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Copy corrected by Mr. Rotblat

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THE PRESENT SITUATION AND THE PROBLEMS BEFORE US

As one of the organizers of this meeting I ought to set the ball rolling, and the first thing I want to do is to summarize the present situation and expand on the aims of this meeting. What I am going to say is probably familiar to most of you, but even so it may be useful to restate the facts, so that we have some agreed starting point. I hope that from the discussion following this introduction, a working agenda for the meeting will emerge.

As you have just heard from Lord Russell, this meeting differs in many aspects from the first Pugwash Conference. At Pugwash scientists from many countries met for the first time, to discuss problems outside pure science. We were, perhaps, as much concerned there with getting to know each other, with overcoming barriers, with laying foundations for future meetings, as with the actual agenda. We were perhaps also too ambitious, because the agenda covered a very wide range of subjects, from radiation hazards and disarmament problems to the even more general topic of the responsibility of scientists in the atomic age; and for all this we allowed ourselves three days! It is not surprising, therefore, that the results, as summarized in the statement issued after the meeting, were not what one may call startling. All the same the Pugwash Conference was a success; the impact it has made on scientific and public opinion is becoming more obvious as time goes on. Whatever else one may say about Pugwash, it has certainly fulfilled one of its tasks, the preparation of the ground for further conferences, of which this is the first.

The object of this is much more specific. When the Continuing Committee, which was set up at Pugwash, met last December, we were strongly impressed by

the urgency of the political situation, resulting from the break-down of the disarmament talks, the shift of balance in connection with the launching of earth satellites by the Soviet Union, and the decision of NATO to set up missile bases in Europe. Although we were well aware that in the field of politics we are amateurs, we felt that at least we ought to try to make a contribution towards diminishing the dangers, particularly as there were many technical questions involved on which we could definitely express an authoritative opinion. The Committee prepared a number of topics for discussion but when circulating the list we made it clear that these topics were not complete, and that it would be for the participants of the meeting to add to or to modify the agenda. Several people have in fact suggested, in correspondence and conversation, some additional topics for discussion, and I shall touch on them later.

The theme for this meeting is "The dangers of the present situation in the atomic arms race, and ways and means of diminishing them", and I shall therefore start with specifying the dangers. One of the members, Colonel Leghorn, has suggested in a letter that we should change the wording of the theme from "atomic arms race" to "technological arms race", so as to include the development of rockets. I am sure that we shall all agree to this, because the development of ballistic missiles was one of the main causes of the deterioration of the situation. In fact, when we referred to "the atomic arms race" we meant it as a generic term, to cover all sorts of nuclear weapons and the methods of their delivery.

When we speak about the dangers of the present situation, we have in mind mainly the outbreak of an all-out nuclear war. The consequences of such a war were discussed at Pugwash, and just to remind you I will read the relevant passage

from the Pugwash statement.

> "It cannot be disputed that a full-scale nuclear war would be an utter catastrophe. Its effects would be thousands of times greater than the fall-out effects from nuclear tests. In the combatant countries, hundreds of millions of people would be killed outright, by the blast and heat, and by the ionizing radiation produced at the instant of explosion. If so-called "dirty" bombs were used, large areas would be made uninhabitable for extended periods of time, and additional hundreds of millions of people would probably die from delayed effects of local fall-out radiation; some in the exposed population from direct injury, and some in succeeding generations as a result of genetic effects. Even countries not directly hit by bombs would suffer through global fall-out, which under certain conditions might be of such intensity as to cause large-scale genetic and other injury".

I do not know of anything that has happened since last year to challenge the validity of this statement, but it is possible that some of you may wish to re-examine this problem and reassess the magnitude of the damage. Some of you may believe that even if the number of people killed was much less than hundreds of millions, a full scale nuclear was would still be an utter catastrophe from which we shall never recover. On the other hand, we may take the view that even if hundreds of millions were killed outright, and many more suffered radiation injuries, this would not mean the end of civilization. Taking the pessimistic view, that war will happen sooner or later, we may want to think of ways of reducing

the disaster and ensuring recovery from it. We may consider for example whether an elaborate system of shelters would not be justified; on the other hand we may argue that the enormous cost involved would defeat its own ends. Although we ~~may~~ met here ~~have~~ to find means of avoiding a nuclear war, it seems to me that it would be proper for us to discuss the problem of survival in such a war.

