of our free society.

If I may at this point summarize my testimony, I would first note that all nations on this globe have an interest in the opportunities and problems with which outer space and its ultimate exploration so dramatically confront us. The Soviet Union, first to achieve a spectacular success in space flight, has gained thereby great prestige. The prospect is that this lead will not be easily overcome. As one would expect, Soviet propaganda has with some success capitalized on the technological achievements of the Soviet Union in space by attempting to present an image of preeminent achievement, not merely in science and technology, but across the board, including military power.

It would be wrong and dangerous to discount either the achievement or the impact of that achievement on the minds of peoples all over this world.

What I have also said, however, is that testimony will be given to show the strength and breadth of our own space program. Our own achievements negate any contention that scientific and technical leadership on any broad front has passed to the Soviet Union. The military aspect of all this I will leave to the witnesses who follow me.

I have also noted—and I think this of great importance—that the basic approach of our country differs from that of the Soviet Union. We have emphasized from the outset consultation and cooperation with others. Even more important, we have taken the lead in the effort to establish a firm foundation for the devotion of outer space to peaceful purposes. Our leadership in the United Nations and elsewhere in this effort is undeniable, and we will continue to follow this policy.

We will continue to work with other nations on the basis of our national tradition of “openness” and we will pursue our efforts to develop space vehicles for purposes of genuine service and utility to ourselves and those who are cooperating with us.

The Department of State throws its full support to a vigorous and continuing national effort in the challenging field of outer space. Soviet accomplishments in this field testify to the capacities of the Soviet Union. As responsible members of a free society, we recognize this fact. We have, however, full confidence that through our national efforts, the United States on the broad scientific front can and will demonstrate in the field of outer space the leadership which is historically associated with free men.

The CHAIRMAN. Thank you very much, Secretary Merchant, for a very fine statement.

We have adopted a rule in this committee that the members of the committee would be limited to 5 minutes questioning for each witness. If we have time left over, we will go around a second time and give a further opportunity for questioning.

We were going to have a clock here. The clock hasn't shown up. We do have access to the clock on the wall and that ought to be enough for the average member and I will just ask members to remember that and if they do go far beyond that in a forgetful mood, the Chair may have to call that to the attention of the member.

Mr. MILLER. The Chair has now consumed 2 minutes, but I move that not be taken out of his time.

The CHAIRMAN. Without objection, it is so ordered.

Look at the clock there, George, and assure yourself that the chairman will not extend himself beyond 5 minutes.

Mr. Secretary, have we experienced any difficulties as a result of the Soviet progress in outer space with our allies or with uncommitted or neutral countries as a result of the Soviet prowess in the space effort?

Mr. MERCHANT. As I indicated in my statement, Mr. Chairman, there is no question but that by its achievements and exploits in the field of outer space, the Soviet Union has enhanced its prestige. I think that is on a worldwide basis. It may vary from country to country or from area to area, but it is a fact that it has gained prestige significantly from its achievements.

The CHAIRMAN. Have any of these uncommitted countries, our allies or neutrals, given this as a reason why they would not cooperate with us in any particular portion of our foreign program?

Mr. MERCHANT. No, sir; not to my knowledge in any case.

The CHAIRMAN. Do you have any suspicion that that is a reason why they are reluctant at times to participate with us in our program?

Mr. MERCHANT. I would have no evidence of that, sir. Of course, the image and attitudes of the Soviet Union, just as the image we present to the world, affects the degree to which we can obtain cooperation. In the United Nations where cooperation is not automatic, we have a situation. There has been a distinct gain by the Soviet Union in this field. I couldn't single it out, however, as an isolatable, single fact.

The CHAIRMAN. If they continue to gain in accomplishments and prestige, do you have any doubt in your mind but what that will affect the view of some of these neutrals or some of our allies with reference to future cooperation with our program?

Mr. MERCHANT. I think if the Soviet Union were to continue to gain significantly in prestige in this field, this would be an element, yes, sir.

The CHAIRMAN. And likewise in the reverse, if we continue to lag in our space program, the same would result, wouldn't it?

Mr. MERCHANT. This is one of the factors I think that create or influence national and popular attitudes abroad.

The CHAIRMAN. So that the space program is bound up in a bundle, you might say, altogether with our foreign policy. And the foreign policy will move forward better, more efficiently and faster, easier, as we produce results in the space program, isn't that true?

Mr. MERCHANT. It is one element, of course, in many, Mr. Chairman, but I wouldn't deny for a minute that our progress and position in this field is of real importance in our foreign policy and its execution.

The CHAIRMAN. Have you any way you can indicate where the State Department has not done all that it should have done in pushing agreements and understandings and cooperative efforts with other countries in reference to the space program?

Mr. MERCHANT. The only one I can think of, sir, at the moment, is the fact that I think the Soviet Union, against the background of its achievements in the early days, showed a great reluctance to cooperate with certain of our activities in the United Nations on outer space.

The Soviet Union may well have thought that by standing alone, you might say, it had more to gain than by a markedly cooperative attitude.

Fortunately, as I indicated, in the last general assembly in the fall of 1959 there was an increased spirit of cooperation or the appearance of a spirit of cooperation on the part of the Soviet Union in setting up the United Nations Committee on Outer Space.

The CHAIRMAN. Mr. McCormack.

Mr. McCORMACK. Mr. Secretary, can you give us any idea what the Department expects the Soviets to do in the near future in the Pacific?

Mr. MERCHANT. No, sir, I wouldn't want to try to interpret their statement. I think very possibly Mr. Allen Dulles would be certainly in a better position to give an intelligence estimate or appraisal of that.

Mr. McCORMACK. Of course, you don't mean by that that you haven't got some information, yourself, as to what the opinion of Central Intelligence is, and other intelligence, do you?

Mr. MERCHANT. No, sir.

Mr. McCORMACK. Can't you take us into your confidence, the American people, and let us know what the Department thinks?

Mr. MERCHANT. Well, the Soviet announcement described this as I think a large space object. Whereas the launching they have forecast would be consistent with other types of experiments, I don't think we have any sound basis for doubting that it is an experiment of the character described in the announcement. It is a very considerably extended range into the central Pacific as you know, sir, and I believe technically, the stated objective would be consistent with the definition of the impact area as given by the Soviets.

Mr. McCORMACK. It has a lot of serious military implications, does it not?

Mr. MERCHANT. Clearly there could or may well be military implications.

Mr. McCORMACK. Now, you say at page 12 the prospect is that this lead will not be easily overcome. That is an admission that we are behind in the field of outer space, isn't it?

Mr. MERCHANT. The prestige which has accrued from the successes, Mr. McCormack, of the Soviet Union, which have been spectacular in nature—that prestige has been considerable.

Mr. McCORMACK. The prestige wouldn't come unless they had the successes, would it?

Mr. MERCHANT. That is right, sir.

Mr. McCORMACK. That means you are admitting that they are substantially ahead of us in what might be called the field of outer space?

Mr. MERCHANT. No, sir—

Mr. McCORMACK. I am not talking about intercontinental ballistic missiles, now.

Mr. MERCHANT. The point I was trying to make there, sir—and I think it may not have emerged clearly from the language, is that they have taken a lead in prestige by reason of the spectacular character of their achievements.

Now, we have had achievements of a very significant character in this field. They haven't partaken, however, of the same spectacular quality that has been true of the Soviets.

If you consider such things as the discovery of the Van Allen Belt—this, in the field of science, and in the field of space technology, is a discovery, I am told, of the highest importance. I don't think the average layman, though, equates this, you might say, with a lunik, or the first satellite.

Mr. McCORMACK. I believe in being objective. Do you admit that the substance of your testimony is—as a legislator, I would like to get facts to legislate upon and I am sure all my colleagues would—that the Soviet Union is ahead of us in the field of outer space?

Mr. MERCHANT. I hadn't intended to be evasive, Mr. Chairman. I was trying to put it a little in perspective. I think we clearly concede Soviet superiority. This has been concentrated, I think, in the large power boosters, allowing them to put heavy objects into orbit or space exploration and this lead will take time clearly to overcome.

Mr. McCORMACK. How long will it take us to overcome it?

Mr. MERCHANT. I couldn't estimate that, sir. I wouldn't feel competent.

Mr. McCORMACK. No further questions.

The CHAIRMAN. Mr. Fulton.

Mr. FULTON. Mr. Secretary, I am glad to see your career has led to these heights. I welcome you here, too.

Mr. MERCHANT. Are you placing me in orbit, Mr. Fulton?

Mr. FULTON. It indicates "I knew you when." The question is this: When there is obviously competition between Russia and the United States, doesn't the administration accept that as a competition or a race? We are in it, aren't we?

Mr. MERCHANT. Certainly.

Mr. FULTON. So that we really know there is a race on in science with respect to outer space and as well on the missile developments on a shorter range.

