

General Disarmament will have to be brought about by the U.S., the U.S.S.R., and China within the next decade

by

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As early as 25 years ago I realized that hydrogen bombs will be produced whose explosive power would exceed the Hiroshima-bomb by ten thousand times. From 1951 to 1967, five countries worked on this scheme and produced megaton bombs; they have piled up enough bombs to turn the world into chaos.

The next decade, from 1971 to 1980, will show that the costs of war, whether nuclear or conventional, spells ruin for every country.

When we go back in history, we can see that wars, beginning from the remote ages of about 4000 B.C. up to the 19th century invariably meant losses. There are exceptions, of course, as, for instance, the two last wars waged towards the end of the 19th century which were very profitable for the victors. These were the war which the Germans won against the French in 1870/71 and the war which the U.S. fought against Spain in 1898.

The salient historical facts of the 20th century can be listed as follows:

1. the conflict between capitalism and socialism
2. the two World Wars
3. de-colonization
4. progress in technology, its advantages and drawbacks
5. the population explosion - environmental pollution (air and water)
6. the explosion of the first nuclear bomb in 1945
7. the megaton bomb

In order to realize why this development became ^{lost} inevitable, one must bear in mind that since the end of the war, the destructive power of weapons held in store for a potential attack has been tremendously increased. In August 1945 a step was taken which meant a ten-thousand-fold increase of the explosive power of one single bomb and its implications were of ^{the} utmost importance: the two bombs dropped on Hiroshima and Nagasaki brought World War II to a sudden end and turned the Japanese people into a peace-loving nation.

Even in 1946 I knew that much stronger destructive weapons were yet to come, the explosive power of which would be between a thousand and ten thousand times greater than that of the Hiroshima bomb.

2 In July 1946 I discussed this matter repeatedly with my colleague Jentschke, who then was a young Austrian physicist and now is Director General of CERN in Geneva. Jentschke, a theoretical physicist was not so sure about the implications of nuclear fusion, whereas ~~to me~~, as a physicist and politician, the unfortunate consequences for world history of this experiment's success (hydrogen bomb) became clear ^{at once, to me.} _{fr}

In the fall of 1946 my book "The History of the Atomic Bomb" was published. The edition ^{consisted of} included 24.000 copies and the book had become a bestseller by Christmas 1946. Three years later it was out of print. Most people found the historical development described in this book most interesting but they skipped the calculations of the lithium hydride reaction as too scientific. "...which again could be increased by several thousand times as compared with those known up to now. God help the country on which a six-ton-bomb made of lithium hydride will be dropped" (p.134).

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I wrote ...

From 1945 to 1949 only the Americans had the uranium bomb. When on 13th September 1949 also the USSR exploded a ~~an~~ uranium bomb, President Truman declared before the Senate

on 10th January 1950 that all scientific and technological effort possible must be made to develop the hydrogen bomb. The fact that a hydrogen bomb was being developed should not have been discussed at all, not even in the Senate, because this subject was classified as top secret. But Senator Johnson (not to be confused with L.B. Johnson, later President) said: "Gentlemen, all the calculations for this experiment were published in 1946 in a book by the Austrian physicist Hans Thirring quite under the nose of the Russians".

The first tests were carried out by the Americans in 1951. In 1953 the USSR followed suit, in 1957, Great Britain, and in 1967, China and France. Now in early 1971, five big powers are in possession of megaton bombs.

The following table shows the rapid increase in the explosive power of the individual atomic bombs:

<u>Year</u>	<u>Tons</u>	<u>TNT</u>
1944	5	(= 5 tons)
1945	20.000	(= 20 kilotons)
1952	5,000.000	(= 5 megatons)
1954	14,000.000	(= 14 megatons)
1961	50,000.000	(= 50 megatons)

28 [Khrushchev had the largest hydrogen bomb exploded underground in 1961 in the test area of Novaja Semlja. The development of bombs of this size has been dropped ever since. The individual bombs have an explosive power of 1 megaton TNT each. Both, the U.S. and the USSR are in possession of several thousands of these H-bombs.

In the period from 1951 to 1974 the expenditure for nuclear arms has reached a peak which is hard to imagine. If we compare the military expenditure incurred between 1776 and 1815 by England, France, Italy, Spain, Egypt, Germany, Austria, and Russia (which covers the time from Washington to Bonaparte), the total will amount to one tenth of what is spent on armaments today.

I repeat again and again and I am still confident that there will be no atomic war. It is always possible, of course, but the chances are about 1 : 0,000001. There are many people who believe that there will be an atomic war after all.

President Kennedy said during the Cuba crisis on 16th October 1962: "The danger of a nuclear war within the next decade is 50 : 50 (Arthur Schlesinger: The Thousand Days. Scherz-Verlag 1966. German translation. p.697)

These opinions have changed in the face of the fact that today we have intercontinental rockets. With these rockets cities such as Leningrad, Charkow, Kiew, Rostow, Stalingrad, Nowosibirsk, Irkutsk, Wladiwostok on one part, and New York, Boston, Philadelphia, Chicago, Baltimore, St. Louis, Seattle, San Francisco, Los Angeles, Denver, Dallas, New Orleans on the other, can be completely destroyed within an hour and changed into a lunar landscape.