Returning to the dangers of the present situation, a full scale nuclear war may break out for two reasons, either from a political conflict, or as an almost automatic consequence of the arms race. I want to examine the last possibility first, and for this purpose I shall review very briefly the progress in nuclear weapons since Hiroshima. Perhaps I should make it clear that since the end of the war, I have had no access to information of a classified nature about nuclear weapons; what I am going to say is based on an analysis of the various bits of news which come out from time to time, particularly during Congressional hearings, and on the published results of testing of nuclear weapons.

From the Oppenheimer hearings we learn that after Hiroshima the work on thermonuclear reactions, which was started by Teller in Los Alamos, practically came to a standstill, and that the only progress made was the improvement of the implosion mechanism of the fission bomb, which resulted in a 25-fold increase in its explosive power. For several years the United States had the monopoly on nuclear weapons, the secret of which they refused to share even with Great Britain. The view prevailing in America was that it would take Russia some years before she had the bomb, and it was hoped that during that time some agreed way of controlling atomic energy would be found. But in September, 1949 the Soviet Union carried out her first test of an atom bomb, and the atomic arms race began in earnest.

The first step was the decision by the United States to go ahead with the development of the hydrogen bomb. One of the reasons for the earlier standstill on this project was the uncertainty whether a thermonuclear reaction could be sustained in a mixture of deuterium with tritium, even if in a liquid form. It appears that calculations indicated that it was not feasible. Then Teller had a brilliant idea which suddenly made the whole project sound. The Oppenheimer hearings did not disclose what this idea was, but from subsequent happenings it can be deduced that he suggested to increase the explosive yield by using ordinary uranium as a tamper, since fewer collisions are then required to give the same explosive power. A weapon based on this method was for the first time tested in November 1952. It was said to be a very clumsy device, weighing over 60 tons, and so could hardly be called a bomb; but it worked, and it opened the field for further progress in hydrogen weapons.

The next important advance was apparently made by the Russians. Instead of manufacturing tritium in the very expensive way, in nuclear reactors - the Americans built for this purpose the huge Savanah River reactors - the Russians found a way of doing it very cheaply, on the spot, by using a compound lithium-deuteride. The first such bomb was tested by the Russians in August 1953, less than a year after the first American thermonuclear test. Since a great deal of information can be obtained from each test, the American scientists very quickly got hold of the idea of lithium-deuteride and combined it with their own idea of a uranium tamper; in this way they both increased the explosive power of the bomb and made it cheaper. The first such bomb, tested in Bikini in March 1954, surprised everyone by the force of its violence and the extent of the radioactive fall-out.

Now, much of what I said is guess work, and the actual sequence of events may have been somewhat different. But I do not think that this matters; it might have happened like this. There are several important lessons to learn from this history. First, that once a project is started in earnest very rapid progress is made, however difficult it may have appeared; second, no side can keep its lead for any length of time; third, tests serve as an excellent medium for accelerating the arms race, because they give away to the opponent a great deal of information about progress made.

I do not know whether a bomb with an explosive power greater than the 17 megatons obtained in the Bikini tests of March 1954 has been tested during the last 4 years. Certainly, a large number of smaller hydrogen bombs have been tested, both by the U.S.A. and the Soviet Union. That period too saw the emergence of Great Britain as a third member of the Hydrogen bomb club. The first British H-bombs were tested in May last year. Anyhow, the centre of gravity in the arms race shifted from the production of larger and better bombs to methods of their delivery. The guided aeroplane, the intermediate range ballistic missile and the intercontinental ballistic missile came to be considered as an essential corrolary to the possession and stockpiling of nuclear weapons.