So then we concede that there are larger payloads and larger boosters, that Russia is ahead on getting larger payloads into orbit or into space. Also, with regard to controls and energizers she probably is, too. However, we don't concede Russia is ahead overall.

Mr. MERCHANT. That is correct, sir.

Mr. FULTON. We might find the United States ahead in some fields while Russia is ahead in others, and that can be reasonably said from the point of view of both policy and on a scientific basis of your science advisers in the Department, can it not?

Mr. MERCHANT. Yes, sir.

Mr. FULTON. The question comes then on the program the administration is entering into. Are they simply trying to catch up to Russia in some fields or are they trying to keep ahead in others, or are we really going to have a program that I am for, of leapfrogging Russia? Would it be possible for us to have a space program that leapfrogged Russia and moved ahead our targets more or less independently of her propaganda? Why don't we do that? Why don't we set targets ahead 3 to 5 years, far-reaching and far-seeing constructive targets and then go ahead and reach them instead of looking to see how Russia is running and then run down that street?

Why shouldn't we arrange it so we would be running clear ahead of her in every field? What do you think of that program?

Mr. MERCHANT. I think it is a very constructive approach, sir. I am not familiar, obviously, in detail with the scientific plans. I wouldn't understand them if I were, I am afraid.

This is a very broad scientific and technological field, as I understand it. I think it might be comparable to a track and field meet where there are an awful lot of events going on inside and outside the stadium. I would be greatly surprised if it would not in the months and years ahead be the case that there were areas spectacular even in character where, as you describe it, a leapfrog result might be obtained. We are in competition, if it is perfectly clear, and this is a deadly and serious one.

Mr. FULTON. When you read off Russia's motives here it seems to be pretty wholesome selfishness to me. They want to be ahead for many purposes. And I would say that we pretty much want to be equal or ahead, too, in the United States.

My next question is in the field of cooperation, and I would like to ask Mr. Meeker this, since he has been an adviser to our U.S. delegation to the 14th General Assembly, just concluded, where I have been a U.S. delegate serving with him: Don't you think the United Nations new permanent committee on space for peaceful uses and for advancing these peaceful uses by cooperation is a tremendous step forward? Here it is unanimous. We all gave in, on each side, and came up with a solution that on space, on the Antarctic, and on about three other areas we are in agreement on major problems with the countries behind the Iron Curtain.

Now, isn't that a tremendous new turn? Shouldn't we be giving some attention to that, as well as to a good many of our fears as to what the future may hold? What do you think of that?

Mr. MEEKER. It seems to me that is a very correct conclusion and analysis of the situation and what is necessary now in the coming weeks and months is to prepare for and carry out a program in the United Nations Committee which will make the most of these opportunities of cooperation which have been opened up by the very agreements that you refer to.

Mr. FULTON. I agree and I think it would be a constructive approach. May I finish by saying I want to compliment Cabot Lodge, the head of our U.S. delegation; Jim Barco, the special representative to the United Nations Security Council on behalf of the United States, as well as Leonard Meeker here, and also Mr. George Feldman, who was an adviser to our U.S. delegation on space, for the excellent work they did. It was a pleasure to work with them. I was pleased to have the comment that some of us who have worked as Congressmen, as advisers, could share the credit on page 7 of your statement. It is a fascinating field, and I think it would be a constructive one with fine results to the world if we handle it right. To me, the 14th General Assembly just closed, of the United Nations, was a tremendous step forward, on a constructive basis, and we in the United States ought to be prepared to follow through.

That is all, thank you.

The CHAIRMAN. Thank you very much.

Mr. Miller.

Mr. MILLER. Mr. Secretary, I am going to try to get you into orbit in your own field and away from some of these other things.

In answer to a question the chairman asked you with respect to relations to Russia, you said it is one element in many. What are some of the other elements besides space?

Mr. MERCHANT. I think I was talking about the image of the Soviet Union.

It ranges beyond the scientific field—more widely than just outer space. The positions and attitudes taken in the United Nations on various matters. The extent to which they enter into aid agreements has a great influence in certain areas in the world. Actions such as the brutal repression in Hungary, this is the sort of thing that contributes to the image of the Soviet Union. The behavior of their allies, such as Communist China at the Indian border in Tibet. Their military posture and strength. Their willingness or lack of willingness to cooperate in joint ventures over the whole range of human relations. The public impact of the personalities of their leaders.

I would say it is the total image of the Soviet Union and it is equally true of the United States or any country; it is composed of the physical, of the military, of the political, of psychological, and of personal elements.

Mr. MILLER. That is what I wanted. That is what I thought you meant.

Now, in this race for outer space, how do you weigh it against these other elements? Is it the all-important one or are there others that contribute to other nations' attitudes toward Russia that are more important?

Mr. MERCHANT. It is such a complex of attributes and forces, sir, that I would find difficulty putting down a percentage for each one.

This is important because it is spectacular. It is indicative of, as I said, a great capability in an area which is a new frontier to man's imagination, almost, so it is important. But I would not say that it was the most important as a single element.

Mr. MILLER. Has it the substance that certain of these other elements have? Will the fact that they are creating the practice of genocide in Tibet, today, last longer in the minds of the people of India and the Orient than this spectacular thing?

The first nation to have radio was Italy—Marconi and the wireless—but this is forgotten now, for example.

Mr. MERCHANT. I think the lasting image on any country by other people is that country's attitude toward and treatment of other human beings. So in answer to your question I would say, sir, that the more lasting imprint in the human mind would be things like Hungary or Tibet, rather than a single scientific achievement.

The CHAIRMAN. Mr. Osmers.

Mr. OSMERS. Mr. Chairman, I thought I would make the observation that, as many view the military posture with relation to Russia, we are not in bad shape at all. I am referring now to the weapons field. There is apparently a lag on the part of the United States in the field of the million-pound thrust rockets which are used to orbit vehicles in space.

Now, how important would you say it was from the standpoint of the Department of State and the prestige of the United States, how important is the time element in overtaking the Soviet Union in purely peaceful exploration of outer space? We know the time element in the military is all-important. How would you rate the time element in connection with the satellite and space program?

Mr. MERCHANT. I think, sir, others could answer that more precisely but the brief answer, I understand, is that there is no present military requirement for the very large booster engine. So to that extent, important as I believe it is to overtake ultimately the Soviet present preeminent position in this field, as I understand it, that lag in that area from a military point of view is not greatly significant, but I would rather have that answer confirmed by those who will follow me.

Mr. OSMERS. Mr. Chairman, I would like to ask just one other question:

Without making a detailed study of the various positions at the international conferences, I have gained an impression that the Russians have up to now always steadfastly resisted any meaningful

inspection within the Soviet Union of sites and missile bases and things of that character in which this Nation has been willing to participate.

What has the effect been on other nations of the world of the Russian refusal to permit honest, meaningful outside inspection of their preparations within the Soviet Union?

Mr. MERCHANT. Well, you are entirely correct, sir, of course, in saying in effect that where progress in this area to date, where progress has been halted, it has been due to the Soviets failing to submit to what we consider to be adequate and necessary inspection and control measures. I think this point is reasonably well established in world public opinion.

Certainly safeguarded disarmament has to be the crux of our position and to the extent it isn't understood I think we have to just keep hammering on the simple logic of it.

Mr. OSMERS. Now, Mr. Chairman, the Soviet has done two things—Mr. Khrushchev has made two announcements which have been designed obviously to influence the world as to the peaceful intentions of the Soviet Union. Just prior to his departure from the United States when he spoke to the United Nations in New York, he was very forthright in urging complete and absolute disarmament. Here recently, in speaking in Russian to the governing body there, he made a very great propaganda announcement about a reduction in the armed forces of the Soviet Union.

Now, in this country I think it was largely viewed by the general public in both of these instances as being straight propaganda of the most blatant variety.

How was that viewed throughout the world?

Mr. MERCHANT. It is hard to generalize, sir. I think that Mr. Khrushchev's General Assembly speech on total disarmament had a considerable impact around the world. I would say the greater impact was in the less developed and less sophisticated parts of the world.

We feel as everyone does that disarmament is too serious a matter for all of us, to fail to look carefully at any proposal from any quarter.

The proposal of Mr. Khrushchev for total disarmament raises a lot of questions that have to be asked and answered.

On the reduction of troops, I don't think I've got the basis for any generalized estimates as to what the effect of that has been around the world. It is really too recent. It has probably had some propaganda appeal. On the other hand, as you read his full speech it comes through pretty clearly that this is really a reorganizing, streamlining, improving of the combat effectiveness of his forces—at least to a very significant degree.

Mr. OSMERS. In other words, they are doing something we did at the end of World War II. They have waited until now to do it and are now bringing their forces in line with a more modern concept of ground defense?

Mr. MERCHANT. That is right. They are making reductions comparable to the ones we made earlier.

Mr. OSMERS. That is all I have.

The CHAIRMAN. Mr. Teague.

