

**CONFERENCE OF THE EIGHTEEN-NATION COMMITTEE
ON DISARMAMENT**

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ENGLISH

SUB-COMMITTEE ON A TREATY FOR THE
DISCONTINUANCE OF NUCLEAR WEAPON TESTS

FINAL VERBATIM RECORD OF THE THIRTY-SEVENTH MEETING

Held at the Palais des Nations, Geneva,
on Friday, 19 October 1962, at 10 a.m.

Chairman:

Mr. P. SMITHERS

(United Kingdom)

PRESENT AT THE TABLE

United Kingdom:

Mr. P. SMITHERS
Mr. D.N. BRINSON
Mr. R.C. BEETHAM

Union of Soviet
Socialist Republics:

Mr. S.K. TSARAPKIN
Mr. A.N. SHEVCHENKI

United States of America:

Mr. C.C. STELLE
Mr. D.E. MARK
Mr. T.R. PICKERING

Secretariat:

Mr. H. CORNIL

The CHAIRMAN (United Kingdom): I call to order the thirty-seventh meeting of the Sub-Committee on a Treaty for the Discontinuance of Nuclear Weapon Tests. I would like to thank both my colleagues for very kindly agreeing to hold this meeting this morning rather than this afternoon, which enables me to keep a long-standing commitment in England.

Mr. STEELE (United States of America): Yesterday afternoon when our Soviet colleague proposed a meeting for today, even though we have not been meeting on Fridays of late, I thought he must surely have something of special importance and, I should hope, of special usefulness to tell us this morning. I trust we shall not be disappointed in this expectation, and I should, therefore, be very happy to yield to Mr. Tsarapkin to hear what he has to tell us.

Mr. TSARAPKIN (Union of Soviet Socialist Republics) (translation from Russian): I think that our Chairman proposed holding our meeting at 10 a.m., although we usually meet at 3 p.m, because he had already prepared something for it.

The CHAIRMAN (United Kingdom): I have a few brief remarks for the Sub-Committee, but I thought it would be a courtesy to allow either of my colleagues to make a contribution first, particularly the Soviet representative, at whose behest we are holding this Friday meeting. If the Soviet representative has no statement to make, perhaps I might have some proposition as to the future course of our meeting today.

Mr. TSARAPKIN (Union of Soviet Socialist Republics) (translation from Russian): In view of the fact that the entire responsibility for today's meeting falls on me, I shall be happy to speak and to put forward a number of considerations which, in our opinion, sum up the discussions on the question of the value and effectiveness of a national system of control for an agreement on the cessation of nuclear weapon tests. I shall also deal with a number of other questions and, in particular, I shall have something to say about the views which were put forward by the United States representative at our last meeting.

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I have already made some preliminary comments in connexion with the statements made by the representatives of the United States and the United Kingdom at the two last meetings of the Sub-Committee. Today I should like to go into greater detail, as we did at the meeting of the Sub-Committee on 16 October (ENDC/SC.I/PV.35), and state our views on the main arguments which you use in trying to justify the negative and unrealistic position of the United States and the United Kingdom which prevents us from arriving at an agreement to ban all nuclear weapon tests.

First of all, we deem it necessary to emphasize very strongly that the Soviet Government considers that it would be best of all to conclude an agreement to ban all nuclear weapon tests for all time. Such a solution would correspond to the fullest extent to the interests of peace and the desires of the peoples. Unfortunately, the position of the Western Powers, who stubbornly continue to insist on their old demands, which have been refuted by actual experience, practice and science, for the establishment of a network of international control and obligatory on-site inspection, makes such a solution to the question of banning nuclear weapon tests impossible at the present time.

In these circumstances the Soviet Union, coming to meet the Western Powers, expresses its readiness to reach an agreement on the cessation of tests in the atmosphere, in outer space and under water, as proposed by the United States and the United Kingdom, and in regard to underground explosions to agree that the negotiations shall continue in the future; until they are concluded and an agreement is reached on this question also, no one shall carry out underground nuclear explosions. At previous meetings of the Sub-Committee we have already stated on more than one occasion our reasons for considering that if no agreement was reached on the cessation of underground nuclear tests as well, an agreement on the cessation of nuclear weapon tests would be a mockery, because from the point of view of improving nuclear weapons underground experimental explosions lead to the same results as other tests. Nevertheless, at our last meeting Mr. Stelle again attacked the proposal that during the negotiations on the cessation of underground nuclear weapon tests the States should give an undertaking to refrain from carrying out such tests or a moratorium, as the representatives of the Western Powers call it, should be established. In support of his position the United States representative put forward some arguments each of which, to put it bluntly, was flimsier than the previous one.

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What were those arguments? Let us take a look at them.

First, Mr. Stelle asserted that the United States-United Kingdom draft partial treaty without a moratorium on underground tests or, in other words, a treaty which preserves the possibility of continuing nuclear explosions underground, meets the wishes expressed in the Disarmament Committee by the representatives of all the non-aligned States. But that is obviously untrue, Mr. Stelle. If one were to believe you, it would turn out that the non-aligned countries have a favourable attitude towards the continuation of underground nuclear weapon tests. But that is simply a glaring, blatant distortion of the intentions, desires and demands of the non-aligned States.

I have already quoted a number of statements made by the representatives of the non-aligned countries in the Disarmament Committee, which show that all of them were unanimous in pointing out the necessity of putting an end to all nuclear weapon tests without exception. To show the blatant distortion of actual facts by the United States representative, we shall quote these statements again.

