demander sérieusement si nous devons ou non continuer dans cette voie. Je dois avouer que je suis très inquiêt et très indécis à ce sujet.

Nous ne devons pas courir le risque que des assemblées trop nombreuses empêchent les astronomes de nouer des liens d'amitié, ni le risque de voir certains de nos meilleurs astronomes, déçus par ces trop nombreuses assemblées, éviter nos réunions.

L'Union doit, à temps, prendre des mesures pour assurer que cette belle tradition de coopération internationale soit préservée. Mais quelles doivent être ces mesures? Le seul remède serait-il d'organiser des réunions séparées sur différents sujets, par exemple, le système planétaire, le soleil, les étoiles et les galaxies?

Actuellement tous ces domaines de l'Astronomie sont encore réunis et nous devons nous réjouir et en profiter pleinement.

Comme cette réunion a lieu en Californie, nous ne pouvons douter, un seul instant, qu'elle sera une pleine et heureuse réussite. Cet Etat de Californie dont le nom vient de cette île fabuleuse décrite au seizième siècle par Ordonez de Montalvo comme étant située *près du Paradis*, pour les astronomes *c'est* le Paradis.

Puisse cette atmosphère de paradis régner sur nos réunions et aussi sur les nouveaux rapports internationaux qui seront renoués pendant ces journées.

Dr Goldberg thanked Professor Oort for his address and then called upon Ambassador Adlai E. Stevenson to address the assembly.

ADDRESS BY THE REPRESENTATIVE OF THE UNITED STATES OF AMERICA, AMBASSADOR ADLAI E. STEVENSON.

On behalf of the Government of the United States, and of the American people, it is my duty and my privilege to express to all of you, the distinguished members of the International Astronomical Union, a most cordial welcome to this country.

In this gathering are learned scientists from every continent and latitude, from Australia to that ancient cradle of astronomy, Egypt. We heartily welcome you all to the United States. And since Moscow was the site of your most recent Assembly three years ago, it is my particular pleasure to greet the large and distinguished delegation which has come here from the Soviet Union.

For yours is a community of the mind—ordered by reason, united in the single pursuit of truth about the universe. We who try to keep the peace among unruly nations cannot help envying and admiring your unity and purity of purpose. Would that all of us at the United Nations could follow your example, would that all of us could unite to end cold war and conflict, and concentrate on the arts of peace and the wider enjoyment of the benefits of this age of unparalleled technical progress.

I have been told that one of the reasons the astronomers of the world co-operate is the fact that there is no one nation from which the entire sphere of the sky can be seen. Perhaps there is in that fact a parable for national statesmen, whose political horizons are all too often limited by national horizons. In the United Nations we have mankind's greatest attempt so far—halting though it is—to widen all our horizons, to cause all men and all nations to accept the fact that there is but one world, without horizons other than the common horizon of illimitable space—one world not only in science, not only in the search for truth, but in the ordering of their international lives.

But science is more than a search for truth and a noble exercise of the mind. For generations the scientist and his practical cousin, the engineer, have been widening man's grasp of nature with geometrically increasing speed. They have put into the hands of the statesman and the citizen unimaginable powers. And although science itself, and the powers it bestows, are ethically neutral with the cold neutrality of outer space, the ways in which men use those powers carry the greatest consequence for good or for evil.

The same hydrogen fusion process that gives the burning light of the Sun and the stars has been in our grasp for a decade—but will we use it for construction or for cataclysm? Earth satellites may soon give us direct and instantaneous communication and television spreading simultaneously around the world—but will we use them for truth or for falsehood, for tolerance or for hatred, for peace or for conflict?

Scientifically and technically the world has already become a single community—yet in our ethical response to this fact, and in our political institutions, we, governments and citizens, are lagging dangerously far behind you, the scientists.

