Science and the Maintenance of Peace

Bart J. Bok

Harvard College Observatory

AT ITS MEETING IN PARIS (June 1948) the Committee on Science and Its Social Relations of the International Council of Scientific Unions voted to undertake an inquiry into some questions dealing with the subject of science and the maintenance of peace. It was decided to address the following two questions to a small but representative number of scientists who were known to have given considerable thought to the question of how scientists can contribute most effectively towards the maintenance of peace:

(1) In which measure do the methods of international scientific work contribute to the creation of an international spirit and to the maintenance of peace?

(2) In which ways could scientific organizations and scientists intensify their activities for the maintenance of peace?

At the request of the president of the CSSR, J. M. Burgers, of Delft, Holland, a number of these inquiries were distributed in the United States. The two questions were also discussed at the July meeting of the NRC Committee on UNESCO; several members of this committee have submitted answers. Since these questions are basic to the place of science in UNESCO, the NRC Committee requested the U. S. National Commission to devote time to discussion of these questions at the Panel Meeting on the Natural Sciences in Boston.

About 40 requests for replies and comments were distributed during the summer months. The present report represents an attempt to digest the opinions expressed in the 22 replies that have been received thus far. The names of those who contributed replies and their respective fields are as follows: I. Amdur (chemistry), I. S. Bowen (astrophysics), A. J. Carlson (physiology), R. Chambers (biology), R. E. Cleland (botany), K. T. Compton (physics), J. B. Conant (chemistry), R. W. Gerard (physiology), S. Goudsmit (physics), C. Kluckhohn (anthropology), S. Lefschetz (mathematics), W. T. Martin (mathematics), P. W. Merrill (astronomy), Melba Phillips (physics), W. O. Roberts (astronomy), H. N. Russell (astronomy), M. H. Stone (mathematics), O. Struve (astronomy), K. V. Thimann (biology), H. C. Urey (chemistry), M. B. Visscher (physiology), and D. Wolfle (psychology).

Interim report prepared by Dr. Bok as chairman of the National Research Council Committee on UNESCO, September 24, 1948.

The Sciences in UNESCO

In the words of the preamble to the constitution of UNESCO, the organization was created "for the purpose of advancing, through the educational and scientific and cultural relations of the peoples of the world, the objectives of international peace and of the common welfare of mankind for which the United Nations Organization was established and which its charter proclaims."

The principal task of UNESCO is to create an international atmosphere of peace. The organization is charged with the responsibilities of getting the peoples of the world to know each other better and of assisting those who are now underprivileged to better their lot. The sciences have a place in UNESCO, not only because they have a big contribution to make toward the achievement of a better material life, but also because scientists are potentially among the most effective ambassadors of good will. *Pierre Auger,* who heads the Natural Sciences Department of UNESCO in Paris, writes in the UNESCO *Courier* for August 1948: "Scientists have always formed a world brotherhood. Their problems, and the solutions they sometimes find, are truly human and therefore international. What wonderful scope for the development of collaboration and brotherhood between the different countries of the world! The only spadework needed for mutual understanding between scientists is the mere understanding of the same language: if they have this, two botanists or two physicists from the most distant continents are immediately drawn together by strong common interests."

Harlow Shapley expresses himself on this same subject in the concluding paragraph of his recent address on "The One World of Stars": "Supranationalism and cooperation across national boundaries are so simple and effective in the sciences that we have a clear responsibility to lead the way into an era of peace and human progress without which our efforts for human knowledge and human comforts will have been in vain" (*Science,* September 24, 1948).

A Digest of Answers to Question 1

Almost all correspondents stressed the basically international character of science. *Cleland* expresses

this as follows: "Science deals with universal phenomena. There is no such thing as an English Law of Gravitation or an Austrian Law of Inheritance. Since the phenomena and laws with which scientists deal are universal, it is natural for scientists of all nations to work together in the solution of common problems, to disseminate their discoveries widely, to develop machinery by which constant international contact is maintained. No group in the world is more in the habit of maintaining cordial international relations than the scientists. No group is characterized by a greater measure of understanding between nationals of different nations. Freedom from racial and national prejudice is the norm among scientists."

The following direct quotations from several of our correspondents show that many scientists feel strongly that, because of the special nature of their work, they are in a favored position with regard to international collaboration:

Bowen: International scientific work brings about many direct contacts between scientists of different nations on the basis of their science. This cannot help but increase the mutual understanding of each other's problems and lead to the elimination of causes of friction.