At the meeting of the Eighteen Nation Committee on 22 August, the representative of India, Mr. Lall, emphasized -- and I quote his words:

"... the delegation of India maintains the position that all nuclear weapon tests should cease. The Government of India has often stated ... that all tests, wherever and by whomever conducted, should be brought to an end." (ENDC/PV.75, p.53)

The Brazilian delegate, Mr. de Araujo Castro, stated at the meeting of the Eighteen Nation Committee on 31 August:

"We do not think that any kind of testing should be permitted or condoned; we are for the immediate cessation of all tests." (ENDC/PV.77, p.24)

The representative of Sweden, Mr. Edberg, also demanded the cessation of all nuclear weapon tests. Here is what he said on this subject -- I quote from the verbatim record:

"Our most urgent task has been to reach an agreement banning for all

time all nuclear weapon tests in all environments. --" (ENDC/PV.82, p.55)

Thus, in analysing the statements of members of the Eighteen Nation Committee, it is impossible not to reach the conclusion that the overwhelming majority of them unanimously express the view that an end must be put to nuclear weapon tests in

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all environments -- in the atmosphere, in outer space, underwater and underground -- and that this must be done as soon as possible. As the representative of India, Mr. Lall, said on 3 September:

"That is the feeling of this Committee; it is the feeling which is irrepresible in this Committee. It is essential -- and we plead with them to recognize this fact -- that the nuclear Powers should take that strong feeling into account and decide to take measures to stop all nuclear weapon tests." (ENDC/PV.78, p.31)

As regards a partial treaty on the cessation of tests, the quite definite opinion was expressed in the Committee that the partial treaty proposed by the United States and the United Kingdom could not solve the problem, because it left aside the question of banning underground nuclear tests. The non-aligned countries were also unanimous that, besides concluding a treaty banning tests in the atmosphere, in outer space and under water, it was necessary, somehow or other, to find a way towards an agreement to ban nuclear tests underground as well.

At the meeting of the Eighteen Nation Committee on 29 August, the representative of Nigeria, Mr. Mbu, pointed out that:

"We must give consideration to what can be done about underground tests in the -- as I very sincerely hope -- likely event of our reaching agreement on a partial test ban treaty.

"This consideration demands that the nuclear Powers do something about underground tests whilst negotiating for a total test ban. This question, I submit, admits of one possibility: a moratorium -- call it voluntary, call it partial, if you wish -- must also be reached by the nuclear Powers on underground tests, pending the final agreement banning all tests." (ENDC/PV.76, pp. 42-43)

At the meeting of the Eighteen Nation Committee on 3 September, the representative of Burma, Mr. Barrington, said that the heads of State or Government of the nuclear Powers could declare publicly that they

"assume personal responsibility for ensuring that no underground tests are conducted by their governments, or under their auspices, until a comprehensive treaty comes into force." (ENDC/PV.78, p.10)

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A number of other representatives in the Disarmament Committee made statements to the same effect.

That was the real state of affairs in the Eighteen Nation Committee, Mr. Stelle, and not at all as you tried to describe it in your statement at the last meeting.

Secondly, Mr. Stelle again expounded at some length the view that a moratorium would be ineffective, because it would be "uncontrolled" and would leave loopholes for carrying out clandestine nuclear explosions underground. That argument too does not stand up to criticism, and we have already said so a good many times. You have been unable to refute in any way the well-known fact which we have adduced, namely, that the nuclear explosions carried out hitherto by the United States, the United Kingdom, France and the Soviet Union have been recorded at great distances by the national means of detection which are already at the disposal of States. It is true that at the thirty-fifth meeting of our Sub-Committee, the United States representative asserted that he could not find any sense in our argument concerning the United States underground nuclear explosion "Gnome", which was carried out, as I have repeatedly said, in conditions of seismic camouflage, Mr. Stelle, not decoupling, but seismic camouflage. There is some difference, as you realize. I think that Mr. Stelle's behaviour in this case is not a matter of chance, because the results of the "Gnome" explosion confirmed the complete baselessness of the assertions of the United States representatives that it was impossible to carry out control over the observance of an agreement on the cessation of nuclear weapon tests through national means. Of course, it is difficult to expect the United States representative to admit that all references by the United States representatives to science are no more than a subterfuge intended to cover up the unwillingness of the United States to conclude a treaty banning all nuclear weapon tests. But since, as is evident from the statements of Mr. Stelle, he has not yet grasped the sense of my arguments, I willingly repeat them once again.

As I have already pointed out, the "Gnome" underground nuclear explosion was carried out in such a medium and in such conditions of seismic camouflage that, according to the calculations of United States scientists, it was bound to yield a signal several times weaker than an uncamouflaged explosion. Now Mr. Stelle tells us that the "Gnome" explosion was not an experiment in decoupling conditions.

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But even if that were so, that is to say, if the "Gnome" explosion had been carried out not in a salt cavity but directly in a salt bed, then in that case, Mr. Stelle, according to the data of the United States technical experts, an explosion in a salt bed should have reduced the strength of the seismic signals by not less than three times. That was stated in the report of the United States Delegation on the work of Technical Working Group 2 of the Conference on the Discontinuance of Nuclear Weapon Tests of 18 December 1959 (GEN/DNT/TWG.2/9). But what actually happened? What actually happened was that the "Gnome" underground low-yield nuclear explosion was recorded with certainty by many seismic stations throughout the world situated at distances of many thousands of miles from the site of the explosion.

The fiasco which the United States suffered in this case in the eyes of the whole world was obvious to everyone. This fact was virtually admitted in a document published by the United States Department of Defense in the middle of 1962 on the results of research in connexion with Project Vela (ENDC/45). This document contains conclusions, Mr. Stelle, directly contrary -- and I emphasize this again -- to those which had previously been drawn by United States experts. Whereas they had previously asserted that a nuclear explosion carried out underground in a salt bed would yield a signal reduced by at least a factor of three, it has now been officially admitted in this document of the United States Department of Defense that no muffling occurs but that, on the contrary salt "increases the signal size by about a factor of two".