I do not have the details of the progress made by both sides in rocketry. The U.S.A. are still relying for their retaliatory power on the use of piloted aircraft, the B52, B47 and B36; but the various types of ballistic missiles, the I.R.B.M.'s: Jupiter and Thor, and the I.C.B.M.'s: Snark, Titan and Atlas (the latter having a range of 5,000 miles and speed of 16,000 m.p.h.), are already or soon will be in production. As far as the Soviet Union is concerned there are no published details, but we have the statement by Khrushchev that rockets carrying hydrogen warheads and capable of flying across continents

and reaching their targets with an amazing degree of accuracy have been tested and are available to the Russian Government. There is no evidence to corroborate this claim, but on the other hand, there is no reason to doubt it. Other Russian claims concerning progress with nuclear weapons have proved to be correct, and the recent Russian success in launching Sputniks certainly shows that the art of rocketry has made great strides in the Soviet Union. We shall, therefore, soon reach the stage in which both sides will be capable of reaching almost any target within a matter of minutes.

Where do we go from there? Obviously if the deterrent is to have any meaning, neither side can allow the other to push too much ahead in the arms race, because this may tempt them to make a surprise attack to destroy the enemy before he has time to retaliate. This means that both sides must keep developing weapons all the time without relaxation. The main effort during the next few years will probably be directed towards reducing the time of flight of the missiles, increasing their aiming accuracy and the weight of the warhead so that a smaller number of weapons would be sufficient to knock out the enemy. Ultimately we shall reach the stage when both sides will have a large number of rockets with hydrogen warheads scattered over many sites on land, sea and under water. Each of these sites would be in the charge of a Commander, who, in view of the lightening speed of an attack and the possibility of interruption of communications, would be empowered to send off rockets as soon as the news reaches him that his country is being attacked. When this stage is reached then the world will literally be sitting on a barrel of gunpowder. A false rumour, a mistaken message, or a nervous breakdown of the Commander, may precipitate a full-scale nuclear war.

This is the picture of the near future painted by some scientists and

politicians. Is there some flow in this extrapolation? Are these fears grossly exaggerated? It seems to me that the matter is important enough to merit a very careful examination.

The protagonists of the theory of an accidental war go on to prove that the danger may in fact be much greater than outlined above. So far it has been assumed that only two countries, or at most three, possess the means of instantaneous attack. But the situation may change very quickly and the nuclear capability may spread to a large number of nations. Already all NATO countries are urged to accept nuclear weapons and ballistic missiles, as part of the NATO defence scheme. France is proposing to manufacture and test nuclear weapons independently, and other countries may follow suit. It is only to be expected that Russia will do the same in relation to her allies, and so in the course of a few years the number of countries capable of starting an accidental war may become quite large. Another factor contributing to this type of danger may follow from the peaceful uses of atomic energy. Many small and backwards countries will acquire nuclear reactors in the course of the next 10 years; it may not be very long before they learn how to take out the fissile material and convert it into weapons. Remembering how very frequently conflicts occur between these nations, it is only too easy to imagine the temptation of some little dictator to use a small atom bomb against his enemy. In a state of great tension, which accompanies an arms race, the explosion of a small bomb may easily be misinterpreted as an attack by a large power and become the signal for an all-out war.

Thus, one of the dangers of continuing the arms race is an accidental war, a war which neither side wanted, but which would nevertheless follow automatically, if the sequence of events outlined above is correct. Is this a real possibility or not? If it is, and if we can prove that it is, then an authoritative statement

from a group such as ~~ours, or~~ the conveying of such findings to the Governments ~~co~~concerned, may prompt them into making more strenuous efforts towards finding a solution. For this reason I submit that the probability of an accidental outbreak of war, as a result of the continuing arms race, should be examined carefully.

The other danger of an outbreak of war, one on which we probably all agree, originates in the political situation, in the fundamental mistrust between East and West, in the unwillingness of either side to make any move which would give the other side a temporary advantage, in the fear of creating an impression of eagerness to negotiate with and the resulting reduction of bargaining power. The sad history of the disarmament negotiations bears witness of this fact.