Conant: It seems to me quite clear that the international character of science is highly important both for the progress of science and as part of the general cultural interchange so important for the maintenance of our civilization.

Gerard: Science is international in all respects. Its content is known to all who are interested. Workers in all countries work together for common ends and build on one another's efforts. Scientists have, in a real sense, a common and precise language. Individuals in far places know and respect each other and even form firm friendships at a distance. Travel to and work in foreign laboratories is common among scientists and forges lasting ties and sympathy.

Goudsmit: The desire and the need of the scientists for world-wide cooperation should be an encouraging example to a world that is sorely in need of the cooperative spirit. It is only by breaking down the barriers of dogma, mistrust, fear and secrecy, only by the free exchange of ideas and the widest possible dissemination of truth, that science can continue to raise its level, and with it, the level of our civilization.

Kluckhohn: Over the long run it seems to me clear that the methods of international scientific work do contribute to the creation of an international spirit and to the maintenance of peace. It is very difficult to live as a scientist and to remain a nationalist in the narrow sense. As one looks at the whole stream of human history it is evident that wider loyalties have developed as a result of individuals from hitherto separate groups discovering that they were pursuing the same goals and that their own interest could best be served by working together.

Merrill: Science seems to be one of the very few areas in which international cooperation is at present both practicable and useful. Here the troublesome questions of integrity and mutual confidence are at a minimum. Successful cooperation in this relatively easy field might serve the interests of peace by tending to preserve or enlarge contacts between various nations, and by suggesting and stimulating cooperative experiments in more difficult areas.

Thimann: It may often happen that a scientist's closest contact, from the point of view of work, is a man in a distant country; in scientific interests he may have more in common with that man than with any of his colleagues in his own institution.

Struve: No one can possibly doubt that the methods of international scientific work contribute immensely to the creation of international solidarity among the peoples of the world and to the maintenance of peace. As an astronomer I am daily concerned with problems which not only transcend national boundaries but reach far out into space beyond the limits of the solar system and even our galaxy. I fervently believe that the ultimate aims of all mankind are the same and that the astronomers perhaps even more than other scientists must carry the message of world peace to those who have not the advantage of scientific thought.

Visscher: A real and natural basis for friendly association may be easier for scientists than for persons in most other occupations because science is naturally an international enterprise, its methods are universal, verbal factors are of minimal importance to it, and because factors of race, religion and nationality have nothing fundamental to do with progress in science.

Wolfle: The scientists themselves in their scientific work are probably as free from restrictions imposed by national boundaries as any group in the world. We read each other's reports (within the knowledge of our linguistic abilities), draw upon each other's results, combine findings, meet in international congresses and include representatives of other countries among our friends pretty much without regard to racial or national boundaries or differences. We might in a sense, therefore, serve as a model of international-mindedness as long as we are unfettered by nonscientific controls.

While most of our correspondents express the opinion that science and scientists have an important mission to fulfill in fostering international collaboration, some warn us not to expect too much, and one says

that the net result is zero. The following quotations are especially pertinent in this respect:

Carlson: Science is one and is consequently international. It could be rendered more international if scientists and science were identical. But, unfortunately, scientists are just human beings and do at times depart from the strict path of science, that is, do not always follow the proven facts with all the cards on the table face up. They do sometimes indulge in the common world practice of artistic lying.

Compton: It is quite a common experience for a scientist in one country to feel almost intimately acquainted with a scientist in his field in some other country, even though the two may never have met. So far as it goes, this is all to the good, and the more that it can be encouraged the better. *However,* I think it is clear that scientists form too small a proportion of the entire population to make this factor anything more than a relatively small influence, but it will generally be in a good direction.

Phillips: The internationalism intrinsic in scientific work does result in a community of feeling between scientists everywhere and is part of an "international spirit." But the extension of the methods of international scientific work to other aspects of international relations, while devoutly to be hoped for and worked toward, is not to be caught in a phrase or even in a solemn treatise. The ICSU is not going to be able to do very much about it, by itself.

