Chicago Speech
Fund raising banquet
Feb 8 1947

It is not easy for the human mind to grasp the meaning of the atomic bomb.

Those of us who worked ~~on the bomb~~ on this bomb at Chicago had ~~little~~ no time to ~~worry~~ think very much about it until rather late in the ~~game~~ war, when the danger that ~~Germany may~~ the Germans drop such bombs on ~~our cities~~ us existed no longer.

In March, April, and May of 1945, we began to see more and more clearly what this bomb would mean to the world in general and to ~~our~~ what it would mean to the part of the world in particular.

About that time we went to much trouble trying to convey to the Government the conclusions which we had reached ~~to the Government.~~

When the bomb was dropped at Hiroshima and the President proclaimed ~~it~~ this event to the world, ~~the President~~ he summed up Hiroshima by saying that we had gambled two billion dollars and won.

~~When we read the President's statement,~~ We knew then that we had failed ~~to get our message across.~~

Since Hiroshima the scientists working ~~at Chicago~~, at Oak Ridge, at Los Alamos, ~~and~~ at ~~Columbia University~~ New York and at Chicago ~~have made~~ progress in the art of getting messages across to the Government and to the public.

Today, the men who negotiate about atomic energy on behalf of ~~this country with other nations~~ the United States ~~have a good grasp~~ are fully aware of the facts which are involved.

If these men should fail us now, it will not be due to lack of information, but rather to the difficulty which everyone must experience if he has to adjust his thinking to facts which are as ~~unprecedented~~ new as the facts connected with atomic energy.

If these men should fail us now, it may also be due to lack of public support or lack of public pressure exerted in the right direction. ~~A~~nd public support or public pressure ~~will~~ will be lacking because the people of this country have not been told the whole story and have not ~~sufficiently~~ fully understood what they have been told.

At present the people of the United States are far from understanding their own ~~situation~~ position in the world.

Those of us who were engaged in this work during the ~~war~~ are not free to tell ~~the people~~ you what we know, but we are free to quote statements made by others ~~which have been cleared by the War Department~~ in public which have been

Recently John J. McCloy now president of the world bank spoke before the annual convention of the National Association of Life Underwriters.

McCloy, formerly Assistant Secretary of War, had served as a member of the Lilienthal Committee, ~~which was a board in the~~ in the State Department ~~which wrote the so-called Acheson-Lilienthal Report.~~

This is what McCloy said. I quote:

"From firsthand information given to me by the scientists whose prophecies were uncannily accurate during the course of the war, there can be little doubt that within the next ten years, (to be conservative) bombs of the power (equivalent) of one hundred thousand to two hundred and fifty thousand tons of TNT can be made, something over ten times more powerful than the bomb dropped on Hiroshima.

"And if we can move to the other end of the periodic table and utilize hydrogen in the generation of energy, we would have a bomb somewhere around one thousand times as powerful as the Nagasaki bomb.

"I have been told by scientists who are not mere theorists but who actually planned and made the bomb which was exploded in New Mexico that, given the same intensive effort which was employed during the war toward the production of that bomb, we were within two years' time at the close of the war of producing a bomb of the hydrogen-helium type, i.e., a bomb of approximately one thousand times of the power of the present bombs."

Now, if you will permit me, I will quote from a statement made by Professor Edward Teller, which has been cleared by the War Department and which you will find printed in the next issue of the Bulletin of the Atomic Scientists.

No one is more qualified to make such a statement than Dr. Teller, and all those who know him know that he is likely to be found on the conservative side.

This is what Dr. Teller has written. I quote:

"Actually it is quite unsound to limit our attention to atomic bombs of the present type.

"These bombs are the results of first attempts and they were developed under war-time pressure.

"The paramount consideration had to be which of the developments promised earliest results.

" In a subject as new as atomic power we must be prepared for startling developments. [illegible]

"It has been recently stated that future bombs may easily surpass those used in the last war by a factor of one thousand.

" I share this belief.

"One consequence of such bigger bombs would be that instead of three or four square miles, three or four hundred square miles might be devastated at a single blow.

"But such bigger bombs may prove to be even more dangerous in an indirect way."

"The radioactivity produced by the Bikini bombs was detected within about one week in the United States.