That is why we say -- and with every justification, Mr. Stelle -- that the "Gnome" explosion, on the one hand, quite unexpectedly for the United States authors of this theory, refuted in the most scandalous manner the previous calculations of the United States experts who had devised methods of camouflaging nuclear explosions and, on the other hand, it provided an opportunity to demonstrate to the whole world the effectiveness of national means of control.

Thus the temporary obligation not to carry out underground nuclear tests, which the Soviet Union -- and not only the Soviet Union, as I have already shown -- proposes that the States should assume, would certainly not be "uncontrolled", Mr. Stelle. In fact, it would be controlled by national means. That is a fact which you cannot refute.

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Mr. Stelle again alleged that the Western Powers had had in the past some sort of deplorable experience with a moratorium on underground nuclear tests and that the Soviet Union had violated some sort of pledge. On that question, Mr. Stelle, you continue with a really pathological stubbornness to do violence to the facts and you pass over the arguments and considerations which we put forward. In fact, a sort of dialogue of the deaf is going on.

How many times have I asked you what deplorable experience, what violation by the Soviet Union of its pledge you are talking about? After all, to violate an agreement or to have some sort of deplorable experience in connexion with such an agreement would be possible only after the conclusion of such an agreement and a certain amount of time had elapsed after its entry into force or signature. But no international agreement on a moratorium has ever existed in fact. Neither you nor we, nor indeed anyone else, have signed such an agreement. So it is simply impossible to violate or to have some sort of experience with something that has never existed. But if you talk about the unilateral declarations which were previously made by the Governments of the United States and the Soviet Union to the effect that they would voluntarily refrain from nuclear tests, we have already reminded you more than once of some well-known facts in that regard. We pointed out that in the light of the actions of the Western Powers, one would have to possess truly enormous capacities in the field of casuistry and hypocrisy in order to turn the facts inside out and try to switch the blame from the guilty on to the innocent by accusing the Soviet Union of some sort of breach of the brief period when there were no nuclear tests in the world, which was terminated by the Western Powers themselves and which lasted from November 1958 to 13 February 1960, the date when one of the Western Powers, namely, France, started to test nuclear weapons.

I have already said several times that there is now a possibility of solving the question of a moratorium, not on the basis of voluntary unilateral declarations which may lose all meaning at any moment, but on the basis of a formal international agreement. The difference is quite substantial, and it is strange that the representatives of the Western Powers go on pretending that they do not understand that what is now proposed is to establish a moratorium of an altogether different character, namely, a moratorium not in the form of unilateral declarations but in the form of an international obligation.

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Thirdly, the United States representative, Mr. Stelle, following the United Kingdom representative, Mr. Smithers, asserted that the cessation of nuclear weapon tests without the establishment of international control is contrary to item 6 of the Joint Statement of Agreed Principles for Disarmament Negotiations (ENDC/5). This item, as we know, states that disarmament measures are to be carried out under international control. But here again I have already given you the appropriate explanations.

First of all, the cessation of nuclear weapon tests is not, strictly speaking, a disarmament measure and, consequently, this principle is not applicable here. The cessation of nuclear tests could help towards solving the disarmament problem, but it is not, of course, disarmament in the direct sense of the word. So do not try to make out from these assertions of ours that we depreciate the importance of reaching an agreement on the cessation of nuclear weapon tests. No, we attach great importance to this question. However, facts are facts -- the cessation of tests is not a disarmament measure and therefore, Mr. Stelle, your reference to item 6 of the Agreed Principles is irrelevant in this case.

Furthermore, as I have already emphasized, the national means of detection available to States at the present time enable them to exercise national control over the observance of an agreement on the cessation of nuclear weapon tests. Consequently, there is no question of an uncontrolled measure here. Thus your argument in this sense also is absolutely unfounded.

Finally, in the fourth place, the United States representative, Mr. Stelle, asserted that acceptance of a moratorium on underground nuclear tests would mean acceptance of the Soviet position as expressed in the Soviet Union's proposals of 28 November 1961 (ENDC/11). Well, what do you see wrong in that, Mr. Stelle? Perhaps you wish to say that these proposals are unacceptable to you merely because they were put forward by the Soviet Union? But that is an absurd argument. Such an approach to the negotiations can never lead to an agreement.

To this I might add that the proposal for a moratorium on underground nuclear tests is not only a Soviet Union proposal. We can but express our satisfaction at the fact that the position of the Soviet Union on this question coincides with the opinion of the overwhelming majority of States and of all peoples. The idea of establishing a moratorium on underground tests has made great headway and in the present circumstances this idea opens up the possibility of getting out of the

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deadlock in the negotiations for the cessation of nuclear weapon tests. This idea meets with the widest support throughout the world. It has been repeatedly put forward in one form or another by the representatives of the non-aligned States in the Disarmament Committee and has been reflected in the resolutions of the most representative international forum, the United Nations General Assembly. Indeed, at the present Seventeenth Session of the General Assembly also this idea is meeting with ever-increasing understanding and support.

So much for the arguments against the moratorium which Mr. Stelle adduced at the last meeting. These arguments only show that the United States does not wish to reach an agreement and that it does not wish to put an end to all nuclear weapon tests for all time. Apparently the United States has prepared a new major series of underground nuclear explosions, and not only underground, as one may see from a recent statement issued by the United States Atomic Energy Commission. For this reason the United States has no liking for an agreement on the cessation of all tests. If that is so and if each side lases itself on the principle that once a series of tests has been prepared it must be carried out, then it will be very difficult, if not impossible, to reach any agreement.