Urey: I believe that merely scientific contact of scientists has comparatively little to do with securing peace. Peace is the by-product of responsible government, and not a by-product of a discussion of the origin of the carbon and nitrogen atoms in uric acid or the discussion of cosmic rays. UNESCO is important, as are all other international organizations, both scientific and otherwise, for without the community of interest which they establish responsible government cannot be established over the present divergent national groups of the world; but scientists will make a mistake if they think that their scientific activities are the direct way to accomplish this end.

In the listing of achievements, our correspondents stress those of the past quarter-century or so made by the present international scientific organizations, notably the unions, and they emphasize the importance of meetings. Almost without exception they point to the effectiveness of international exchanges of personnel at all levels. They comment favorably on international exchanges of scientific literature and on the advances made in scientific abstracting. The importance is stressed of several projects undertaken by the Natural Sciences Department of UNESCO, notably the establishment of the Field Science Cooperation Offices, the creation of the Hylean-Amazon Institute, the work on scientific reconstruction and that on the popularization and social implications of science.

Roberts expresses the opinion that the methods of science lead to world-wide cooperation and mutual understanding. He writes: "A basic factor in the method of science, for example, is the elimination of personal bias from the interpretation of events of the surrounding world. It is nearly impossible for scientists to avoid carrying over this impersonal approach when they assess politics or other social endeavor. Thus the method of science provides a way for men to put aside the conventional signal reactions, prejudices, and many of the other blocks to understanding things that are unfamiliar.

"Another factor in the method of science is the appreciation that must come to all scientists—that the development of theories is always an evolutionary thing and never static for long. This helps men to understand that their social theories, like all theories, are in the process of gradual change—that no sole theory or complex of theories is sufficient for all times or all places and that all systems will evolve in one direction or another at one rate or another—thus the method helps provide the flexibility of mind that is necessary if we are to maintain peace in a world inhabited by proponents of diverse and sometimes conflicting social schemes.

"Just to mention briefly one other essential feature of the method of science, I believe that the principle of freedom of inquiry which all good scientists must possess is a great asset in the maintenance of world peace. It is engrained in the spirit of scientists that in their progress there are no man-made absolutes, and that the ultimate principle by which all theories stand or fall is not authority, or force of will, but solely experiment—solely how well, how simply, and how usefully a given theory explains and predicts the various phenomena of the universe. This fundamental freedom is hard to reconcile with doctrinaire politics and impossible to reconcile with dogmatic adherence to particular theories of social or physical organization imposed by the dictation of a leader."

A Digest of Replies Received to Question 2

Natural Resources and Overpopulation. Several correspondents express extreme concern over the problems of overpopulation and lack of natural resources as they bear upon the maintenance of world peace. *Stone* writes: "It is only through the applications of science on an international basis in agriculture, industry, public health and population control that a balance between our limited world resources and our consumption can be achieved at a relatively high

standard of living and one of the most dangerous causes of aggression and war eliminated." *Lefschetz* expresses the opinion that the explosive growth of population everywhere is the principal long range cause for war. A clash between the United States and the Soviet Union (mainly due to lack of understanding between the two sides) is, according to *Lefschetz,* the most important cause for war in the immediate future.

Carlson writes: "The known factors that lead to war are overpopulation, undernutrition, uncontrolled greed, and antediluvian religions and philosophies. We know now on the basis of science that the present human race is one species and that there are saner and better ways of meeting human food needs and controlling excess human reproduction than the methods of war."

Two sample quotations may suffice to show the importance which scientists attach to the world's natural resources.

Amdur: To focus the attention on the use of science for conserving and developing the world's resources is one of the most effective ways for scientists and scientific organizations to contribute to the maintenance of peace. No single cause for wars can definitely be said to be the most important one, but I am sure that if the world's resources could be developed to take care of economic needs of peoples to a greater extent than in the past, those causes of war which are tied up with economic rivalries would be much less important.

Cleland: Most modern wars have been brought about as the result of economic pressures, based on the Malthusian principle. Only science can remove the basis of these pressures. Scientific control of population, the production of more efficient crop plants and domestic animals, the proper exploitation of vast areas of potentially usable land, control of soil erosion, development of irrigation and other projects designed to increase arable land, the discovery of new sources of energy—these are activities which will remove the chief cause of war. Without such activities, no amount of talk or education will achieve lasting peace.

UNESCO's activities in connection with the forthcoming United Nations Scientific Conference on the Conservation and Utilization of Resources are wholly in line with the above suggestions, as are the attempts to assist in the formation of an international union for the protection of nature.