I shall not attempt to go over the history of the negotiations for the International Control of Atomic Energy; it is too long and too depressing, although important and instructive. For those who want to read it there is a reprint available of an article by Dame Kathleen Lonsdale giving the chronology of the negotiations from 1945 until the beginning of the discussions of the Disarmament Subcommittee in London in 1954. This Committee was set up by a majority vote of the General Assembly of the United Nations in 1951, and sat until September last, when it finally adjourned for an indefinite period, without reaching agreement. The amazing thing is that the disparity of views between both sides did not appear to be very great; in the course of the negotiations both sides seem to have made a number of concessions, Mr. Zorin listed 10 Soviet concessions, and Mr. Moch -- doing one better -- quoted 11 concessions made by the West. In fact, a few months earlier it looked as if agreement was just about to be reached. But when one looks back on this period now it is obvious that this was only an illusion. As long as there is mutual distrust, neither side

can put itself even temporarily in a militarily disadvantageous position. In order to avoid this, each side makes proposals which, if accepted, would give it an advantage; but for this very reason it is unacceptable to the other side. In fact, it has happened in the past that after a concession was made on one side, the other replied, not with a concession, but with an increased demand. The whole procedure of the negotiations consists in shifting from one state of metastable equilibrium to another.

Anyhow, at the moment there is not even a pretence of seeking agreement. The Soviet Union has refused to collaborate with the expanded Disarmament Commission of the United Nations unless it consisted of all members of the United Nations. The proposal made by the Western Powers at the London Meeting, and later endorsed by the General Assembly of the United Nations, and which included the suspension of tests for a limited period subject to a cut-off in production of fissile material and the proposed establishment of a ground-air inspection system have not been accepted by Russia, which insists on an absolute ban on nuclear weapons without any strings attached.

It is of course possible that by now any foolproof inspection system against a surprise attack is in any case impossible. Just as it is now generally accepted that it is no longer possible to have a fool proof system of control of fissile material -- since any side could hide a substantial amount of it -- so it may be too late now to set up an air inspection system under the open skies scheme. Missile launching platforms could now be set up in the forests of Siberia or Canada and so successfully camouflaged that no aerial reconnaissance would detect them. This problem, too, may perhaps be a subject for discussion by this meeting.

The threat to Western security which has increased after Russia's

launching of the Sputniks, has allerted NATO into taking further military measures At the meeting of the Council of NATO last December, it was decided -- among other things -- to build stockpiles of nuclear warheads which would be readily available in case of need, and to put at the disposal of the Supreme Allied Command intermediate range missiles. Their deployment and arrangement for use is still a matter for agreement with the various States concerned. Some Scandinavian countries expressed unwillingness to have missile bases, others, like Germany, are on the verge of reaching a decision, and still others, like Britain, have accepted these bases, not without strong protests from the Labour Opposition, who, although in favour of the deterrent itself, feel that the establishment of bases should have been left until after the Summit talks.

The attitude of Great Britain in relation to the development of nuclear weapons underwent several modifications in the course of the recent years, leading up to the present position as set out in the recent White Paper on defence. The British view about H-bombs has always been that a full-scale nuclear war would mean the complete destruction of Great Britain. From this point of view the possession of the bomb was really meant to deter any enemy from using this weapon against Britain for fear of retaliation but it had not been intended to use it first. Britain felt that as a great ~~nuclear~~ power she ought to possess her own stockpile of nuclear weapons, although on the whole she was prepared to lean on the might of the U.S.A. This attitude underwent a considerable change after Suez, when it was realized that a situation may arise when Britain may have to defend herself without the help of America. At the same time it became clear that the economic situation would not stand the burden of armament with both conventional and nuclear weapons, and so, gradually the idea developed of relying entirely on the nuclear deterrent. This was stated openly in the recent

White Paper in which, for the first time, Britain declared that she will use nuclear weapons in reply to an attack with conventional arms. What would have to be the size of an attack to warrant a suicidal reply with H-bombs is not clear. The Prime Minister stated that Britain would do this if Russia started out with 200 divisions, but it was left deliberately vague whether the same would apply in the case of an attack with 10, 50 or even 100 divisions.