At yesterday's meeting the United Kingdom representative, Mr. Smithers, again tried to divert our political negotiations into the channel of technical discussions. Like a mythological siren he crooned to us how nice it would be to convene United States, United Kingdom and Soviet scientific experts to discuss what he called the technical facts, that is questions regarding the degree of effectiveness of national means of detecting nuclear detonations. But, in the first place, we consider that there is no need for this, because, as we have already pointed out repeatedly, the implementation of control over compliance with an agreement banning all types of nuclear tests through national means of detecting nuclear explosions has become a scientifically and technically well-established fact. Existing practice and the experience which has been accumulated in the various countries in recording nuclear explosions including underground explosions, fully confirms the effectiveness of national means of detection.

Secondly, such a diversion of our discussions towards technical matters can only be to the advantage of that side which is determined to avoid agreement. If we were to set ourselves such a task then, as the experience of the work of the groups of experts has shown, it would be easy by means of technical discussions to

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frustrate any possibility of agreement and to cover up this frustration by alleging that the experts had differences of views and were unable to come to a unanimous opinion.

Obviously, for the Western Powers, this is a very convenient technical screen covering up their political line in this matter, a line which runs counter to the cause of peace. This technical screen, so they think, saves them from the extremely unpleasant prospect of being exposed to the whole world as militarists intent on preserving the possibility of continuing nuclear weapon tests, in other words, of continuing to improve existing, and to construct new and more deadly, models of this weapon of mass destruction.

That is why the United States and United Kingdom representatives both here in the Geneva Conference and at the Seventeenth Session of the General Assembly in New York are campaigning in favour of holding a meeting of technical experts.

Apparently you overlook what everyone else understands, namely, that you want to carry on doing all this after an agreement has been signed. This position of yours speaks for itself. The gist of it is that just as you are testing new types of nuclear weapons at the present time when there is no agreement, so also after signing the partial treaty which you propose, you will continue testing ever newer types of nuclear weapons. And under the United States proposal this would not be considered a violation of the treaty. Consequently, after the United States partial treaty came into force, these nuclear weapon tests would be, as it were, legalized.

The United Kingdom representative, Mr. Godber, speaking on 17 October in the First Committee of the General Assembly of the United Nations, (A/C.1/PV.1250) likewise displayed a special interest in the convening of a technical conference of Soviet and Western experts. How strong is the desire of the Western Powers to ruin the cause of ending nuclear tests by burying it in a morass of technical controversies is evident from the statistics which Mr. Godber quoted in his statement. He complained to the General Assembly that the Soviet Union had rejected more than twenty proposals put forward by the Western Powers in this regard. Speaking on this subject, Mr. Godber got so worked up that he did not notice how he had overstepped the limits of logic and had entered the field of nonsensical, illogical concoctions. He stated that if the Soviet Union failed to furnish the Western Powers with information on Soviet national means of detecting nuclear explosions,

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it would be "a crime against humanity". That is really astounding logic on the part of the Western representatives. According to their logic, it would appear that the contemptuous attitude of the Western Powers to the demands of the peoples for the cessation of all nuclear weapon tests, and the striving of the Western Powers to impose such a treaty as would allow them to continue nuclear tests even after the treaty had come into force, would not be a crime against humanity, but when the Soviet Union opposes the attempts of the Western Powers, under the guise of technical discussions, to ruin the political negotiations on the cessation of nuclear weapon tests, that, you see, is to their mind a crime against humanity. Truly, there are no limits to distortion and hypocrisy.

Now a few more words about the scientists who are working in accordance with instructions or are in the service of the United States Department of Defense or the Atomic Energy Commission or are employed by armaments manufacturers. Everybody realizes perfectly well that these scientists are in a subordinate position to their masters, and if the masters are interested in the armaments race, naturally they will not allow their scientist employees to act contrary to their interests. It is well-known that the Pentagon and the Atomic Energy Commission and the business concerns connected with the production of nuclear weapons are directly interested in the nuclear armaments race and in the testing of nuclear weapons, and it is no secret to anyone that they have opposed, are opposing and will oppose by every means the cessation of nuclear tests. Therefore, the demand of the representatives of the Western Powers that the question of the means of control over the cessation of tests should be submitted to technical experts for examination in order that we may afterwards settle the question of banning nuclear weapon tests according to the results of that examination, looks exceedingly odd. It could be compared, for example, to a demand that research into the effect of tobacco smoking in the origin of cancer of the lungs or cardio-vascular disease should be handed over to the tobacco companies. Anybody could foresee what would be the results of such research.

The technical approach which is now being insistently advocated by the Western Powers is altogether unrealistic. It should be obvious to everybody -- and in the first place to the representatives of the Western Powers -- that the character of the relations between the countries possessing nuclear weapons and the

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technical means of detection does not make it possible for them to lay all these technical means on the table and make a sort of display of them. To describe those relations I could, in addition to the examples I have already given, refer to one more recent statement which is still, so to speak, quite hot. I have in mind yesterday's dispatch of Reuter's Agency from Washington about the statement made by President Kennedy's Adviser on security problems, Mr. McGeorge Bundy. This responsible person, in an interview given by him for the West German television, stated that the United States, in order to ensure access to Berlin for the Western Powers, would use all means, including nuclear weapons.

That is the sort of threat that is being put out; that is what is being prepared by responsible representatives of the United States in reply to the Soviet Union's desire to regularize the situation in Berlin, to normalize the situation near its frontiers and to do away with the vestiges of the Second World War.