Mr. TEAGUE. No questions, Mr. Chairman.

The CHAIRMAN. Mr. Van Pelt.

Mr. VAN PELT. No questions.

The CHAIRMAN. Mr. Anfuso.

Mr. ANFUSO. Mr. Merchant, in your statement you concede the Soviet Union has reaped great prestige by being first to achieve success in space flight and that the world image of the general standing of the Soviet Union has been enhanced.

Have you then given serious consideration to the fact that space exploration is not only important for the advancement of mankind and the security of our country, but that it offers us a serious challenge in waging psychological warfare? If so, how are you prepared to meet this challenge?

Before you answer that question I might add that it is my prediction that the Russians are going to achieve another great first in its test in the central Pacific—such as demonstrating the ability to put man into space and that they will use this for political propaganda during the summit conference.

Now, the indication for that is the fact that they have blocked out 45,000 square miles for this test, which is more than we have ever blocked out.

How are you prepared to meet this challenge? Supposing this event does take place? You will go to the summit rather short-handed unless you can meet it psychologically in some way.

Mr. MERCHANT. I think it is an interesting speculation, sir, that you have offered. Certainly the Soviets do attempt to gear some of their activities to specific events in order to get a propaganda impact from it. We all recall that just before, or practically coinciding with Khrushchev's arrival in this country, there was the Lunik II.

Perhaps we are not as flashy in the propaganda field as we should be. My own philosophy is that propaganda is no substitute for policy and for constructive action. If you do the sound thing and if you construct and pursue the right policies, good propaganda naturally is thereby created.

Answering your question specifically, I know of no specific counter-measure, you might say, for what may, as you suggest, prove to be a psychological exploit, or a scientific exploit subject to psychological exploitation.

I make one other comment, sir, and that is that the summit conference, as with all international conferences dealing with serious matters, is not, it doesn't seem to me, affected in its conduct or its outcome by propaganda. You can capitalize and gain propaganda advantage but the issues are going to be discussed and dealt with and if possible solved, you might say, removed from the propaganda atmosphere, or aura, that attaches to it.

Mr. ANFUSO. Would you say other nations today regard Russia as being first in this effort and as being a greater power than the United States?

Mr. MERCHANT. As I think I testified, the achievements of the Soviet Union in this area have notably enhanced its prestige and contributed—not created, but contributed—to an image. They have done their best to build on this, to exaggerate it, to drive it home, to multiply the actual, practical fact.

Mr. ANFUSO. If they continue to achieve success in that regard with other nations will it not make it more difficult for us to keep our friends and to win new friends?

Mr. MERCHANT. Yes. As I replied to the chairman, this is a real factor in foreign policy.

Mr. ANFUSO. Which should be considered. We certainly should have a policy of our own.

Mr. MERCHANT. Absolutely.

Mr. ANFUSO. Mr. Merchant, you know that I have written you several letters in connection with international cooperation and I wonder whether you are prepared to submit to the permanent United Nations committee certain suggestions on peaceful cooperation with regard to space medicine and biology protection and reentry of man in space vehicles and other experiments of that kind?

Mr. MERCHANT. As I understand it, sir, we are giving most careful consideration, now, to the subjects which might properly be put before that committee and we have welcomed your specific suggestions in this connection. We have not, to the best of my knowledge, reached any final decision as to what our proposals will be before the committee. The committee has not yet met and organized itself.

Mr. ANFUSO. Don't you think that we have much to gain by international cooperation and we have much to offer—for instance, we have greater tracking facilities and we can certainly help the Russians in recovering a man, should they put a man into orbit before we do. But they also have much to offer us in this field of peaceful exploration, which may be the answer to avoiding another war.

Mr. MERCHANT. I agree, sir.

As I indicated, one of the fundamental elements in our policy has been to stress and to practice international cooperation and we welcome that from every other country.

Mr. ANFUSO. I thank you for the cooperation you have given me personally and I hope we can continue to work together.

Thank you, sir.

Mr. MERCHANT. Thank you, sir.

The CHAIRMAN. Mr. Bass.

Mr. BASS. Mr. Secretary, you stated earlier in your testimony, I believe, that we were very definitely engaged in a race with Russia in the exploration of outer space.

I noted with interest the suggestion of my colleague, Mr. Fulton, that we fix our policy on a leapfrog basis, as he puts it, and accomplish that, evidently regardless of what the cost would be.

I would like to ask you, do you think we should set our own goals on space exploration and then stick to them, regardless of what Russia has done or does, or should we base our space program on a race-with-Russia basis?

Mr. MERCHANT. I don't really feel competent in this field, sir, but my own reaction is that whereas it is right and proper to recognize that in a sense, and in a very real sense, we are in competition and the world is watching, I never think you should base your policy, so to speak, on reactions to what other people do. I think you want to set your program as the soundest, the most farsighted, and most imaginative, and go ahead with it.

Now, just what the complications might be on putting a man in space or other aspects of this from a scientific point of view are, just

what the detailed planning of those responsible for this in the scientific field are, I just don't know, sir.

Mr. BASS. That is all.

The CHAIRMAN. Mr. Sisk.

Mr. SISK. Mr. Secretary, you discuss in your statement the things that are being done with reference to international cooperation, and on page 7 you mention certain specific proposals concerning the international Conference.

Now, I am concerned with what your Department, which has the responsibility of our international affairs, what proposals the United States has come up with, or planned? Not necessarily conferences but a specific plan which will provide for peaceful space exploration.

I am thinking from this standpoint: Are you stressing the importance of doing this through a United Nations committee, through the United Nations, or is your Department putting more emphasis upon a bilateral agreement, or a multilateral agreement outside of the United Nations? Of those three things that you are pushing within your Department which do you emphasize as being No. 1?

Mr. MERCHANT. Well, in such matters as can be expected to come before the Committee, as, for example, the definition of the peaceful use of space, the first problem, obviously, is to—on the basis of adequate study—is to formulate our own policy, our own policy views, and this is what is in process.

On such a matter I would myself think—I may ask, with the chairman's permission, Mr. Meeker, to comment further on this—I would think that type of project or proposal would, to be really useful, then have to be considered on a multilateral basis rather than a bilateral basis. What one would be seeking would be a universally accepted definition, you might say.

Now, of course, there is a great deal that could be done also through the scientific community on an international basis, but I would rather expect the United Nations Committee on Outer Space to be the focal point for multilateral consideration of all these matters which extend far beyond just bilateral relationships between any two countries.

Would you agree on that, Mr. Meeker?

Mr. MEEKER. Yes.

Mr. MERCHANT. I don't know that that exactly answers your question, sir.

Mr. SISK. It indicates the attitude of your Department placing the emphasis on the work of the United Nations, or at least a multilateral operation rather than an idea of just Russia versus the United States because we happen to be the leading nation at the moment in this field.

Looking ahead, let's say 5 or 10 years to the time when we may, let's say, land a task force on Mars, and that some other country might possibly do the same thing. Because of your responsibility in international affairs, I am interested in the extent your Department is planning on being able to make certain that that will be a peaceful operation. Either bilaterally or multilaterally.

This becomes all important if we look into the future, based on the proposals of our scientific people.

Mr. MERCHANT. I would say that philosophy, sir, is central to all our policy thinking.

As I think I noted in my testimony, the President made a proposal before the first sputnik that this was a matter of the greatest importance for international multilateral consideration.

It seems to me that we have got a chance which may not be available to us very long, to establish and gain universal acceptance of policies to insure that this new frontier, this new dimension, will only be used for peaceful purposes.

Mr. SISK. I agree with that statement and that is what I am happy to hear you make. I don't know how long it is going to be, but certainly if the scientists know what they are talking about—and I have a great deal of confidence in them—there is going to be a time, when we will have some people on the moon and Russia will have them and perhaps the United Kingdom.

Now, what is going to happen? I think you have indicated it is later than we think, and I am interested in how broadly your planning may be going on within the State Department because of your responsibility in this field, to make certain that this thing which we talk about every day—peaceful exploration of outer space—is going to be carried forward.

Mr. MERCHANT. I think Congressman Fulton mentioned earlier Antarctica. Driving up here, this had occurred to me in a small and terrestrial sense. It is roughly analogous to our approach and our purpose with respect to the ultimate regime or environment of outer space.

There in Antarctica is the last uninhabited land mass of the world, and with the leaps and bounds ahead of science in all fields, no one can foresee what in 10 years might be the utility or the value or the usefulness to mankind of that area. And I think we were fortunate and I think we can properly congratulate ourselves as the U.S. Government in taking the leadership in establishing, before conflicts or competition arose to a really serious degree, in negotiating a multilateral treaty whose central thought was that Antarctica henceforward should be devoted only to peaceful purposes.

Mr. SISK. I am concerned, and I am sure many people are, with the fact that we can now lay down ground rules that maybe in 10 years we cannot—due to the things that will develop and happen. So it seems to be urgent that your Department take leadership in this and that we come forward with specific proposals for doing this.