You have given us dangerous powers, but we have not yet learned to control them. You have given us tools to abolish poverty—but we have not yet mastered them. You have given us means to extend the span of human life, but this may prove a curse, not a blessing, unless we can assure food, survival, and then health and a good life for the bodies and minds of our exploding populations. You have made the world small and interdependent, but we have not built the new institutions to manage it—nor cast off the old institutions which scientific progress has made obsolete.

Every great change wrought by science is foreshadowed years ahead in the laboratory and on the drawing board. But it is not until the new device is fully built and functioning, and has astonished the whole world, that we begin to think of its human and political implications. We are forever running today to catch up tomorrow with what you made necessary yesterday.

This gap must be closed—this disruptive and dangerous lag between scientific discovery and political adaptation to it. I suggest that the natural scientist and the political practitioner must enter into a new communion of early and constant intercommunication, so that the world's institutions can more nearly keep up with the incessant march of science. Unless this is done, the gap will surely widen, for there is no way to slow down the pace of scientific discovery even if we wanted to do it.

Today things move more swiftly. Within ten years after man set off his first atomic explosion, the leaders of all the great powers had acknowledged that a nuclear war between any nations would be a catastrophe for *all* nations. There is now an Atomic Energy Agency which is *international.* There are strenuous negotiations for a permanent, reliable, controlled ban on nuclear weapons tests by any nation. There is a groping determination to halt the further spread of nuclear weapons to any nation. Thus, no doubt the exploration of outer space will breach them further.

We can only guess at such possibilities. But there is no guessing any more as to whether man will undertake the adventure of space exploration. Yesterday's dreams are today's facts. Scientific instruments, then animals, then men, have been hurled into space. The splendid flight and safe landing of Major Titov, just nine days ago, marks one further stride in this progression. There is no turning back; as certainly as the oceans were conquered in the century of Columbus and Magellan, new realms of space will be conquered in our century.

These questions are beyond the scope of science—but all of us, as citizens, must help to answer them. If the scientist and the engineer can create a thrust strong enough to defeat the Earth's gravitation, and can plan to send groups of men into flight far beyond the Earth—

then it is up to us in government and diplomacy to develop a comparable "orbital velocity" of our own, great enough to lift *all* mankind beyond the dread gravitation of mistrust and war.

In the years ahead, then, international diplomacy must do far more than put out the recurrent fires of conflict. It must apply itself with massive energy to three great areas of creative effort: to disarmament, to the building of institutions to keep the peace, and to international cooperation for human progress.

After fifteen years' debate all the world agrees that the arms race, especially in nuclear weapons, is anarchic, wasteful, and deadly dangerous for humanity. So all agree that we must stop the race, reverse the process and disarm.

Yet it is not done. Why? Because of deep conflicts of purpose, and an even deeper mistrust. But it can be done. It involves principles which are familiar to you as scientists—freedom of investigation, freedom of inspection, and freedom of verification. There must be, in any disarmament program, adequate inspection and verification such that each side can be quite sure, at every stage, that the other is living up to its part of the bargain.

Disarmament has been misconstrued as if it were in some way the enemy of national defense. And the idea of inspection and verification has unfortunately been misconstrued in certain quarters, as if it were in some way the enemy of disarmament. It is not. It is a necessity. The acid test of sincerity is whether one agrees to fully adequate inspection and verification. Only with them can we know that, inside the box marked "Disarmament", we will really find the reality and a peaceful world, and not something ticking away to the destruction of all of us. The same, of course, applies to the banning of nuclear weapons tests, for no permanent ban is possible without adequate inspection and verification. In nearly three years of negotiations in Geneva that has always been the key issue. And it still is.

The next question is: Who is to do the inspection and verification? What sort of policeman can police the great powers?

Here we find that we cannot take even the first practical step toward general and complete disarmament and a peaceful world unless the nations are willing to build new world institutions which stand above the individual nations and act impartially for the entire human community. What is called for is an international organization within the framework of the United Nations which will see to it that no single nation fails to comply with agreed steps toward general and complete disarmament.