At yesterday's meeting Mr. Stelle reacted quite sharply to my reference to a device which has been developed at the California Institute of Technology. Unfortunately, only now is something of what is hidden in the innermost recesses of the Pentagon beginning to leak out. The fact that information about this device, to which Dr. Frank Press referred, appeared in the United States press only quite recently does not at all mean that this device has only just been created. Hints of the possibility of building such an ingenious combined instrument and even more definite hints in this respect were given some years back, Mr. Stelle. And it can safely be assumed that in the innermost recesses of the Pentagon, the Atomic Energy Commission, the RAND Corporation and certain scientific research institutes in the United States, there are very valuable detailed studies on methods of recording nuclear explosions and on devices, apparatus and instruments adapted for the effective application of these methods of recording. I readily admit that the United States representatives here may either be completely in the dark with regard to the progress achieved in the United States in this respect or are deliberately feigning ignorance, since to admit that there has been progress in this field in the United States would obviously make it much more difficult to carry on the present negative political line of the United States on the question of putting an end to nuclear weapon tests.

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At the Conference on the Discontinuance of Nuclear Weapon Tests in January 1962 I pointed out that recently many geophysical methods of detecting and identifying nuclear explosions, including those underground, had been considerably improved. The Soviet experts, who as far back as 1958 predicted an inevitable increase in the effective power and range of these methods, proved to be right. One can say that the increase was achieved even more quickly than had previously been expected.

Seismologists in the Soviet Union have already succeeded in proving that accuracy in determining the epicentres of earthquakes is about ten times greater than the United States experts estimated. It is well known that in the Soviet Union, the United States and United Kingdom a number of very promising methods of identifying underground nuclear explosions have been devised. In a number of countries, devices for the automatic selection of seismic events of a certain category are being successfully developed. The device to which Dr. Frank Press referred is one of this type.

In this connexion I should like to draw your attention to an article by the scientific observer of the London newspaper, "The Evening News", which appeared at the beginning of January 1962. In this article he said that experiments carried out by the United Kingdom Atomic Energy Authority by means of highly sensitive recording instruments had made it possible to devise a method of detecting underground nuclear explosions by measuring their effect on the earth's magnetic field. He noted that in the opinion of United Kingdom scientists the practical application of this method would make it impossible for any country to carry out clandestine nuclear tests.

Here is another example. On 25 March 1962 the "Sunday Times" published an article by its scientific correspondent, Mr. Margerison, on a new method of detecting nuclear explosions, which had been devised by United Kingdom specialists. He wrote that that week a new British method for the detection of clandestine underground nuclear explosions was to be used.

This method, considered to be the best in the world, was recently mentioned by the United Kingdom Prime Minister. The detection station at Eskdalemuir in the Lake District can, with much greater reliability than was thought possible up till now, distinguish between underground bomb explosions and minor earthquakes. As this article points out, in the United Kingdom methods of detecting nuclear explosions have been considerably improved, as has also the construction of seismographs; this makes it possible to distinguish more clearly between an earth tremor caused by a nuclear bomb explosion and an earth tremor resulting from the movement of transport vehicles, work

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in industrial plants, minor subsidences of the soil and the beating of waves on coasts, that is to say, to distinguish it from the noise background. It was also pointed out that a new method of calculations has been worked out, which makes it possible to use simultaneously a combination of seismographs and thereby to obtain more detailed information about the scale, type, direction and magnitude of the explosion.

The new method of evaluating explosions enables a clear distinction to be made between a nuclear explosion and an ordinary earthquake. Here you have one more piece of evidence of the remarkable progress achieved in devising new methods of detecting nuclear explosions and improving instruments for recording them.

We have drawn your attention to an article by the same writer Margerison published in the Sunday Times of 16 September 1962. Referring to a dispute which took place between the Russian scientists who asserted that all underground explosions, down to the smallest, could be detected by means of seismic stations, and the United States scientists who asserted that underground explosions could be concealed by means of various methods of camouflage, Mr. Margerison wrote:

"Today the British scientists have developed a new type of seismic station so sensitive that twenty could monitor suspicious disturbances anywhere in the world." Further the article stated:

"At the same time the Americans have discovered that their calculations on the possibilities of muffling underground tests are incorrect. This has been embarrassing for the Atomic Energy Commission although official announcements of underground explosions have exaggerated their size making the extent of the error less apparent."

"It is now clear that the Russians were right," Mr. Margerison concluded.

Those are the facts, Mr. Stelle. They refute all the Utopias of United States official science regarding the alleged difficulty of detecting underground nuclear explosions.

At the meeting of the Sub-Committee on 16 October I quoted some facts mentioned by the American weekly, National Guardian, which said that the principal adviser to the United Kingdom Ministry of Defence on scientific matters, Sir Solly Zuckerman, and the Director of the Research Group of the United Kingdom Atomic Energy Authority, Sir William Penney, who met the Government scientific specialists in Washington from 16 to 20 March, submitted to those specialists proofs that the British had detected all the recent United States underground tests. However, all this is of no importance to

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the United States, because it picks out only what is likely to give support to its position in regard to the nuclear arms race and rejects everything that fails to support that position.

All these facts testify eloquently to one and the same thing, namely, that national means of detecting nuclear explosions are being developed incessantly and are advancing with giant's strides and that they now represent a means of control which does not require the establishment of an international system of control in any form whatsoever.

To sum up all we have said, we consider it necessary once again to make an ardent appeal to our Western partners to cease their obstruction, to stop wasting our time, to abandon their demands for the establishment of an international system of control and obligatory inspection, which are unfounded and in the present conditions neither necessary nor practicable. We appeal to the Western Powers to show good sense, moderation, farsightedness and political wisdom and to go forward to meet the wishes of all the other countries which demand the cessation of all nuclear weapon tests for all time without any exceptions or exemptions whatsoever. The Soviet Union is prepared to conclude an agreement in all sincerity, without any reservations. It is now up to the Western Powers to act.

Mr. STELLE (United States of America): At the beginning of our meeting, in yielding to our Soviet colleague, I expressed the hope that, since it was at his initiative that we were meeting here today, he would have something of special importance and usefulness to say to us. I expressed the hope that we should not be disappointed. Clearly we have been. He has had nothing important or useful to say. He has made certain statements which require an immediate reply.