International Unions and Congresses. The majority of our correspondents, notably Bowen, Cleland, Conant, Compton, Martin, Phillips, Roberts, Russell, Struve, Thimann, Visscher, and Wolfle, attach a great importance for the future to continued support of the work of the international scientific unions, and they urge holding frequent international scientific congresses.

Cooperative Research. A number of correspondents point to the importance of cooperative research projects with scientists as individuals, or institutions, from two or more nations collaborating. The following sample quotation shows that scientists would welcome the establishment of international laboratories and observatories under United Nations auspices:

Merrill: International laboratories might be established for intensive research on the great health problems of mankind, for example, cancer, arthritic diseases, the common cold. A large cooperative astronomical observatory in the Southern Hemisphere might be considered. Possibly an improved world calendar could be advocated.

Exchanges, Fellowships and Scientific Missions. Martin lists as one of the most important activities the "wide exchange of scientists and scientific students on a visiting basis with travel and passport regulations as simple and flexible as possible." This same thought is expressed clearly by *Cleland* who writes: "We must enlarge as much as possible existing programs for the exchange of students. Nothing can be more effective in bringing about mutual understanding than giving large numbers of students the opportunity to study in other lands and to become acquainted with other peoples at the time in life when they are still plastic and impressionable. The more students can experience a satisfying experience abroad, the more nearly will we approach the goal of mutual sympathy and understanding."

An interesting suggestion is made by *Thimann*: "Without doubt one important way in which the international spirit of science could be increased and given more impetus is by increasing the *personal* contacts among scientists of the world. The exchange of personnel that now goes on, while very useful, influences only a very small fraction of the men involved. We need a very much greater exchange of personnel in the form of visiting lectureships and travelling fellowships. These should not be mere tours of inspection but should involve actual residence for not less than a term or perhaps a year. They should involve not only university staff and students but men working for Government and industry. Travelling fellowships for industrial scientists would be particularly useful.

"Towards the close of the 19th century it became very common for biologists and chemists of England and America to go to Germany for graduate work and to take their doctorates there. Arrangements of this kind involving a *really* large fraction of the total sci-

entific men are needed. Practically every scientist should, by age 30, have spent at least a year studying abroad."

Gerard and *Visscher,* who have both participated in the medical mission organized by the Unitarian Service Committee, stress the importance of international scientific missions organized with the specific aim of aiding and assisting the scientists and the population of the region. *Roberts* points to the need of simplifying the movement of scientists across national boundaries. He writes: "Every effort should be made to simplify the passport and visa requirements to give scientists freer access to all countries. If the many-times-proposed plan for the issuance of 'UNESCO passports' could be worked out so that people carrying these passports could have free access to all UNESCO countries, it would be a great step in the right direction."

On the same subject *Stone* writes: "Scientists and their organizations can contribute to the maintenance of peace by working to break down artificial barriers to communications, travel, and cooperative endeavor which seriously obstruct the development of world science in all its aspects, including its application to some of mankind's most pressing problems."

Popularization and Social Implications of Science. The principal recommendation made by *Carlson* is the following: "More factual scientific education and understanding of the populations in all lands would greatly diminish the drives or needs for war. In my judgment and experience, this phase of education on an international scale is primarily a social responsibility of the scientists."

Amdur expresses the opinion that continued popular education in the field of atomic energy is needed. *Gerard* feels that a big opportunity is being lost since we are not stressing to a greater extent the popularization of the use of the scientific method and since we are not attempting to introduce this attitude early in the formal education of our children.

Gerard and Visscher urge the fullest support of the social sciences. We quote them as follows:

Visscher: The scientific method can and must be applied to the greatest problems of human life, the problems raised by peoples having to live with one another on a single planet made small by the advances in the physical sciences. All prior attempts to create conditions conducive to peace have failed. Man must be allowed to use the constructive power of the scientific method in this sphere. This method is not a tool of infinite utility, but, until its usefulness in this area has been exhaustively tested, no one has grounds for rejecting it. The survival of the human race as a whole is in jeopardy today.

Gerard: The social sciences are still feeble and groping, and mental ones hardly less so, and many maintain that human problems must remain extra-scientific. Most scientists are convinced otherwise; and this position at least has the merit of inviting rather than dissuading effort. Other modes of thought and feeling have been tried and have failed to achieve harmony among men. The mode of science—rational extrapolation from reliable knowledge, subjected to operational test—may also fail, but it surely deserves its trial. This is, indeed, also the avowed mode of democratic government and is being approached, however slowly, in actuality.