And if we look still further down the road, to the day when national armed forces will be done away with and only internal police units remain, then all the more will the world need institutions of international law and order. Then the United Nations will need its own United Nations Peace Force, capable of deterring or subduing the strongest combinations which might be raised against it.

That is the long-run need—but the short run makes similar demands on us. Events in the Congo have shown how vital it is that the United Nations retain and develop further the capacity to act for peace, to deploy military forces with speed and precision, and thus to uphold the integrity of vulnerable nations in emergencies where direct intervention by a great power would risk disaster. The United Nations is the world community's greatest instrument, and the world community must act now to uphold it, pay for it, invigorate it, and support its able and courageous Secretary General.

All these things are demanded of us to save mankind from violence and war. But the community of nations, as this meeting today so eloquently attests, should be bound together by more affirmative and creative purposes. More and more we must, as a world community,

learn to practise the arts of peace cooperatively and together. And, at this fateful moment in history, when man has, so to speak, one foot already in the heavens, surely we must find ways for the powers to cooperate rather than fight in the exploration of outer space.

And surely all the world would breathe easier if the conquest of space were looked on henceforward not as a means to the power and glory of particular nations or ideologies, but as one of the great adventures of the whole human race.

"Together let us explore the stars"—so said President Kennedy at his inauguration last January, appealing especially to the Soviet Union. A few days later he renewed this appeal in these words: "I now invite all nations—including the Soviet Union—to join with us in developing a weather prediction program, in a new communications satellite program, and in preparation for probing the distant planets of Mars and Venus."

Technology will not wait long for an answer. In just a few years there will be rocket boosters, in more than one country, big enough to launch whole teams of men on journeys to the nearest planets. Shall this too be a race for military or psychological advantage at huge and wasteful expense? Or shall it be the occasion for teamwork, ignoring ideological lines? We haven't much time left in which to decide—it is a fork in the road which will soon be passed.

We have many similar choices to make closer to home. The new nations, which have recently become independent, have an almost unlimited need for education, health, industrial development, agricultural improvement, communications, and exchanges in the fields of science and culture. Shall more fortunate nations exploit those needs by offering aid only in exchange for political influence? Or shall we help because it is right to help? And shall we prefer more and more the disinterested channels of the United Nations? The path to peace must lie increasingly in the multilateral direction of the United Nations, especially with all the self-restraint and mutual tolerance which it requires.

Such are the specific challenges which face international diplomacy today and which draw still greater urgency under the accelerating pressures of science and technology. Disarmament. The building of institutions to keep the peace, both now and in a future disarmed world. International cooperation in the creative arts of peace, to abolish poverty and backwardness.

We have no choice but to meet these challenges. And, in meeting them, we shall be building together a grand design of peace—a design whose keynote is world community.

If there can be said to be a way of the future for mankind, I believe it is in that principle of community. No one nation, no empire, no imposed system can dare to speak any more for mankind. All must be willing, if sovereignty is to make any sense in the thermo-nuclear age, to deny themselves some of the extravagant jungle habits which have accompanied it in times past—and to join their sovereign wills in community institutions, in common community action, and in common obedience to the community's rules.

The rules themselves already exist. They are proclaimed in one of the greatest creative acts of history, the United Nations Charter. We can attempt to restate some of them in the light of our experience since 1945, when that Charter was framed—on the other side of San Francisco Bay.

The Charter commands every nation not to use or threaten force against the territory or independence of another. But experience requires us to go further, for there are other means of conquest. We have seen nations and peoples subjugated by political subversion and guerrilla warfare. We have seen economic aid used as bait and club to impose political influence and subservience. We could well see the raising of new territorial claims, or even, claims of possession in outer space. To all these exaggerations of sovereignty we must say: no, no

nation, any more, by any means, direct or indirect, shall seek to extend its control at the expense of another. And we can say so with rising confidence now that the Republic of the Congo, which was mortally threatened with new conquest by outside powers, has with the massive help of the United Nations regained its unity and its hopes for the future. Long may it live! And long may the world remember the triumphant achievement of the United Nations!