The Soviet representative, as I heard him in the interpretation, used very strong words about a statement that I made yesterday. He said this statement was untrue. I will read from the verbatim record the statement to which he referred, and I will read it all, so that there will be no doubt as to what I said, and then we shall see whether it was true or not.

I said:

"The situation facing the Conference on 27 August last was, of course, not a unique one in the course of these negotiations. At that time, we all recall, there existed a dispute over the means to provide adequate control of the cessation

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of underground nuclear weapon tests. This dispute, of course, continues. However, for at least a month prior to 27 August the delegations of the eight more recent members of this Conference, on the initiative originally of the delegations of Brazil and the United Arab Republic, made repeated statements in support of a limited test ban. For all practical purposes, what was suggested was to sign immediately a treaty banning tests in those environments the control for which could be agreed by both nuclear sides. Specifically, various of the eight delegations suggested a treaty banning tests in the atmosphere, in outer space and under water using presently existing means of control.

"The policy of the United States and the United Kingdom at that time was to seek above all a comprehensive test ban treaty, and indeed that remains our policy. A comprehensive test ban treaty is our first and primary goal. However, in view of the many statements supporting a partial ban, the United States and the United Kingdom made a proposal for a treaty banning tests in the atmosphere, in outer space and under water using presently existing means of control." (ENDC/SC.I/PV.36, pp. 3-4)

Mr. Tsarapkin said that my statement that the eight new nations advocated a partial ban was not true. He used a variety of quotations most of which, as I heard them, indicated that of course all the eight nations want the ending of all nuclear weapon tests. So do we. We want a comprehensive treaty. But the statement I made was addressed to the fact that, failing a comprehensive treaty, the eight new members of this Conference advocated a partial ban. Let us see whether that statement was true.

At the Conference of the Eighteen Nation Committee on Disarmament on 25 July 1962 the representative of Brazil said:

"It has been implied that a nuclear test ban is difficult to attain because the great Powers cannot or do not wish to agree on the intricate question of control, a problem which is based on confidence. It is well-known, however, that the main divergencies and discrepancies do lie in the problems of detection and identification of underground tests, as the international control required for atmospheric and outer space tests does not appear to present so many insurmountable difficulties. Why, then, not concentrate our efforts on this question of atmospheric and outer space tests which are the most dangerous, actually and potentially, and the ones which have a most disturbing effect on mind, body and nerves?"

(ENDC/PV.61, p.36)

(Mr. Stelle, United States)

Finally, the eighth of the eight nations, through its representative, the Defence Minister of India, Mr. Krishna Menon, told the Eighteen Nation Committee on 20 March 1962, obviously in support of a partial agreement:

"The main explosions we are worried about at the moment are explosions in the atmosphere and the biosphere." (ENDC/PV.5, p.39)

I submit that the accuracy of the statement which I made at our last meeting to the effect that a partial agreement was advocated by all eight new members of the Conference is incontrovertible.

Mr. Tsarapkin again failed to see how I, as representative of the United States, could state that the United States had had one deplorable experience with the Soviet Union's resumption of nuclear weapon tests. I went into this in great detail at our last meeting. Perhaps, since we are meeting this morning, Mr. Tsarapkin has not had time to read the verbatim record carefully. I trust he will do so, and when he does he will see that I made it very clear that the Premier of the Soviet Union had pledged that the Soviet Union would not be the first to test, in a statement which he had addressed to the United States and the United Kingdom; that that pledge had been reaffirmed after the French tests by our colleague Mr. Tsarapkin; that later warnings about the French tests had all been couched in terms of the possibility that the Soviet Union might have to test if the French tested further; and that after the last of those warnings there had been no further French test and the Soviet Union, against its pledged word, had resumed tests in the fall of 1961. For the United States that was clearly a deplorable experience.

Mr. Tsarapkin again went into the question of capabilities for identifying seismic events through distant instrumentation, and he again referred, as he is so fond of referring, to the Gnome explosion. I was at least happy to hear today that Mr. Tsarapkin had finally abandoned the ridiculous charge that the Gnome explosion was a decoupling experiment. He admitted that it was not a decoupling experiment, but he went on again to charge that the United States had undertaken a muffling experiment and that it had expected that the strength of the signal would be reduced; and, as I heard the interpretation, he said, "many times". Therefore, he said, the United States expected that there would be a very weak signal and that it would not be picked up by distant stations. That is clearly ridiculous. A shot fired in salt gives a stronger signal by a factor of about two than a shot fired in volcanic tuff.

Mr. TSARAPKIN (Union of Soviet Socialist Republics): A factor of three.

Mr. STELLE (United States of America): Two, according to our Project Vela announcement, but I am not going to stick at this factor. However, as stated in the Defense Department announcement summing up the results of the Vela programme, there are other media which have a real muffling effect, such as alluvium.

The reason why the Gnome shot was conducted in salt was a very simple one. This, as Mr. Tsarapkin knows, was one of our series of "ploughshare" shots -- "beating swords into ploughshares", in other words, an experiment in peaceful uses -- and the particular peaceful use of that shot was an experiment in trapping heat, to see if that kind of shot could have any utility in the generation of power. That is the reason why salt was used as the medium for that shot. It clearly was not a muffling experiment, and I am glad Mr. Tsarapkin has admitted that it could not have been a decoupling experiment.