This was very vividly brought out just recently—and this may be a little farfetched—but in a rather widely televised program on birth control, this hassle that is going on over birth control, well, someone who was opposed to birth control indicated that, after all, the progress in outer space is going to make room for additional people, and that is what we are going to do with the surplus population.

I think we have to solve this problem first or we are going to be in trouble, if you get the point, Mr. Secretary. Thank you, Mr. Chairman.

The CHAIRMAN. Mr. Riehlman.

Mr. RIEHLMAN. Mr. Secretary, you have covered in great detail the propaganda effects accrued to Russia because of their being able to move into this field of exploration in space ahead of the United States, and secondly, the capabilities of putting into orbit much larger satellites than we are capable of doing today.

Now certainly the United States has made great strides in the exploration of outer space, and in many fields other than just the capabilities of putting large objects into orbit under thrust.

In scientific publications we have read a great deal about these accomplishments.

How effective are we, through our State Department and other communications services, in being able to handle this type of propaganda in order to affect the thinking of other nations that we are in this to accomplish great things for peaceful purposes?

Mr. MERCHANT. My impression, sir, is that certainly insofar as the international scientific community goes, there is a very widespread understanding of our unique achievements in this general field. I mentioned the discovery of the Van Allen Belt which, from a scientific point of view, I gather it was totally unexpected as to its existence, and I understand that it has the most serious implications involving space travel and so forth.

There have been a number of others. The Argus experiment. The discovery of the fact the earth was pear shaped. These are things maybe not as spectacular as an impact shot to the moon, to the man on the street, but to the scientific community, these are very notable achievements and I think in the long run, popular understanding develops a more balanced view under the guidance and gradual dissemination of knowledge from the scientific community.

I wouldn't want to try to assess how successful with the man in the street we have been in publicizing, propagandizing or informing as to our achievements.

Certainly this has been our purpose, to honestly exploit our honest achievements and this will continue to be our purpose.

It is a fairly esoteric field and it is a field of tremendous breadth.

Mr. RIEHLMAN. That, I think, is one of our great problems that affects our Nation. We haven't been able to build in this Nation the engine—we are in the process of it now—to put into space the big object, which apparently appeals to the mass of people in their thinking. Because they have been able to do that, they are considered far, far ahead of us in this whole field of exploration of space.

And I cannot agree with that philosophy. I think that as far as that portion of it is concerned, they are. But in the broader aspects, I feel our Nation is abreast and ahead. Could you comment on that at all?

Mr. MERCHANT. I go back to my analogy of the track and field meet. There are an awful lot of events going on and it may be the hammer throw outside the stadium that will win the meet, I don't know. I believe that may be a fair analogy.

Mr. RIEHLMAN. I realize, Mr. Secretary, that you are not in a position to answer a lot of the questions that this committee would like to ask you with respect to the outer space program, or exploration of space. I certainly don't want to ask any questions that are not proper as far as the State Department's interests go in this field and I am sure the committee wouldn't want to. We are vitally interested in knowing whether or not our activities in this field are properly dispensed to the peoples of the world and that through the State Department we are doing everything we can to keep them abreast of our activities. Even though they may not be quite as spectacular on the surface as those of Russia.

Mr. MERCHANT. That certainly, sir, is our effort and purpose and I think perhaps on this particular aspect of it, Mr. George Allen will be a helpful witness.

Mr. RIEHLMAN. Thank you very much.

That is all, Mr. Chairman.

The CHAIRMAN. Mr. Mitchell.

Mr. MITCHELL. Mr. Secretary, following the questions of Mr. Riehlman concerning the psychological impact of the spectacular achievements of the Soviet Union and the effect that they would have upon your particular department and its role in worldwide diplomacy, that is the general subject of my questions also.

In your statement you acknowledge, if I correctly interpret it, that insofar as the spectacular achievement concept is concerned, we have been outdone by the Soviet Union. But you state that our program of space science and its practical applications appears to be sounder and broader than that of the Soviet Union and, therefore, you conclude that the scientific and technological leadership on any broad front has not passed to the Soviet Union, but, in effect, that on the broad front, we are ahead.

Is that correct? But that on the spectacular achievement front, the Soviet Union is ahead?

Mr. MERCHANT. I think on the broad front of scientific and technological development, not confined to space exploration and space science, I think we are ahead, sir.

It is hard—as I think I indicated in earlier questions—I think it is hard to balance and to define overall leadership. They are clearly ahead, obviously, as we all know, on the big booster launchers. But I understand, and other witnesses are far more competent than myself, I understand that if you balance achievements in the broadest area, that from a scientific point of view, many of our “firsts,” so to speak, are of the greatest importance and I think we conclude that, on balance, there is not a clear case for Soviet leadership across the board.

Mr. MITCHELL. Here is what concerns me. I think that you, representing the State Department, would have liked very much to appear before the committee this morning and point out spectacular achievements on our part and to have said what effect it had on our ability to negotiate, for example, in the field of international cooperation, or the field of outer space, as well as the general field of cooperation, in disarmament and other things. Is that correct?

Mr. MERCHANT. That is correct, yes, sir.

Mr. MITCHELL. Therefore, do I conclude that you feel, that although we have this broad program, this sound program in science and technology not only in space, but generally, that we also have a great need for the spectacular achievement as well?

Mr. MERCHANT. Yes, sir. It would make me very happy; surely.

Mr. MITCHELL. That is all, Mr. Chairman.

The CHAIRMAN. Mr. Quigley.

Mr. QUIGLEY. Mr. Merchant, would it be a fair statement to say that the several Soviet spectacular firsts in space have not made the State Department's job any easier?

Mr. MERCHANT. Yes, sir.

Mr. QUIGLEY. Is it conceivable that if these spectacular firsts were to continue unabated, unmatched, that your job could become almost impossible?

Mr. MERCHANT. I don't think so, sir, because I don't think you could conclude that a succession of spectacular achievements and exploits in one area of a nation's activity would be controlling. I mean, what we would be doing in the whole area of our policies and our actions, not just in science, or one field of science alone, would enter into the equation, so to speak. Do you see what I mean, sir?

Mr. QUIGLEY. I see what you mean, but let me illustrate what I have in mind by this question: I presume that like every good Washingtonian you have read a certain bestseller, "Advise and Consent."

Mr. MERCHANT. Yes, sir.

Mr. QUIGLEY. Now, I don't want to give the plot away if you haven't read it, but if I do, it is your own fault. If you have been in Washington 6 months and haven't read this book, it is your own fault.

Let me direct your attention to the final scene in that book. It ended on a note of optimism which, in my opinion, was slightly contrived, perhaps a little forced, but it was optimistic.

You knew as a reader and the people in that plane heading for Geneva—and, incidentally, you would have been in that plane if you were occupying your current position—you knew and I knew and the reader knew that in 3 days' time we were going to be on the moon, and so we went into Geneva, or our President and our Secretary of State headed for Geneva, with a certain note of optimism.

Can you conceive what the atmosphere would have been in that plane if we knew that instead of getting to the moon in 3 days, after the Soviets, it was going to be 3 years?

Mr. MERCHANT. I don't think the atmosphere would have been one of jubilation. On the other hand, sir, the power relations between countries depend on many things. As I tried in my statement to put in perspective, without discounting or deprecating the problem which the Soviet spectacular achievements have created, the equation is one made up of many, many elements.

I don't have to name them: Military power, geography, allies—of course, here you are affected in the long run by psychological factors. Geography, productivity, the will and capability of the people, the quality of their leadership, all these things go into the creation of the totality of the power position of a country.

I think we must keep a sense of proportion.

Mr. QUIGLEY. I agree with you, but the thing that worries me is that we have managed to survive the first sputnik, we have managed to survive a Soviet bull's-eye on the moon, we have managed to survive the photographs in Life magazine of the back side of the moon as seen from a Soviet camera. These things have hurt us and I think they have made your job much more difficult. We have suffered propaganda setbacks. But what I am afraid of is that if they continue, we will continue to suffer propaganda setbacks—if they put the first man in orbit, if they land the first man on the moon. I still think we are not at the point of no return, but I do worry and wonder, if this thing continues and they not only get the first man on the moon, but they get the first troops to the moon and get them there with hydrogen bombs and with rockets that can send them back, this may cease to be some-

thing more than a situation where we are embarrassed, propaganda-wise. We may actually be in a position where none of us dare think about this country ever being.

Mr. FULTON. Would the gentleman yield?

Mr. QUIGLEY. If I have any more time, I will yield—may I yield under the rules?

The CHAIRMAN. You may yield your time as long as you have it.

Mr. FULTON. Did it ever strike you that it might do the United States good, abroad, to be second for once? It is always the brightest one in the class who does everything first and suddenly finds himself popular when he finds somebody else competing with him.