"In the meantime the westerly winds had swept the air mass from Bikini to this country.... then Teller goes on

"If the activity liberated at Bikini were multiplied by a factor of one hundred thousand or a million, and if it were to be released off our Pacific coast, the whole of the United States would be in danger."

Now

Bombs of the Nagasaki ~~and Hiroshima~~ type act by the blast which they cause.

One single bomb of this type destroys ~~many~~ most of the buildings of a city.

Bombs of this type produced in sufficient quantities could very well destroy all of the buildings of all of our ~~large~~ major cities.

But clearly if ~~the~~ giant bombs ~~of which Molloy and Teller speak~~ could be made and used against us, they would not be used to destroy the buildings of our cities.

They would be dropped off the Pacific coast and allowed to disperse radioactive materials into the air.

The prevailing winds would then carry these materials clear across the continent.

If such bombs were used against us, the cities would remain undamaged, but the men and women inside of the cities would not remain alive.

From the vantage point of the physicist~~s~~, the outlines of such a war are gradually becoming visible, and as they do so, they take on more and more the shape of a catastrophe for which there is no precedent in the history of mankind.

The legitimate aim of foreign policy is to prolong the peace, that is, to lengthen the interval between two wars.

But ~~We~~ the physicists find it very difficult to get enthusiastic about such an objective.

If we accepted the thought that it will be impossible to reach ~~the~~ a state of permanent peace without first going through another world war, most of us would pray for an early rather than a late war.

~~Clearly~~ The problem which faces the world to-day cannot be solved at the level of foreign policy.

It will have to be solved one floor above the level of foreign policy.

Moving on the level of foreign policy, we may hope ~~that it will be possible to~~ to arrive at an agreement providing for general disarmament, and ~~within that general framework to provide~~ providing also for ~~the international~~ the control of atomic energy. ~~along the lines of the Lilienthal Report.~~

If this could be achieved, we would have averted the outbreak of a world war ~~at an early date~~ in the near future, but ~~if this is all we achieve, and~~ if we do not go further and go further very fast, we would not have done more than ~~prolong the interval between two wars.~~ deferred the war (which will be all the more terrible the later it comes.)

Russia and the United States have emerged from the last war as military powers far outranking all other nations.

There will be no inter-national police organization or armed force in the foreseeable future that would be strong enough to ~~impose~~ enforce, short of war, the observance of ~~international~~ obligations either against the United States or against Russia.

Moreover, there has arisen a rather peculiar relationship between the governments of these two countries.

Since war between them is a potential possibility, these two governments consider it their duty to put their own nation in the position ~~of win~~ winning that war, if there should be a war.

~~Clearly,~~ The problem so formulated is absolutely not capable of a solution which is satisfactory to both parties, and if the pursuit of such a non-existent solution will remain the sole purpose of the foreign policies of Russia and the United States, they will not be able to escape from the vicious circle in which they are caught at present.

A general agreement providing for disarmament and the ~~international~~ control of atomic energy along the lines of the Lilienthal Report would ease the present tension in the world.

~~But~~ It will ~~would~~ also mean the setting up of an Atomic Development Authority ~~which is~~ in charge of mining and manufacturing of fissionable materials

~~all over the world everywhere.~~

But if this Authority lives up to its obligations, ten or fifteen years from now a number of atomic power plants will be in operation all over the world, many of them in the territory of Russia.

Should these power plants be distributed between various nations according to economic needs, or should they be distributed on the basis of military considerations?

Is it possible to safeguard plants which are located on the territory of one of the major nations against seizure by the government of that nation?

And if this cannot be done effectively, shall the United States exert her influence to keep at least the absolute number of these plants as low as possible, even though the relative number of these plants may be fixed by some sort of quota agreement?

I believe the longer you think about the problems which would arise from such a situation, the more difficulties you will discover. As long as you have to go on the assumption that the considerations of maximum relative military strength will remain the sole or the predominant considerations, it will not be possible to resolve these difficulties.

We may be able to avoid war in the near future by agreeing to disarmament and control of atomic energy.

But we will not reach a state of permanent peace unless we follow up this first step by creating a world community or a world society in which, the incentives will be overwhelmingly in favor of continued cooperation rather than in favor of abrogation of existing arrangements.