Publications and Abstracting Services. General approval is expressed of UNESCO's activities in the field of abstracting and international scientific publications. *Chambers* expresses the belief that "an international spirit in scientific work would be greatly aided by the establishment of more active international polyglot (English-French-German-Italian) scientific journals." *Struve* makes the following suggestion: "It would be important to stimulate a more active exchange of scientific publications and develop a system whereby scientific articles by American workers may be published abroad while papers by foreign authors may appear in American journals. Difficulties of exchange now make it impossible for European institutions to pay the cost of publication in America, but an exchange of publications might well remove this difficulty."

The Twilight Areas of Culture. Cleland writes: "Scientists in the more advanced countries should do everything possible to encourage science in the less favored areas, by training increasing numbers of foreign students, by consenting to serve as visiting professors or as members of commissions sent to other countries to encourage and assist in developing their scientific programs, by acting as consultants in the solution of nutritional, medical or other problems confronting the scientists of other countries, by taking an active interest in the international scientific unions, by lending support to all international scientific agencies, by contribution toward the rehabilitation of devastated laboratories and libraries, and any other way possible."

Stone: Scientists and their organizations can continually and vigorously urge the need for so organizing education in all countries that a sufficient number of adequately trained scientists will be available to each national group in its attempt to share in the benefits conferred by science.

Phillips urges that special attention should be given to the encouragement of scientific growth in backward countries. She points further to the continued need for activities in the field of rehabilitation of science

in war-devastated countries. It appears that the majority of our correspondents is agreed that UNESCO's Field Science Cooperation Offices fill a distinct need and that UNESCO has done very useful work through its program of scientific rehabilitation.

Concluding Observations

Scientists and Citizens. Compton writes: "I happen to be one who feels that the responsibilities of scientists are just like the responsibilities of any other group of citizens when it comes to the matter of responsibility for peace. I do not believe that it is feasible or, in the long run, safe for scientists to attempt to exert their own controls on the products of their work. They are but one of the contributors to our intellectual and economic strength and it is the impact of the population as a whole that has the predominating control, in my judgment."

Russell agrees with this view and writes as follows: "The problem of maintaining peace is so deeply entangled with many sincere differences of social and political belief that, in my judgment, it would be unwise for scientific organizations, as such, to endorse any particular programs. It is better for individual scientists to act as citizens, in cooperation with others who hold similar convictions."

In a letter bearing on the subject *Bowen* writes: "Projects should be planned primarily from the standpoint of the advancement of science involved in the most effective manner. If the scientific standpoint is made secondary to deliberate peace propaganda, the whole program will become political in nature and very little will be accomplished either in the advancement of science or of peace."

A remark by *Roberts* deserves to be quoted at this point: "I feel that it is actually far more important for them to join their efforts in a genuinely important scientific problem than it is for them to try to bridge the political chasms that exist by any direct action."

The Iron Curtain. Most correspondents refer in one way or another to the urgent need of lifting the "iron curtain," which separates the East from the West. The astronomers quote several instances in which the iron curtain has been pierced in recent years through sincere efforts from scientists on both sides. But the curtain admittedly becomes more real every day. Some are quite pessimistic. *Conant,* for example, writes: "It is hardly possible for the scientists as such to affect the practices of certain countries in which freedom of travel is highly restricted and which more and more appear to be using academic men as propagandists of special views of essentially a political nature. Perhaps patience and continued endeavors to promote international exchange along old-fashioned lines is all that we can hope for in these troubled times. I am a firm believer that better days will sometime dawn and as times improve, the chances of having international scientific meetings with their old spirit may also improve."

Others feel that the time for action is by no means over. The following two quotations take this point of view:

Struve: Unrelenting efforts should be made to remove from the field of science the present division of countries on two sides of the "iron curtain." In particular, efforts should be continued to bring about a more active participation in scientific organizations of the scientists of Russia and of countries in the Russian orbit. That such efforts can be successful has been strikingly demonstrated by the invitation recently confirmed to hold the 1951 International Astronomical Union in Leningrad.