The position is entirely different in wars waged with conventional weapons. According to the SIPRI Yearbook, one hundred wars were fought with conventional weapons between 1945 and 1968. These wars meant tremendous costs and devastations. The war in Vietnam has become the second most expensive war in the history of the U.S.. The costs nearly equal those incurred in WW II. Also Russia and China are faced with the problem of huge armament costs.

Is it possible at all for the U.S., USSR, and China to start negotiations?

The easiest way to get together is at the conferences "on science and world affairs". It is not the generals, politicians and businessmen who try to solve the world's problems, but scientists from all countries have always found a way of talking with each other in a friendly manner and in most cases have reached an agreement.

More than fifteen years ago, the Einstein-Russell Appeal was made at a press conference in London on 9.7.1955.

Among those who signed this manifesto were Max Born, Percy Bridgman, Leopold Infeld, Frédéric Joliot-Curie, Hermann Muller, Linus Pauling, Cecil Powell, Joseph Rotblat, and Hideki Yukawa, many of them Nobel Prize winners.

On 3rd April 1956 a conference of scientists was held in Peking at the sole initiative of the Chinese. Scholars of international status discussed "the social responsibility of scientists".

As a result of the Einstein-Russell Appeal, the first Pugwash-Conference was convened in 1957; it derives its name from the place of meeting which was Pugwash in Nova Scotia, in Canada; all subsequent meetings of eminent scientists on an international scale are called "Pugwash-Conferences". Mr. Cyrus Eaton, who sponsored the first conference, has amply donated money also to later meetings.

Twenty one scientists coming from twelve countries attended the first Pugwash-Conference in July 1957. I represented Austria. The delegates of the 5 big powers were E. Rabinowitsch (U.S.A.), A. V. Topchiev (USSR), Chou Pei Yuan (China), C. F. Powell (Great Britain), and A. M. B. Lacassagne (France).

Austria was the country chosen for the third Pugwash-Conference which took place from 14.9. to 21.9.1958 in Kitzbühel and Vienna. A great effort was necessary to bring this international conference to Austria but I undertook it with pleasure. At this conference a "Vienna Declaration of the Third Pugwash-Conference" was prepared whose first item consisted in the clear statement: "The necessity to put an end to wars". This conference was concluded with an impressive demonstration in the Vienna Stadthalle attended by 10.000 people. This conference in Austria was made possible with the help of several prominent Socialist members of the Austrian coalition government then in power:

Federal President Dr. Adolf Schärf, Minister of Foreign Affairs
Dr. Bruno Kreisky, Mayor of Vienna Franz Jonas, Trade Union Congress
President Johann Böhm and Vice-Chancellor Dr. Bruno Pittermann.

The fourth Pugwash-Conference was convened in 1959 to Baden near Vienna, an Austrian place of meeting again. The Ministry of Foreign Affairs under Dr. Kreisky made it possible for the delegate of the People's Republic of China, Professor Chou Pei Yuan, to come to Austria and attend the Pugwash Conference in Baden. For Austria who had no diplomatic relations with the People's Republic of China (diplomatic steps towards this end have been taken since March 1971), the visit by the Chinese scientist obviously meant disregarding diplomatic usage, which is possible in the field of science only.

Between 1957 and 1970 twenty Pugwash-Conferences were organized, very often twice a year: Pugwash, Lac Beauport, Kitzbühel, Baden, Pugwash, Moscow, Stowe, Cambridge, London, Dubrovnik, Udaipur, Karlovy Vary, Venice, Addis Ababa, Sopotny, Melbourne, Nice, Sochi, Fontana.

At present we have to consider what came to pass within the period from July 1969 to July 1971. Nixon soon realized that the situation in Vietnam deteriorated more and more. He decided upon a world-historic step. On July 15th, 1971, news spread like wildfire through all newspapers and radio stations: The US-President would make his first visit in China. The plan had been carefully prepared by Henry Kissinger, his advisor on foreign policy. The most important point of the discussion was that China should finally be accepted a member of the United Nations.

Also in Russia a change in world politics seems to evolve. At the 24th Party Congress Leonid Breschnew stated: "We are in favour of calling a conference of the five nuclear powers: UdSSR, USA, China, Great Britain and France."

Recently a world survey of the problem was published by the Austrian Hugo Portisch under the title "Peace through Fear" (Fritz Molden Verlag, Vienna 1970). The Author shows that there is a growing fear of an atomic war in our world. Yet, scientists from east and west have carried on reasoned discussions at Pugwash-Conferences for 14 years. They are convinced that there will never be an atomic war, and have agreed upon constructive propositions to promote peace.

I personally submit four propositions for the next decade:

1) The five nuclear powers alone should deliberate upon the possibility of reducing political tension.

2) On January 1th, 1971, the USA and the UdSSR each had in their arsenals about 2000 nuclear bombs, everyone with a destructive force a hundred times that of the Hiroshima bomb. The five powers should aim to reach an agreement that each of them should have a reserve of only two nuclear bomb for a case of utmost emergency. Even these they will not need if general disarmament is reached.

3) Egypt, Israel, Vietnam a.o. should be induced each to conclude an armistice until the major problems of disarmament and peaceful collaboration have been solved by the five great powers. Only then can the smaller states undertake adapt their concerns to the world situation (f. i. Formosa).

4) 10.000 students and workers who speak fluent English and Russian shall sent at public expence for about two years to the USA and vice versa to the UdSSR. Later China, Great Britain and France could also participate in this "Experiment in getting to know and learning to understand each other better."