Mr. QUIGLEY. This may be true, psychologically, but it is like my trying to tell myself that the fact that the Soviets need 45,000 square miles in the Pacific indicates how inaccurate their guidance systems are. I would like to believe that, but I don't.

Mr. FULTON. Mr. Teague of Texas says—look how Alaska helped Texas.

Mr. QUIGLEY. That is all, Mr. Chairman.

The CHAIRMAN. Mr. Karth.

Mr. KARTH. There has been a great deal of conjecture today about the value of propaganda. I may be in error, but it seems I understood you to minimize its effect to some degree at least. I think we must all agree that propaganda does have the effect of capturing the imagination and the minds of man and, therefore, formulating opinions. In elections in this country, for example, where we have the best educated people in the world on an overall basis, propaganda has even won elections or lost them. Now look at the propaganda the Soviets have put out insofar as Khrushchev's bold proposals for world peace are concerned—that is, disarmament, reduction of the manpower forces in the Soviet military posture and his so-called disarmament proposals, and so on and so forth.

My question is this, sir: What is the general opinion in the minds of the people of the world—as you refer to them on page 13—as to the militaristic attitude of the United States, as opposed to the militaristic attitude of the Soviet Union?

In light of all these propaganda proposals that have been played by Mr. Khrushchev, are we considered the militaristic nation? Are we considered the nation who is most often propounding solid proposals for peace, or is Russia being considered that nation?

Could you answer that, sir? I think this is important because people are generally interested in peace rather than in war. What is your posture? What is the perspective that we are held in, in the eyes of the world, insofar as this militaristic attitude is concerned?

Mr. MERCHANT. I suppose it varies considerably from country to country. Certainly behind the Iron Curtain we are painted as a militaristic nation, a potential aggressor.

In generalizing though, sir, it is my belief that we are not regarded generally in the world—the general impression of the United States is not that of a militaristic power with aggressive intent.

I think it is pretty well understood and accepted, the things we have stood for—as was described earlier, the extent to which we unilaterally disarmed after the Second World War when the Soviets didn't; the aggression in Korea; the attack on the offshore islands; the Com-

munist-supported, the Chinese Communist-supported activities with many of its neighbors; Hungary.

I would think probably as good a test as you could get as to what the world concept of the United States is, as good a test probably would be over a period of years in the General Assembly of the United Nations where more than 80 countries are represented. To the extent you can generalize, I would say that apart from the area behind the Iron Curtain, we are regarded as a nation essentially devoted to peace and that would be my answer, sir.

If I may make one point, sir, I have not intended in anything I have said, to deprecate the importance of an imaginative, forceful, intelligent information service to present the facts about ourselves and present our policies truthfully, forcefully, and effectively.

The point I tried to make earlier, I think, was that propaganda, as propaganda, cannot be the substitute for a policy and in the long run, it won't stand up, I think. And propaganda, or an information program, is much more effective and it is easier to conduct if it is faithfully and truthfully reflecting and explaining a sound policy.

I wouldn't want my friend, George Allen, to think that I had undermined him before this committee.

Mr. KARTH. Mr. Secretary, it is my opinion that we have had quite a difference of opinion, or quite a reversal in foreign relations, at least in foreign policy thinking, in the last 8 or 9 months or so. Instead of the hard, ironfisted foreign policy of the late Mr. Dulles, to the more conciliatory, willing to talk and negotiate, exchange visits type program of the present. What, in your opinion, is the effect of this change in attitude on foreign policy relations in the minds of the people of the world? Has this been good, has it been bad, has it been indifferent? Has it had any effect at all?

Mr. MERCHANT. I would not concede, sir, that there has been any change in our foreign policy, in the essentials of our attitudes and actions outside our country's borders.

We hold strongly to the essential elements in what has consistently been our foreign policy and we have consistently said that we were prepared to negotiate at any time on any controversial issue.

Mr. KARTH. The effect, Mr. Secretary, has been a little different. To meet you halfway.

Mr. MERCHANT. Yes, I was coming to that, to make a point on this, sir: I think a part of the appearance of an increase in negotiating activity and visits and so forth, is, in fact, a reflection of a change in attitude, if not policy, on the part of the Soviet Union. And I think the policy of Mr. Khrushchev as enunciated, to attempt to relax tensions, has resulted in a greater willingness on the part of the Soviet Union to engage in negotiations.

The Antarctica treaty for one thing; coming in this year as opposed to refusing to come in the year before in the General Assembly on the Outer Space Committee; the Geneva Foreign Ministers Conference last summer—which was the first foreign ministers conference since the fall of 1955, as I recall it.

I think this activity in a very real sense has been a reflection of a change in attitude, on the Soviet part.

Mr. KARTH. But you would agree there has been some change on the part of the United States, insofar as their foreign policy is concerned?

Mr. MERCHANT. A change on the part of the President of the United States?

Mr. KARTH. More conciliatory. I think the treaty of Antarctica indicates that.

Mr. MERCHANT. No, I think the President has consistently been conciliatory. No, sir, I would not concede that.

Mr. KARTH. Mr. Chairman, in the interests of time, I will forgo any further questions.

The CHAIRMAN. Gentlemen of the committee, I would like to put forth this thought right now. It is 11:45 and we have four members remaining to question. Is it the desire of the committee to try to finish up this morning or go over to 2:30?

Mr. MILLER. I think this morning.

Mr. ANFUSO. This morning.

The CHAIRMAN. Everyone seems to wish to conclude this morning.

Mr. FULTON. Would you hear from the minority?

The CHAIRMAN. Surely.

Mr. FULTON. The minority side unanimously agrees with the chairman.

The CHAIRMAN. I privately consulted with the minority before I brought the matter up.

Mr. HECHLER. Mr. Secretary, I believe, and I am sure you believe, from your testimony, that we have to achieve a peaceful and not a military solution. Yet the question is so frequently raised by the man on the street and although it has been answered frequently, I don't think it can be answered too frequently. I want to give you an opportunity to give again a simple and clear answer to this question which is frequently raised: how can we continue with our missile and space program in a way which will catch up and leapfrog Russia and at the same time talk about, believe in, and work toward disarmament?

It seems to the ordinary person to be a conflict. I want to give you an opportunity to clarify this simply so that the people can understand it.

Mr. MERCHANT. Well, I think I would answer this way, sir: Disarmament without adequate inspection and controls is the most dangerous of all frauds and illusions. Anxious as one is to negotiate on disarmament, it seems to me as a practical matter that a failure to maintain a position of military strength in the face of great military power removes from the negotiation the incentive to agree to a properly inspected and safeguarded disarmament.

So from a practical point of view, to my mind, the maintenance of one's defensive power practically contributes to the ultimate securing of sound, effective agreements on controlled and reduced armaments.

This, to my mind, is the essential point.

Mr. HECHLER. That is a very good answer.

I would also like to ask you: Would it have an adverse effect on our foreign policy if foreign nations felt that our space program was not centrally directed, did not have central leadership, or if they felt that there was an excessive amount of competition among the military services in such a way as to slow down that program?

Would this have an adverse effect if these facts were true?

Mr. MERCHANT. I have had enough difficulty, sir, explaining to well-educated, well-informed foreigners in many countries the simple

fact of separation of powers under our Constitution, to believe that foreigners, generally speaking, would be particularly interested in the details of how we conduct a program.

Mr. HECHLER. I suppose I have run across different foreigners than you have, perhaps, but I find many of them who seem to feel a certain frustration about the way that our program is being run administratively. They constantly raise the question: Would it not be much simpler if you had a single space agency with central leadership and direction?

I find it difficult to answer a question like that. That is why I raised the question, that if this were true, would this have an adverse effect on our foreign policy?

Mr. MERCHANT. I think, sir, they are interested in results, essentially. I haven't had the same experience that you have, possibly because I imagine I am a more recent newcomer to the world of outer space than you.

I wouldn't think this would be a major factor in their attitudes, myself.

Mr. HECHLER. If it were true, do you feel it would affect our foreign policy adversely?

Mr. MERCHANT. I think if other people felt we were not making a coherent, well-organized, administratively sound, effort and were dispersing or duplicating unnecessarily our resources, I think this would reflect on our ability to operate successfully in a very important field.

I would agree completely on that.

Mr. HECHLER. That is all, Mr. Chairman.

The CHAIRMAN. Mr. Daddario.

Mr. DADDARIO. Mr. Secretary, you have stated that the Department is interested in how our activities in this space field bear on other countries. In answering questions, you come to the conclusion that it has not made it any easier for you. Is that correct?

Mr. MERCHANT. Yes, sir.

Mr. DADDARIO. You have also stated that you believe our solid achievements in the area of peaceful uses of outer space—the possibilities of communications, meteorology, and that type of thing, sets well with the scientific community throughout the world, that we are making broad achievements in this area and that this is, in the long run, the way in which we will off-balance the sensational achievements of the Soviets. Is that correct?