We have thus reached the situation when a nuclear war may start as the result of a conflict involving an unspecified conventional force. Such conflicts do occur from time to time and have occurred frequently since the end of the last war, but an intervention in them with nuclear weapons is a new development. It is said that threats to use nuclear weapons had already been made in the past; apparently Russia threatened to use rockets during the Suez crisis. More recently during the arguments between Syria and Turkey, both Russia and the U.S.A. have apparently intimated that they were ready to intervene with nuclear weapons. Were these threats real, or just bluff? One day somebody will call the bluff and the game will be over. Nobody can doubt that the present state -- which many politicians consider to be the best guarantee to prevent war -- is in fact most unstable and precarious.

These then are some of the dangers which we face in the present state of the arms race.

I am now going over to the next part of our theme - the ways and means of diminishing the dangers. The findings of these ways and means is of course the main reason for our being here, and it will be for the person who gives the closing speech to summarize them. In this opening address I can only outline the topics which have been suggested for discussion.

I am sure we shall all agree that the only proper way of dealing with a crisis is to tackle it at its origin: in this case it would mean the removal of the basic causes - the mistrust between nations resulting from various historical events, different ways of life, etc. But we shall probably also agree that to achieve this will take a very long time. It is our object to secure enough time for this long term policy to be brought about. For this reason we have to accept some short term policy, on the understanding that it is only the first step towards the final goal.

One of the best starting points appears generally to be the possibility of stopping tests of nuclear weapons.

No other aspect of the arms race has been more hotly disputed, no other topic has so strongly roused public opinion and caused more excitation, exaggeration and misrepresentation, and on no other item have both sides come nearer to agreement than on the stopping of tests. In this clamour for banning tests, there is of course a great deal of emotionalism, but underlying it is much common sense, there is the realization by the man in the street of the importance of tests in the arms race.

It is clear that if new weapons are developed they must be tested, and we have already seen that tests accelerate the arms race because each side learns, not only from its own tests, but also from those of the enemy. For this reason it is in the interest of both sides to carry on with the tests as long as the arms

race continues. Yet the attitude of the United States and Russia was curiously different. Russia is officially against tests. In all their disarmament talks, in all their propaganda, at every opportunity, Russia called for an immediate and absolute ban on tests, and we have just learned that Russia decided to stop tests unilaterally. Until last week Russia kept carrying on one test after another, doing it without any warning before hand, and often without any statement afterwards. The West always announce their tests in advance, sometimes even inviting observers. The upshot of this is that there is usually a great deal of commotion in the Western Countries before every test, with people even trying to get into the danger zone to be killed, while in Russia every tests becomes known only post factum.

On the other hand, the American Government is openly in favour of continuing tests. In their fight against mounting public opinion against the tests, they have the support of a group of scientists, who have put forward such clever arguments in favour of tests that even the Editor of a well-known and influential magazine on scientific and public affairs, said recently in an editorial article "the call for cessation of weapons tests has lost its rational justification - at least for some time to come".

I am not going to analyse these arguments now, but I submit that they are important enough for this meeting to spend some time on them. We may agree with these arguments in which case there is nothing more that can be done, but if we should find that they are not valid, then we may conclude that the stopping of tests would give us a breather, it would decelerate the arms race, perhaps for long enough for the next step to be made.

The main reason for making the banning of tests a first step, is that it can be enforced without inspection. I believe that the view held previously by some American scientists that it is not always possible to detect a test is now not generally accepted. A ban on nuclear tests need not of course prevent the carrying out of tests for purely peaceful purposes; I shall return to this later on.