Mr. Tsarapkin went on -- again on the theme of the capacity of distant instrumentation to identify seismic events -- to charge the possibility that the United States was concealing technical advances in the field of seismic research, and he suggested that perhaps the information given in the press statement over the week-end on the device which has been developed at the California Institute of Technology, under the leadership of Dr. Frank Press, might have been known for a long time and the announcement of it held up. This is also ridiculous. The United States and the United Kingdom have been completely forthcoming about all advances in seismic research and seismic improvement. If I may refer in this particular connexion to the report of the United States Department of Defense on Project Vela, dated 7 July 1962, which has been made available to the Conference, it is stated there:

"In addition, further experimentation with surface arrays of seismic instruments indicates that, with the use of special filtering techniques" --

I repeat, "with the use of special filtering techniques" --

"improvement in sensitivity somewhat greater than that previously considered possible can be obtained." (ENDC/45, p.1)

If Mr. Tsarapkin's Government had allowed Soviet scientists to come to confer with the United Kingdom and United States scientists who came to Geneva and talked with other delegations, Mr. Tsarapkin's scientists would immediately have been informed that important among the special filtering techniques is the use of computer techniques with arrays of seismographs; and the research device which has been developed at the California Institute of Technology is just such a device as we told the Soviet Union about on 7 July. Clearly there is no truth in the charge that the United States is

(Mr. Stelle, United States)

censoring or hiding the results of the scientific research being undertaken for seismic improvement, particularly that under the direction of the Department of Defense of the United States.

Mr. Tsarapkin had many other things to say about United States scientists and their findings and about United Kingdom scientists and their findings. We in the West have paid for and pushed forward energetically research in seismic improvement. We have made the results available. On the basis of our evaluation of these results, we have been able to offer a comprehensive draft treaty which accepts the most important principle of the eight-nation memorandum (ENDC/28): that is, that there should be an international system based primarily on national stations under international supervision. It is for the Soviet Union to give real scientific reasons as to why, if it really believes so, our scientific evaluation of the research results of our scientists may not be accurate. To that end it would of course be very helpful if Soviet scientists would be freed by their Government to sit down with United Kingdom and United States scientists and talk these things over in scientific terms. It is for the Soviet Union to make a move towards a treaty banning nuclear weapon tests.

The CHAIRMAN (United Kingdom): Perhaps I might just briefly allude at this point to one matter mentioned by the representative of the Soviet Union in the course of his speech this morning. The Soviet representative sought once again to show that there was some contradiction between the views of United Kingdom scientists, some of whom he named, and the scientists who are advising the United States Government. The plain fact is that there is the closest consultation between those United States scientists and those United Kingdom scientists who are advising their respective Governments, and I think this was reflected in the Defense Department document of 7 July 1962 to which the representative of the United States has already referred. It was also reflected in the proposals put forward jointly to the full Conference here on 5 August; and the representative of the Soviet Union will remember that at that time both United States and United Kingdom scientists came here and were available to give, and indeed gave, explanations of these technical matters.

I find it very hard to understand how the representative of the Soviet Union can really expect us to believe that we should found a serious negotiation with regard to the cessation of nuclear tests upon what he calls "common knowledge" and upon a sheaf of newspaper cuttings. In the United Kingdom we recognize that this is in its substance

(The Chairman, United Kingdom)

a scientific question, although doubtless in our negotiations it is a political matter, and the establishment of the scientific facts is of prime importance. If they are in doubt, as we believe they are, I do not think that any sensible person could deny that the proper and appropriate course is for each of the States concerned to make available to the Conference the scientific data on which it bases its case or to produce scientists who can perhaps themselves make the case better than we politicians could do.

However that may be, I must allow myself to say that any unprejudiced person happening to read the speech to which we listened from our Soviet colleague this morning could hardly be expected to imagine that it was a part of a negotiation. It might have been suitable to a propaganda occasion, but as a serious attempt to try to find a basis for agreement I must confess that I found it deeply disappointing; and once again I venture to express the hope that at future meetings our Soviet colleague will be willing to engage in detailed discussions of practical issues with the desire, which we hold very strongly, of arriving at an agreement which meets the needs and desires of both sides.

Mr. TSARAPKIN (Union of Soviet Socialist Republics) (translation from Russian): The United States representative expressed his happiness at the fact that the Soviet Union representative had now admitted that the Gnome shot was not carried out in decoupling conditions. But you are happy to no purpose, Mr. Stelle. I never asserted that the Gnome shot was carried out in decoupling conditions. It was carried out in muffling conditions, that is it was an explosion in a salt bed and it was calculated that the released energy would be muffled in the ground; it was not at all in a salt cavity. So your happiness is premature, because I had no occasion to admit having made a mistake. I told you all along that the shot was carried out in a salt bed and you, your scientists, had previously asserted that a shot in a salt bed would muffle the energy by a factor of three, but now your experts say, on the basis of the Gnome shot, that a shot in a salt bed increases the seismic signal by a factor of two or three. As you see, your experts drew quite different conclusions after the Gnome shot and, indeed, Mr. Stelle, you were unable to refute the fact that your experts suffered a scandalous fiasco in this matter.

I have a second observation to make. You attempted to justify what you said when you tried to use the statements of the neutrals as proof that they fully supported the United States proposal for a partial treaty on the cessation of tests only in the

(L.R. Tsarapkin, USSR)

atmosphere, underwater and in outer space. But I must say that you have not proved anything; you merely tried to present in a somewhat false light what was said here by the representatives of the non-aligned States. But, Mr. Stelle, it is not a question of the attitude of the non-aligned States to the cessation of tests in the atmosphere, underwater and in outer space; it is not a question of that; we are not arguing with you about that; it is not in that respect that we refer to the non-aligned States. What we are concerned with is something different, namely, the attitude of the non-aligned States to the other explosions which, under your partial proposal, would be left outside the treaty, to the question of underground explosions. What is the attitude of the non-aligned States in this respect? What I have quoted today is taken from the verbatim records, from the statements of the non-aligned States, and all this shows that, besides the conclusion of a partial agreement, they demand that at the same time an agreement should be reached in some form in regard to the cessation of underground nuclear weapon tests as well. That is what we are talking about. What I have read out to you today from the verbatim records, from the official texts of the statements made by the representatives of the non-aligned States, fully confirms our point of view and you have been unable to refute it. As you see, in regard to the cessation of underground tests as well, we form a united front -- the non-aligned States, the Soviet Union, the other socialist States and all the other countries of the world -- against you; you are isolated here, you are acting here against the wishes and against the demands of all the other States of the world.