Mr. MERCHANT. Yes, sir. With the footnote—I think I noted that in the area where the Soviet lead is clear on high power boosters that we, as I understand it, are making a very significant effort to develop a booster which would enable us to project into space, or orbit, far heavier loads than we have to date. So I would not say that you might say that we were accepting defeat in one area and concentrating on other areas—maybe that wasn't the intended implication of what you said.

Mr. DADDARIO. Well, the reason I am concerned with that approach to it is that it assumes that the scientific community through the world, which is an opinionmaking, leadership type of community, does have this opinion of our effort.

On page 12 you referred to the fact that we are maintaining a broadened base program. I have talked to scientists throughout the

world and to people whom I have known over the course of time, and I find a criticism about our efforts in the peaceful uses of outer space—that it is too broadly based, that it has no direction, that it is not going anywhere, that we are doing many things that we should but we are doing many things that we should not be doing. That we are wasting time, effort, manpower, and that this leaves them with a sense of frustration as to our inability to direct our full forces to a sensational achievement in the area of peaceful uses. Therefore, I have come to a different conclusion than you have.

Haven't you, in your seeking out information, found that this is a criticism—the scientific community has to our effort?

Mr. MERCHANT. I can't honestly say I have encountered it, sir; but here again I really don't feel that I am a competent witness on this phase of the subject, for this committee. I accept what you say that there is criticism that we are maybe too broadly dispersed. But I think the record of some of the less spectacular, but nevertheless, as I said, scientifically extremely significant achievements on our part would confirm that, even though more broadly spread possibly, our national effort has shown great progress in this new field.

Mr. DADDARIO. I think perhaps it has shown great progress, but the thing that bothers me is that we have come to an assumption as to the State Department's approach to this. The basis of it appears that we are making solid achievements in one area. If this is an assumption and if it is affecting the leading minds in the scientific community throughout the world, it would seem to me that your job is going to become more difficult as the years approach to carry out your relations with these other countries when you admit that they are making spectacular achievements in certain areas. And if, in fact, we are not getting into their minds that we are properly accomplishing our end objectives in the peaceful area, this would seem to be a doublebarreled problem you would then have to overcome.

Mr. MERCHANT. My understanding, as I said, sir, is that within the international scientific community there is a very real respect for our achievements and for our capabilities and that this knowledge of what we have done and are doing has been more widely spread by reason that one of our more basic policies is to place very great emphasis on international cooperation.

Mr. DADDARIO. I am afraid I am in disagreement with you on this because the people I know who are eminent scientists don't come to this same conclusion.

Mr. Anfuso has asked me to ask you a question and that is, has any answer been received to Dr. Glennan's proposal of last fall to make a United States worldwide tracking facility available for use in any Soviet man-in-space program?

Mr. MERCHANT. I am informed no, sir.

Mr. DADDARIO. That is all.

The CHAIRMAN. Mr. King.

Mr. KING. Mr. Secretary, there have been eminent scientists recently, Dr. Teller being one who comes to my mind, but not the only one—who have stated categorically that the progress of Russia in the scientific field is so rapid, and their momentum is so great, that inside of 10 years they will have overtaken us in practically every significant department of scientific activity. Moreover, that they are going so fast, relative to our speed, that as of now there is nothing we

can do to prevent that from happening. It is much like two trains, the one being ahead traveling 30 miles an hour; the one behind traveling 60 miles an hour, and there is no known means whereby the train traveling 30 miles an hour can build up its speed to 60 miles an hour fast enough to prevent the other one from overtaking it.

Now, if that be true, then isn't it a little deceptive and dangerous to continuously make the flat statement that we are ahead of the Russians in the total broad scientific picture—which may be technically true, but is still a deceptive statement, if it also be true that the Russians will have overtaken us in 10 years and there is nothing we can do to prevent them?

Would you care to comment on that?

Mr. MERCHANT. Well, if the statement you made is true, I think what you say obviously follows—and this is a matter of judgment, but this assessment which you attributed to Dr. Teller is not what I have been given to understand by the people working with this program in the Government.

In other words, if we are behind and going so much slower we never can catch up, obviously then you can't make any claim for anything except total loss in all areas. However, that assessment differs from what I have been given to understand.

Mr. KING. Dr. Teller's statement was not that we could never make up for lost ground, but his point was that if we were to accelerate our program as much as would be conceivably possible right now, we still couldn't do it fast enough to prevent the Russians from overtaking us. That we would have to look to some time in the more distant future, shall we say, 15 or 20 years from now, before we could again catch up with them. That they were leapfrogging us and that they were in the process of jumping over us and we couldn't stop them now even if we were to double our educational output because of the inevitable lag that is always present in this type effort.

I appreciate your answer on that.

That is all I have.

The CHAIRMAN. Mr. Roush.

Mr. ROUSH. Mr. Secretary, do I assume correctly when I assume there is a very close liaison between the State Department and NASA?

Mr. MERCHANT. Yes, sir.

Mr. ROUSH. May I assume you are aware of our future program and what we are planning to do in the next year and the next 2 years?

Mr. MERCHANT. Mr. Farley has just given me the answer, that we are so informed within the limits of our ability to understand.

Mr. ROUSH. You do have the schedule for our firings which are planned and things of that sort?

Mr. MERCHANT. Could I ask Mr. Farley to answer that question, Mr. Chairman? I think he is more familiar, obviously.

Mr. FARLEY. We are informed of these things. On the other hand, we do tend to concentrate more on the activities they are undertaking which will require preparatory work with other countries since we do not attempt to duplicate and follow all their efforts.

Mr. ROUSH. What I am attempting to get is this: Is there any attempt to coordinate our proposed achievements with State Department policy and activities? I am thinking of what the Russians have done. For example, Mr. Khrushchev came to America and they hit the moon.

Mr. Anfuso spoke of what probably they will be doing in connection with the summit conference.

Is there any attempt to coordinate our activities so that we might get the maximum propaganda value out of our achievements?

Mr. FARLEY. I would say this is a factor taken into account. In general our effort is to anticipate when we will have such an achievement so that we can make maximum exploitation of it rather than to try to tailor the program to some particular foreign event, since we can usually find an international conference, an important meeting, in which we are able to take advantage of what we do.

We do not attempt to distort their program for propaganda purposes but rather to take political and psychological advantage of what they do achieve.

Mr. ROUSH. Thank you.

That is all, Mr. Chairman.

The CHAIRMAN. Mr. Secretary, that completes the schedule of the committee. What I want to ask is this, and I am not going to interrogate you especially regarding these two matters but I am going to ask you, if you would, to cause the answers to be placed in the record with reference to what I want.

I would like to have just a little bit more on the progress which has been made in international cooperation. Now, you have mentioned that two or three times, but not specifically. I would like to have details: "We have done this. We had an ad hoc committee. We attended this conference." Tell us what the results are, and set it out specifically, step by step, so that we will know in this committee what has been done.

Mr. MERCHANT. I will be happy to supply that.

The CHAIRMAN. Two. I would like to know what you have done in setting up scientific attachés in your embassies and consulates throughout the world. We had some testimony on that last year. It is not exactly in line with the space hearings but it is close enough to where I think it would be proper to place that in this record. If you will give us both of those we will appreciate it.

Mr. MERCHANT. I would be very happy to supply that for the record, sir.

(The information requested is as follows:)

MAJOR ELEMENTS OF UNITED STATES INTERNATIONAL CONSULTATIVE AND COOPERATIVE ACTIVITIES IN THE FIELD OF OUTER SPACE

From the inception of its present outer space program as part of the International Geophysical Year, 1957-58, the United States has recognized the interest of all nations in the purposes for which outer space is explored and used, has actively sought to promote the establishment internationally of an orderly basis for the conduct of outer space activities, and has encouraged international participation in the conduct of such activities and the sharing of their results. The United States has played a leading role in encouraging international consultation and cooperation with respect to two basic aspects of the international opportunities and problems arising from the exploration and use of outer space.

First, the United States has expressed its willingness to participate in a study of the possibility of assuring that outer space be used for peaceful purposes only. In this regard, the United States has consistently expressed the view that if there is general agreement to proceed with such a study on

a multilateral basis, this country would join in examining the matter without awaiting the conclusion of negotiations in other substantive areas relating to the reduction and control of armaments.

Second, as Secretary of State Christian A. Herter has stated before the United Nations General Assembly: "Recognizing that progress in disarmament might be slow, however, the United States has urged that peaceful uses of outer space be considered as a separate step toward constructive change." Significant advances in this area have been made through arrangements within the framework of the United Nations, through traditional international scientific channels, and through direct arrangement with other countries.

ACTIVITIES WITHIN THE UNITED NATIONS

In the United Nations, Ambassador Lodge has called attention to the fact that events in outer space during the past 2 years have challenged man's political as well as his technological inventiveness. Ambassador Lodge has stated: "It is a prime task of governments and of the United Nations to see to it that political progress keeps pace with scientific change. Unless this is done, the world runs the serious risk of relying on political institutions and arrangements that are outmoded and inadequate." A principal objective of the United States in the United Nations has been to assure the provision of an informed basis and suitable organizational arrangements better to enable the United Nations to deal with the new field.