Several other short term solutions have been suggested which do not need any elaborate system of inspection, but which may not be acceptable for political reasons. In his recent B.B.C. lectures, George Kennan put forward very forcibly the idea of neutralization of some countries, the creation of a zone free of nuclear weapons. A modification of this scheme, called the Rapacki Plan, was put forward by Poland and is supported by the Soviet Union. This plan specifies the countries on both sides of the Iron Curtain which would be neutralized. There are many attractive features in this plan, but one of its great drawbacks is that it would mean the end of NATO; it would necessitate a complete readjustment of the Western Defence Policy, and this may be impossible to achieve in a short time even with the best of will. All the same this scheme is important enough to justify looking into and reviewing its advantages and disadvantages.

Another way of diminishing the dangers may be an exchange of information on weapons. This is a much bolder scheme, some people may say it is unrealistic and even fantastic, but sometimes such schemes succeed where timid ones failed. The idea behind it is to stop the arms race by the simplest way to stop any race, by removing the element of competition. If both sides can be kept all the time at the same level, then there would be no need for either side to rush, and to work hard for a possible break through. Of course, this scheme would make sense only if nuclear weapons are meant to be deterrents and not the means to win a war of aggression. But both sides repeatedly assure us that this is so, that

they do not want a war of aggression.

The idea of exchange of information on weapons was first put forward in connection with the development of clean bombs, when it was said that in order to take away from the enemy the excuse to use dirty bombs, it would be necessary to tell him how to make clean bombs. But an extrapolation from this to rockets would require much more than an exchange of information. To ensure that no side is keeping something up their sleeves, there would have to be a full exchange of scientists and experts in the various technical fields. This might, therefore, be considered an extension of the scheme to exchange scientists and students, which figures separately on our agenda.

I have already mentioned the dangers resulting from more nations acquiring nuclear weapons. Apart from the direct acquisition of such weapons, there is the possibility of smaller nations converting fissile material from the nuclear reactors into bombs. We may inquire into the probability of this happening. How much know-how would be required for such conversion? How big a chemical plant would be needed for it and could such installations be hidden? The answer to these questions are needed -- and these can probably be given here -- before the danger can be assessed.

Next comes the problem of how to deal with this danger. Would it be feasible to limit the degree of purity of fissile material delivered to small nations? Should there be a prohibition for smaller nations on chemical processing of fuel rods? Since neither of the big Powers really want to see the spreading of nuclear weapons to many nations, there is a good chance of reaching agreement at least on this topic. The technical means of achieving this are available for the moment, but just like in the case of International Control of Atomic Energy, the situation may change if it is not done soon. For example, once thermo-

nuclear reactors become widespread any nation would be in a position to produce its own plutonium.

One way of settling this problem may be through the International Atomic Energy Agency in Vienna, but there may be a need to give this or any other United Nations Agency some means of enforcing its decisions, something in the nature of a United Nations Police Force. Indeed we may consider whether such a police force may not become an effective Third Power to prevent a clash between the two Great Powers.

Another way of diminishing dangers is by relaxing tension. I am sure we all agree that in order to ensure a lasting peace, conditions must be created in which both sides begin to trust each other. One of the best ways of creating confidence is by carrying out some useful job together. There are of course already in existence several international organizations in which both East and West collaborate, more or less happily, but the number of joint projects should be increased, particularly in those fields which normally contribute most to the arms race. One example is a joint nuclear physics centre. We have at the moment two such centres in Europe, at Geneva and Dubno, and although they are both supposed to be purely scientific, political considerations enter frequently into their organization. Would it not be possible to have a combination of CERN and Dubno? Or to set up a new truly international centre for nuclear physics research? One of the jobs for such a centre might be the carrying out of atom bomb tests for purely scientific and peaceful purposes. Another possibility is an international centre for rocket research, and particularly a joint space missile project. Colonel Leghorn will probably talk about his suggestion for joint pro-

jects for interplanetary exploration and for exchange of meteorological research information. Quite apart from all this, we should consider the great advantage of having a very wide exchange of scientists and students between different countries. Any or all of these measures would promote goodwill and reduce the barrier between the nations.