As for the statement of the United Kingdom representative, I did not find in it anything serious, anything new. It was just a collection of words which I am already accustomed to hearing from Mr. Smithers, devoid of any substance or cogency. Mere verbiage! There is nothing for me to say in reply.

I should merely like to say to Mr. Stelle that as regards the question of underground explosions he is trying to treat this question in the same way in which he treated the neutrals' memorandum when he said that the memorandum reflects the United States point of view and provides for obligatory inspection and an international system of control, whereas, in fact, that is not so. Similarly, on the question of underground explosions you are trying to call the non-aligned States as evidence on your side that they support the United States proposal which provides for the continuation of underground nuclear tests, whereas that is not at all the case, as is evident from the extracts I have adduced from the statements made by the representatives of the non-aligned States in the Eighteen Nation Committee.

Mr. STELLE (United States of America): I am still happy about what I believe was a revised approach by Mr. Tsarapkin to the question of the Gnome shot. I had been led to understand -- perhaps I was in error -- that he was referring to it as a decoupling experiment: in other words, an explosion in a large cavity. But the Soviet representative says today that he was referring to it not as an explosion in a large cavity but as a muffled explosion. Muffling or amplifying of course depends on the medium in which a fully-tamped shot is carried out. So we at least are talking now, when we refer to the Gnome explosion, about a tamped shot.

Mr. Tsarapkin has been trying to make the ridiculous case that the United States expected a radical muffling of the Gnome shot, so radical that it gave the time and the place of the shot in advance throughout the world in the expectation that distant instrumentation would not pick it up. Mr. Tsarapkin is quite accurate in one thing, namely, that our scientists, in theoretical calculations which we discussed with Soviet scientists in Technical Working Group 2, had predicted that there might be a muffling factor of two or three in the case of a shot in salt as against a shot in volcanic tuff. This was a theoretical calculation, because no shots had been carried out in salt. As a matter of fact, the shot did prove, in terms of signal strength, that there was an amplifying factor of perhaps two. But it would clearly be ridiculous to assume that the United States, even though it might have expected a muffling factor -- and it expected a muffling factor of no more than two or three -- would have gone through the business of announcing to the world the time and place of the shot in the expectation that it would not have been picked up. There was a difference in the effect of salt on the signal from what had been expected. Evidently it amplifies by a small factor rather than muffling by a small factor. This is just the kind of thing which we have been suggesting we should explore together in a research programme, and this is just the kind of data which we hope Soviet scientists would discuss with our scientists.

Mr. Tsarapkin also took objection to my quotations from the representatives of the eight new members of this Conference which clearly indicated that they advocated a partial ban because they recognized that an agreement as yet was difficult on a comprehensive ban. Those quotations were accurate. Mr. Tsarapkin can read them in the verbatim record. They clearly refuted his statement that my statement of yesterday -- that the eight new members did advocate a partial ban -- was inaccurate or, as he said, untrue. As for what the eight new members of the Conference -- and for that matter all the nations of the world -- now think about the specific proposals of the United Kingdom and the United States, that is for them to say but not for Mr. Tsarapkin to assume.

Mr. TSARAPKIN (Union of Soviet Socialist Republics) (translation from Russian): I should like once again to say something in connexion with your happiness, Mr. Stelle. At the thirty-fifth meeting, when I was speaking about the Gnome shot, I said:

"... you made this announcement because the Gnome shot was prepared in such a medium and in such conditions that, in accordance with the calculations of your scientific experts, it was bound to produce a signal several times smaller than an unmuffled explosion." (ENDC/SC.I/PV.35, p.19)

I was speaking about an explosion in a medium and not in a cavity. Consequently at the thirty-fifth meeting I was speaking about an explosion in a medium. When an explosion takes place in a cavity, this means that the explosion is not carried out directly in the medium but in decoupling conditions. The Gnome shot was carried out in coupling and not decoupling conditions.

Further, at the twenty-ninth meeting, Mr. Stelle, I said that in the first report, it was given as the opinion of your scientists that:

"... a nuclear explosion carried out underground in salt -- not in a cavity, but in a salt bed -- ..." (ENDC/SC.I/PV.29, p.33)

Consequently, I was not referring to decoupling.

But you got confused about the matter, Mr. Stelle. Here is what appears in the verbatim record, and I am going to quote you. You said:

"Mr. Tsarapkin mentioned the theory of decoupling and he talked about the Gnome shot in salt." (ibid. p.32)

These are completely incompatible things. If I was talking about decoupling, I could not be talking about a shot in a salt bed. If I was talking about a shot in a salt bed, it was obviously not about decoupling. The matter is perfectly clear, in my opinion. I think that after this clarification you will not revert to saying that I first talked about decoupling and then about muffling. The matter is perfectly clear.

Mr. STELLE (United States of America): I continue to be happy. I am glad that it is clear now that Mr. Tsarapkin and I are speaking of the same thing: in referring to the Gnome shot, we are speaking of an environment and not of a cavity.

The CHAIRMAN (United Kingdom): If both the representative of the United States and the representative of the Soviet Union are happy, perhaps it would be a good moment to fix the time and date of our next meeting. May I suggest we meet on Tuesday, 23 October, at 3 p.m.?

It was so decided.

The meeting rose at 11.45 a.m.