First steps in the General Assembly

In addressing the 13th session of the United Nations General Assembly, September 18, 1958, the late Secretary of State John Foster Dulles expressed the belief of the United States that the United Nations "should take immediate steps to prepare for a fruitful program of international cooperation in the peaceful uses of outer space." To this end, the late Secretary proposed the establishment of a committee to make the necessary preparatory studies and recommendations. Subsequently, the United States, together with other interested nations, introduced a resolution calling for the establishment of such a committee, and on December 13, 1958, the General Assembly adopted this resolution, thereby bringing into being an 18 member Ad Hoc Committee on the Peaceful Uses of Outer Space.

Under the terms of General Assembly's resolution, the Ad Hoc Committee was requested to study and report to the 14th General Assembly on four basic matters bearing on future action within the framework of the United Nations: the existing activities and resources of the United Nations; the existing activities and resources of the United Nations, its specialized agencies, and other international bodies, relating to the peaceful uses of outer space; the area of international cooperation that could appropriately be undertaken under United Nations auspices; the nature of emerging legal problems; and future United Nations organizational arrangements in this field.

The Ad Hoc Committee met at United Nations Headquarters between May 6 and June 25, 1959. The Soviet Union, Poland, and Czechoslovakia refused to participate in the work of the Committee because of dissatisfaction with respect to the number of Soviet bloc representatives named to the Committee by the General Assembly. India and the United Arab Republic also declined to participate. The Committee's work, therefore, fell to 13 nations: Argentina, Australia, Belgium, Brazil, Canada, France, Iran, Italy, Japan, Mexico, Sweden, the United Kingdom, and the United States. The representative of Japan was elected chairman of the Committee.

In a series of constructive discussions conducted primarily through committees of scientific and legal experts, the Ad Hoc Committee considered the matters assigned to it and prepared a report which serves as a useful introduction to the international opportunities and problems of the space age.

The Ad Hoc Committee's findings in the scientific area emphasized that the principle of open and orderly conduct lies at the root of international cooperation directed toward the peaceful uses of outer space and the adherence to this principle would further the progress of space science and technology, both in the narrow sense as activities in themselves, and in their relation to human progress. The Ad Hoc Committee noted the evident need for efforts of coordination and encouragement by the United Nations in support of international cooperation in the scientific field.

In the legal area, the Ad Hoc Committee considered that, as a result of practices followed in outer space exploration, there may have been initiated the recognition or establishment of a generally accepted rule to the effect that, in principle, outer space is, on conditions of equality, freely available for exploration, and use by all in accordance with international law or agreement. The Committee emphasized the need for resolving practical legal problems as they arise.

With respect to future organizational arrangements within the United Nations, the Ad Hoc Committee found no need at present to establish an autonomous intergovernmental organization for international cooperation in the field of outer space. It suggested, however, that the General Assembly might wish to consider establishment of a committee to study practical and feasible measures for facilitating international cooperation, to consider means for studying and resolving legal problems, and to review the matters initially examined in the Ad Hoc Committee's own report.

Continuing interest of the General Assembly

In his address of September 17, 1959, in connection with the opening of the 14th Session of the General Assembly, Secretary of State Herter urged the Soviet Union to join in the cooperative efforts of the United Nations in the field of outer space. Secretary Herter said: "There could be no more dramatic illustration of a spirit of cooperation in the world today as we stand at the threshold of the space age than for this Assembly to act unanimously in this field." On December 12, 1959, the General Assembly did act unanimously to establish a new Committee on the Peaceful Uses of Outer Space both to carry forward the work of the Ad Hoc Committee and, as an immediately practical step toward cooperation, to organize an international conference for the exchange of experience in the peaceful uses of outer space. The initial Soviet proposal for such a conference was welcomed by the United States as evidence of a spirit of cooperation on the part of the Soviet Union.

Elected to membership on the new Committee were Albania, Argentina, Australia, Austria, Belgium, Brazil, Bulgaria, Canada, Czechoslovakia, France, Hungary, India, Iran, Italy, Japan, Lebanon, Mexico, Poland, Romania, Sweden, the Soviet Union, United Arab Republic, United Kingdom, and United States.

The pioneering efforts of the Ad Hoc Committee and the subsequent action of the General Assembly have prepared the groundwork for the United Nations to consider the opportunities and problems of the space age, thereby helping to assure, in the words of Ambassador Lodge, that political progress keeps pace with the scientific change.

Initial activities of the specialized agencies

The United Nations Ad Hoc Committee placed special emphasis on the need for international coordination of radio frequencies for space tracking, communications, and research purposes as the first technical area in which immediate international action was required. The Ad Hoc Committee noted that there already existed in the International Telecommunication Union (ITU), a specialized agency of the United Nations, a means for handling this problem.

The United States recognized this matter as the first practical problem of a regulatory character which has arisen in the outer space field and as an important element in the provision internationally of a basis for the orderly conduct of outer space activities. Meeting with over 80 other countries in the International Administrative Radio Conference of the ITU, which was held in Geneva, August through December 1959, the United States called attention to the need for reserving radio frequencies for space communications and radio astronomical research. The Conference accorded some recognition to this problem and made minimal provision for frequencies for these services. However, the results of the Conference can be regarded as only a first step toward resolution of an already pressing problem which will become increasingly urgent in the future.

In another specialized agency of the United Nations, the World Meteorological Organization (WMO), the United States has taken the lead in focussing attention on a field where satellites may be of widespread service. Looking to the future, the United States has encouraged the WMO to study the application of satellites in the field of meteorology, where their use promises significant improvements in weather forecasting. Following presentation by the United States of the current assessment of the potentialities of satellites in this field, the WMO established in 1959 a special panel, of which the United States is a mem-

ber, to perform a continuing review of progress toward realization of these potentialities.

As a result of a recommendation of the United States in 1958, UNESCO is also prepared to undertake such activities in this new field as may prove useful with the fuller determination of the specific role to be played by the United Nations and its specialized agencies.

OTHER INTERNATIONAL ACTIVITIES

Opening the consideration of scientific matters by the United Nations Ad Hoc Committee on the Peaceful Uses of Outer Space in May 1959, Dr. Hugh L. Dryden, Alternate Representative of the United States and Deputy Administrator of the National Aeronautics and Space Administration, observed: "Creative ability is not confined to any race or nationality. The records of past achievement repeatedly demonstrate this potential of men everywhere, given the opportunity to contribute. I am sure that the exploration of space will prove no exception. It is a task vast enough to enlist the talents of scientists of all nations."

In keeping with this view, the United States has given practical effect in the conduct of its own outer space programs to the principles of consultation and cooperation it has supported in the United Nations. The range of activities underway or envisaged includes exchanges of scientific and technical data, exchanges of visits among scientists, coordinated programs of observation and experimentation, and cooperative programs in the tracking of space vehicles and in the conduct of space exploration.

Traditional channels of international scientific cooperation

Reflecting the origin of the space age in the International Geophysical Year, 1957-58, traditional nongovernmental channels of scientific cooperation have played a continuing role in facilitating international consultation and cooperation and in providing a means for exchange of information regarding scientific research activities in outer space. Increasingly significant in this regard has been the Committee on Space Research (COSPAR) of the International Council of Scientific Unions. During 1959, successful efforts to obtain the cooperation of the Soviet Union in United Nations activities were paralleled by the success of the international scientific community in arriving at agreed organizational arrangements for COSPAR.

The United States has strongly supported this nongovernmental channel of scientific interchange and activity. At the second meeting of COSPAR held at The Hague in March 1959, Dr. Richard W. Porter, the delegate of the U.S. National Academy of Sciences, expressed the full support by this country's scientific community of COSPAR's objective of bringing together the capabilities of satellite launching nations and the scientific potential of other nations. Dr. Porter made known the willingness of the United States to undertake the launching of experiments proposed by scientists of other countries. It was pointed out that this could be accomplished by sending into space either single experiments as part of larger payloads or groups of experiments comprising complete payloads.

The strong support by the United States of free and full scientific communication through traditional channels was further evidenced by the active participation of scientists of this country in the First International Space Science Symposium held under the auspices of COSPAR at Nice during January 1960. U.S. scientists presented over 45 papers at this meeting and played a prominent role in discussions looking toward further exchange of data respecting the conduct of scientific research activities in outer space and their results.

Arrangements with other countries

In addition to participating in the activities of international governmental and nongovernmental bodies, the United States has embarked on a program of cooperative arrangements directly with other countries. These arrangements are being effected in the areas of space research and ground support.