Finally there are a few entirely different problems for us. I have so far discussed the dangers of a nuclear war and the threat to mankind resulting from the atomic arms race. But there may be other threats to mankind and other ways of reducing the probability of war. I know that some members of this conference consider over-population a very serious threat to civilization, and would like to discuss it. Other members want to deal with the underdeveloped countries and with ways of diverting armament expenditure to raise their standard of living. Another suggestion was to set up a United Nations Arms Information and Research Agency. Such an Agency would study ways of avoiding war and ensuring peace. To a certain extent this is the purpose of the present meeting, but we may want to consider the feasibility of a permanent organization with that object. All these, plus any other projects which any of you may put forward, are legitimate and should be discussed, if time permits, although I should point out that long-term policies are the main theme of the proposed September meeting.

I shall now summarize my suggestions for topics for discussion. I suggest that we divide our agenda into four main headings, with a number of sub-headings:

1. The dangers of the present situation.

   a. Probability of a war breaking out by accident
   b. Probability of a war breaking out as a result of political conflict.
   c. Possibility of small nations acquiring nuclear weapons.
   d. Consequences of a full-scale nuclear war.
   e. Measures for survival after such a war.

Dr. Chou Pei Yuan
April 2, 1958

The Chinese scientists are very thankful to Lord Russell for having representation at the Pugwash meeting and this conference. I am particularly grateful to Mr. and Mrs. Eaton's hospitality during my visit in Canada. The Pugwash meeting last year has created a deep impression upon the Chinese public. Indeed Mr. Eaton's statements and views have been constantly published in Chinese newspapers since Pugwash. The very fact that scientists of the world with different political views can sit around the same table to discuss with earnestness present day problems of vital importance is itself a great accomplishment on the road to a better world in the future.

I came across the word "deterrent" the first time in Pugwash and I must admit frankly that it sounded very repugnant to my ears. To my mind deterrence meant to push people around and that brought back to me painful memories of the bad old days when China was used to be pushed around by other powers. Indeed in the modern age of advanced science and technology, the very concept of deterrence necessarily leads to the arms race which is a great danger to all parties concerned.

The very root of present day difficulties is the mutual distrust between East and West which is doing great harm to world relations. How can we dissipate mistruct and establish mutual confidence? We must resort to actions instead of arguments.

I am very happy to learn that the Soviet Union has announced unilateral stopping of test of nuclear weapons and I am quite sure that the Chinese scientists

are happy about the Soviet action. The Soviet Union has set a very good example. I am of the opinion that this initial step should not only be followed by other countries armed with nuclear weapons but should also lead to agreements on the cut-off of the manufacture of nuclear weapons and on the destruction of the existing piles of atomic and hydrogen bombs and should furthermore lead to limit nuclear energy only for peaceful uses.

I am strongly for the creation of atom-free areas in Asia. It was Asia that first suffered from the consequences of A-bomb and the test of H-bomb on Pacific islands. The present partial and eventually complete withdrawal of Chinese volunteer troops from Korea will be an important step forward toward disengagement and similar steps should be taken by other nations together with their atomic weapons and missiles in Korea. Taiwan must be returned to China and the presence of the reationary Chiang Kay-Shek group in Taiwan is a menace to world peace.

I warmly support the proposal of summit talks between the powers of the world. Indeed the Bandung conference in 1955 is an example of summit talks between the 29 Asiatic and African countries for building mutual trust, respect and equality for each other's sovereign rights. The development of wide-spread cultural exchange of scientists and students and the promotion of trade will bring mutual understanding and friendship between countries. Although there is still no diplomatic relation established between Japan and China, the frequent mutual visits sponsored by the popular organizations of the two countries are gradually healing the old wounds which were inflicted by past Japanese aggressions. For instance the visit of 20 Japanese physicists to China last year was warmly received by the Chinese physicists everywhere and a large scale trade agreement has been completed recently between Chinese and Japanese commercial organizations. All such concrete steps will contribute substantially toward the establishment of mutual respect and trust between nations.