Thimann: The second most important step forward will be taken when free exchange not only of men but even of publications and research results takes place with the Soviet Union. The present tendency of Soviet journals to omit presentation of summaries in English, French or German represents a serious loss of the international spirit. Free correspondence with Soviet scientists is also necessary. If it were possible to extend the exchange of personnel mentioned above to the Soviet Union, even in small part, this would be perhaps the most important activity which scientists could undertake for the maintenance of peace.

Kluckhohn fears that scientists will be able to influence only to a very slight degree the various governmental interferences with the freedom of movement across national boundaries and the freedom of expression. He writes, however: "It is all too true at the moment that certain individuals in certain countries label even the most detached of natural science enquiries in accord with competing ideologies. However, I cannot but feel that this is only a temporary phase which cannot endure. The deepest loyalty of the scientist is inevitably to the facts of nature which know no ideological boundaries."

Science Fosters Peace Rather Than War. Nonscientists frequently charge that modern science is basically destructive. Vigorous objections against this point of view are voiced by our correspondents.

Cleland: The impression that science fosters war rather than peace is based upon a misconception of the activity of scientists and of the breadth of the field of science. Many nonscientists have a myopic view of science, being impressed with the effectiveness of physics and chemistry in the late war and forgetting the many sciences whose fields contribute only to the arts of peace; forgetting also the fact that the major activities of physicists and chemists have always been devoted to the building of a richer civiliza-

tion. Their efforts have only incidentally been directed toward wartime objectives, and only unwillingly and under stress of emergency. No group is more conscious of the disastrous possibilities of war in the atomic age than the scientists themselves. No group has been as vocal as the nuclear physicists in condemning war and in supporting efforts to achieve world-wide cooperation.

In discussing the biological sciences *Gerard* writes: "The biological sciences, however, have also reached the stage of expanding application, and life expectancy is rising precipitously. The X-ray alone saved more lives than were lost in World War I, and who can doubt that antibiotics will far more generously cover the losses of World War II. Such facts are not dramatized and are little known. Indeed, science has, with the exception of a few devoted scientists, preferred an esoteric status and has insulated itself from its society. This must be radically altered."

Funds to Fight for Peace. Roberts adds new emphasis to a suggestion that has been made several times in the past. We reproduce his comments here without further remarks: "Another thing which has been discussed many times, and which to me appears to possess great merit, is the proposal that some specific percentage of all funds expended for purposes of national military defense be expended in specifically peacetime and humanitarian activities. The details of the administration of such a program have been discussed by a number of people, and I feel that several satisfactory and workable plans have been offered. One of the best of these, to my way of thinking, is the establishment of an actual cabinet post and entire government department for these functions and activities. The benefits and findings of this department should, I believe, be made freely available throughout the world, without regard to nationalism, without regard to politics or prejudices. Perhaps this is a bit visionary and utopian, but to me it seems immensely sound."

Ultimate Aims. Several correspondents allude to the ultimate aims toward which the work for world peace must lead. *Urey* sees this in the establishment of world government. He writes as follows: "In attacking a large scientific problem, we all go back to fundamental principles, and we face our problems fairly and squarely. If they involve very difficult things, we nevertheless recognize that our problems are difficult and do not try to solve major problems by following up side issues or the minor fringes. The problem of securing peace is the greatest that humanity has ever faced, and scientists will do their best in furthering this problem if they frankly recognize the fundamental problem, namely, world government, and speak those words firmly and fearlessly whenever the question is introduced. Without this there is no hope anyway."

Several correspondents point to the value of world-wide cooperation in science as an example for similar cooperation in other fields:

Goudsmit: Not until the world realizes that world-wide cooperation is necessary, not only for the progress of science but for the progress of all phases of civilization, can we hope for lasting peace. As science is only a small fraction of human endeavor, its influence is not large enough to promote this cooperation beyond its own boundaries. Scientific organizations can, however, make known to the world the benefits they derive from such cooperation.

Stone: International cooperation in science gives valuable experience and training in the conduct of activities directed to a high purpose above purely nationalistic considerations, and can point the way for similar enterprises undertaken to solve the common problems of nations.

Perhaps the attitude of science is summarized best in the following cautious words of *Wolfle*: "It is a matter of hope rather than one of history that the increasing knowledge of the world, improved communications and transportation of goods, and raised standards of living can minimize the causes of war by reducing needs of aggression. The hope is, however, one that is worth mentioning and worth establishing as a goal for our political thinking."