A second provision of the United Nations Charter calls for international cooperation for human progress—economic, social, cultural, and in the field of human rights. Much has been accomplished along those lines, but how much more could be done, both on this earth and in the spaces beyond, if all the nations would willingly pool their capacities and their efforts! The wonderful techniques of material progress should not be perverted to satisfy political or ideological ambitions. The poor and the hungry and the diseased of this world do not ask for help in the name of one "system" or another. They ask for it in the name of humanity—of the community of mankind—and it is in that name only that they should receive it.

There is a third principle of the United Nations that needs reaffirmation. It is summed up in those splendid words of the Preamble—"to practice tolerance, and live together in peace with one another as good neighbors."

Tolerance is the key to peace, for there can be no peace unless there is mutual tolerance as between differing peoples and systems and cultures. Peaceful co-existence should not and cannot involve "burial" by any one of any other.

You men of science above all others should value and preach tolerance, for you have only to recall the blight that intolerance cast on Copernicus and Galileo, a blight that held back astronomy for generations, and you know only too well how the orthodoxy of one scientific era becomes the heterodoxy of the next.

The condition of tolerance is openness and the understanding that comes from openness. How can there be tolerance or understanding if great nations continue in secretive isolation from the rest of the world, in suspicion and fear of sinister foreigners, excluding outside information, periodicals, books, and broadcasts, restricting travel, and hiding great parts of their territory? Only in openness will that mistrust that poisons the world atmosphere today be dispelled, and only through open societies can there arise that tolerance that will permit all of us to live in confidence and peace with one another.

Amid the darkness of this noontime there are rays of hope that we *will* achieve an open world. It is happening, bit by bit. Just the other day, we read that next year there will be direct air service between New York and Moscow. We see it in the growing record of tourism and cultural and technical exchanges. Indeed, we see it in such great world-wide assemblies as this of the International Astronomical Union.

Just last week I was happy to read the remark of the eminent Soviet astronomer, Professor A. A. Mikhailov, at a meeting in Pasadena on the astronomy of the space age. "Science is international," said Professor Mikhailov. "My hope is for the United States and Russia to share in space projects and in many other fields of human endeavor."

I am glad Professor Mikhailov is here this morning, because I would like to tell him how much I agree with him!

Community, tolerance, openness—those are the words which I would leave with you. And if they are to be made real, we all have one more great duty: to support the United Nations, which is the community's greatest symbol and greatest instrument. It is the world center of tolerance and openness. It is, as long as men are free to differ—which I trust will be forever!—a center of disciplined disagreement. No one power can dominate it, or use it to drive another

to the wall. It is the greatest defense of the weak against the bullying of the strong. It is the lightning rod which prevents rampant nationalism from sparking war. And if the world is to be saved from disaster, the United Nations must be built into still more—an institution which can enforce the judgments of the world community against those who threaten or break the peace.

I hope I have not detained you too long. After this exposition of our terrestrial worries, I suspect you will all be glad to get back to the remotest celestial bodies!

Indeed, I rather wish that all of us who deal in human affairs could be astronomers for a while. Sir James Jeans called astronomy "the most poetic of the sciences." Perhaps if we all practiced it we would be filled with the wonder and excitement of discovery, with a sense of elemental majesty and beauty, with our little quarrels in better perspective, and would thus be purged of our pride and prejudice, and all the base motives which complicate and endanger our lives.

At all events, I devoutly hope that all of us in and out of the United Nations will make a new beginning; that we will dare to part with habits and institutions dangerously outworn; and that we will have the courage and determination to construct, soon enough to save mankind, a new world order more nearly worthy of the scientist and the poet, and of the best that man has in him.

The Chairman expressed the thanks of the gathering to Ambassador Stevenson for his inspiring address, and formally declared open the Eleventh General Assembly of the Union.