Cooperation in space research is in a relatively early stage of development. An initial pattern which is emerging reflects the U.S. offer in COSPAR and is based on the cooperative planning and conduct of specific experiments, with the scientific instrumentation being designed and provided by scientists of other countries and the launching operations conducted by the United States. In keeping with the offer made through COSPAR and in recognition of the fact

that the interests of NATO go beyond the military, the United States offered in April 1959 through the NATO Science Committee to place in orbit experiments proposed by scientists of NATO countries.

Since the general offer made in the spring of 1959, technical discussions looking toward arrangements of this character have been and are being undertaken with scientists of a number of countries in Europe, Asia, and the Americas. These discussions are already beginning to come to fruition with the formulation of firm plans for joint programs with Canada and the United Kingdom. Others are expected to follow in the near future.

International cooperation has also been facilitated by the fact that the United Nations space program, by its varied nature and as a reflection of this country's geographic position and global relationships, requires a worldwide network of ground support facilities for the tracking of and communications with space vehicles. Governmental and technical discussions have been completed or are underway to place on a firm basis the radio and optical tracking facilities established during the International Geophysical Year, 1957-58; to extend the capabilities of this basic network in support of new programs such as the deep-space probe programs; and to meet the special needs of programs such as Project Mercury. In some instances facilities established by other countries form a valuable supplement to the U.S. network.

These tracking arrangements have been regarded by the United States as essentially a cooperative effort of this country and the other countries involved. Where practical, provision is made for active participation of others in the operation of the network, and in a number of cases facilities are operated entirely by personnel of the host country. In cases where full operation in this manner is not feasible, a degree of participation and training may prove possible. The number of countries with which tracking arrangements have been made or are being discussed is approaching 20.

A special aspect of the usefulness of the tracking network in facilitating international cooperation is its capability of acquiring scientific data from space programs of the Soviet Union. The United States has already transmitted to the Soviet Union a number of tape recordings of the data transmitted by Sputniks I, II, and III. In furtherance of this unique form of cooperation, Dr. T. Keith Glennan, Administrator of the National Aeronautics and Space Administration, offered on December 7, 1959, to utilize the services of the network in support of scientists of the Soviet Union in connection with any manned space flight program that may be undertaken by that country. This offer was subsequently affirmed in correspondence from the U.S. National Academy of Science to the Soviet Academy. No reply has as yet been received.

The cooperative arrangements in space research and tracking which the United States has initiated with other countries have provided an opportunity for those countries to play an active and essential role in the space age and have served to demonstrate the genuine interest of the United States in effective and meaningful international arrangements.

PROGRESS OF DEPARTMENT OF STATE SCIENTIFIC ATTACHÉ PROGRAM¹

At the present time (January 1960) there are 14 distinguished scientists assigned as scientific attachés or deputy attachés in 9 posts abroad: 2 men each in London, Paris, Stockholm, Tokyo, and New Dehli, and 1 man in Rome, Bonn, Buenos Aires, and Rio de Janeiro. A special consultant served in Moscow for 3 months during 1959 and he will return for a similar period this summer. With selection of men for the deputy attaché posts in Rome, Bonn, and Moscow all of the presently authorized positions will be filled. A modest increase in geographic coverage is contemplated for 1961.

The persons selected for these positions are mature scientists, with established reputations in the American scientific community and in their countries of assignment. Each has facility in the language of the country of his assignment. Before departing for his post, each man has been assigned to Washington for intensive briefing in various offices of the Department and for consultation at other Government agencies and appropriate nongovernmental

¹ Background of the science attaché program is presented in hearings before the House Committee on Science and Astronautics in "Dissemination of Scientific Information," May-June 1959, pp. 122-137.

groups. Of the 14 men, 7 may be classed as physical scientists, 4 as life scientists, and 3 as engineers. Ten have been recruited from academic life, three are on leave from other Government agencies, and one is from a private research institute. They are appointed as Foreign Service Reserve officers for a 2-year period.

The scientific attachés are an integral part of the Embassy structure, and in collaboration with other specialists in the Embassy they assist and advise the Ambassador on the problems arising from the interaction of science and foreign relations. It is their responsibility to keep the Department informed of developments in science significant to foreign relations and to advise of the impact of U.S. policies on the scientific activities of the host countries and the influence that foreign policies may have on U.S. scientific activities.

An increasing responsibility of the scientific attachés is to assist their Ambassadors in coordinating the many foreign science programs supported by various U.S. Government agencies in the countries of assignment.

A possibly unique aspect of their job is its representational character. With their recognized stature among foreign scientists they are in excellent positions to explain U.S. science and policy to an important and influential segment of the foreign public. They are becoming a focal point for U.S. and foreign scientists seeking closer contact with each other and are able to initiate and foster means for the exchange of information and for collaborative research.

The CHAIRMAN. Now, Mr. Fulton has some questions to ask you.

Mr. FULTON. I have two things to clear up. One is on this specific test of the Russians. It isn't so unusual because in the orbits of the Soviet space vehicles that they have been using previously, it is within a 4-percent correlation of their previous orbits and it would seem to be an extension of their range otherwise, which is a land range going eastward—northeast.

To me it sounds like a logical development of the Soviet policy of a man in space, or control of orbits, or more lunar shots. It is entirely within the context of the scientific base they have already developed. Everybody seems to talk around the United States and in these newspapers as if it is a completely acute angle off in another direction and off in another region. It isn't.

Wouldn't you agree with that?

Mr. MERCHANT. I would.

Mr. FULTON. And your scientific adviser?

Mr. FARLEY. We do agree that this is the most likely explanation.

Mr. FULTON. So it isn't any terrifically unusual occurrence. We would be doing the same thing if we were in the same position, from the United States, coming up east instead of being at Vandenberg and going west.

My question is, on this man-in-space program where there has been more the feeling of cooperating for peaceful purposes, could we indicate a show of help, as we helped the Russians, on one of their trawlers' officers with ulcers, we certainly went out of our road to help them there; couldn't we try to make it a joint program. Because at some point in the Pacific I can see where it is going to overlap and there will be real trouble. On our range going west and theirs moving east, in just about the same satellite pattern, why couldn't we work something out to avoid the future trouble which everybody thinks there now arises? Because there will be a gray area where it will intrude on our proposals and they will say, "We have the right to go ahead," and we say, "We are on the same track," and we meet head on.

Are we doing anything to try to head it off?

Mr. FARLEY. The particular area you identify either in tracking or in other aspects of a man-in-space program is one which we think

could be potentially a very attractive one for this United Nations committee on which for the first time we will have the Soviets this coming year.

Even before that, as I think it was Mr. Anfuso's question which indicated this, Dr. Glennan has made it known to the Soviet through, I believe, our National Academy of Sciences that if they would be willing to let us know of any launchings of this kind we would be willing to put the services of our worldwide tracking network at the disposal of their effort there. This is simply a preliminary step.

Mr. FULTON. I would like that put in the record. That is very important to me.

Mr. FARLEY. We will obtain this for you.

(The information requested will be found on p. 28.)

Mr. FULTON. There is the impact of what this committee sees in its work. For example, when we in the Antarctic have changed from the troubled era of competition on the discovery of new lands on the earth, and have taken an entirely new policy there, it ought to apply as well in space and it looks to me as if there has been a significant and basic change in international relations.

It was Dr. Selden's book, "Dominion Over the Seas," that led to the Spanish Armada.

It was Dr. Grotius of the Netherlands, that led to the Mare Domini—freedom of the seas.

It appears to me we have made a tremendous step forward in the United Nations through these negotiations, in 1959, and on the Antarctic treaty negotiations where everyone in the United Nations accepted the freedom-of-the-seas basis for land and space and to me that is a mature advance in the history of the world. Don't you think that is possible?

Mr. MERCHANT. I agree, sir. I think this is a significant advance. I think the Antarctic treaty is a very important development, and I think the approach which has been taken by the United Nations, if I may say so, under our leadership, in the dedication of outer space to purely peaceful purposes, is a very hopeful augury for man's future at a time when there are many depressing elements in the picture.

Mr. FULTON. And we should strongly move ahead in these constructive steps both in the U.S. Department of State, as well as under Cabot Lodge and in cooperation with the others at the United Nations.

Mr. MERCHANT. Yes.

Mr. FULTON. Thank you.

The CHAIRMAN. Thank you very much, Mr. Secretary.

At this point, the committee will adjourn until tomorrow. Tomorrow we have the CIA here, but Mr. Dulles has a security council meeting in the morning at 10 and we will not be able to open up until 11 o'clock. However, I want all the members of the committee to know that we will be prepared to come back tomorrow afternoon if we don't finish with him by noon tomorrow. We will ask him to come back at 2 o'clock tomorrow afternoon.

If there is nothing further, the committee stands adjourned.

(Whereupon, at 12:10 p.m., the committee adjourned to reconvene at 11 a.m., Thursday, January 21, 1960, in executive session.)

(The executive session of January 21, 1960, concerned another matter and is not included here.)