Only within the framework of a world community or a world society can this requirement be satisfied.

Only if the United States takes the lead in this direction can a world society become a reality fast enough to enable us to reach safely a permanent solution of the problem of peace.

And ~~However~~ ~~This will~~ be possible only if the problem is put squarely before the American people and if the American people understand their own position in the world.

As I see it, within a few years the American people will be faced with a crucial decision.

This decision is not so much what amount of sovereignty they are willing to give up.

Undoubtedly more and more sovereignty will have to be given up as time goes on.

But the main issue is not the issue of sovereignty.

The main issue is whether we are willing to base our national policy on those higher loyalties which exist in the hearts of the individuals who form the population of this country, but which do not as yet find expression in our national policy.

~~If we merely wish to delay the next war, we may conclude agreements providing for general disarmament and International control of atomic energy.~~

~~But if we wish to remain permanently at peace, we have~~ The main issue is whether we are willing to assume our share of responsibility in the creation of a world society and ~~have to begin before long~~ to mobilize for this purpose our ~~our moral and~~ material resources ~~for this purpose~~ on an adequate scale.

What are our chances that the vicious circle in which Russia and the United States find themselves caught ~~at present~~ may be broken?

And if it is broken, what are our chances of creating a world society fast enough to reach the ~~haven~~ state of permanent peace before we are overtaken by a catastrophe?

Most of us physicists believe that nothing short of a miracle will bring about such a solution.

But ~~Enrico Fermi~~ miracle was once defined by Enrico Fermi ~~a miracle~~ as an event which has a probability of less than ten per cent of occurring. This ~~which~~ is Fermi's way of saying that we tend to ~~there is a general tendency to~~ underestimate the likelihood ~~probability~~ of improbable events.

And if there is one chance in ten of finding the right road and moving along it fast enough to escape the approaching catastrophe, then I say let us focus our attention on this narrow margin of hope, for another choice we do not have. Obviously, the odds are heavily against us. But we may have one chance in ten of reaching safely the haven of ~~permanent~~ peace. And maybe God will work a miracle if He gets a little help from all of us.

Chicago fundraising dr. Szilard speech Feb 8-47

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Those of us who worked on this bomb at Chicago had no time to think very much about it until rather late in the war, when the danger that the Germans may drop such bombs on us existed no longer.

In March, April, and May of 1945, we began to see more and more clearly what this bomb would mean to the world in general and to our part of the world in particular.

About that time we went to much trouble trying to convey to the government the conclusions which we had reached.

When the bomb was finally dropped at Hiroshima and the President proclaimed this event to the world, he summed up Hiroshima by saying that we had gambled two billion dollars and won.

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Since Hiroshima the scientists working at Los Alamos, at Oak Ridge, at New York, at Chicago and elsewhere have made progress in the art of getting messages across to the Government and to the public.

Today the men who negotiate on the control of atomic energy on behalf of the United States are fully aware of the facts which are involved.

If these men should fail us now, it will not be due to lack of information, but rather to the difficulty which everyone must experience if he has to adjust his thinking to facts which are as new as the facts connected with atomic energy.

If these men should fail us now, it may also be due to lack of public support or lack of public pressure exerted in the right direction. And public support or public pressure will be lacking because the people of this country have not been told the whole story and have not fully understood what they have been told.

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"And if we can move to the other end of the periodic table and utilize hydrogen in the generation of energy, we would have a bomb somewhere around one thousand times as powerful as the Nagasaki bomb.

"I have been told by scientists who are not mere theorists but who actually planned and made the bomb which was exploded in New Mexico that, given the same intensive effort which was employed during the war toward the production of that bomb, we were within two years' time at the close of the war of producing a bomb of the hydrogen-helium type, i.e., a bomb of approximately one thousand times of the power of the present bombs."

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"The paramount consideration had to be which of the developments promised earliest results.

" In a subject as new as atomic power we must be prepared for startling developments.

"It has been recently stated that future bombs may easily surpass those used in the last war by a factor of one thousand.

"One consequence of such bigger bombs would be that instead of three or four square miles, three or four hundred square miles might be devastated at a single blow.

"But such bigger bombs may prove to be even more dangerous in an indirect way."

"The radioactivity produced by the Bikini bombs was detected within about one week in the United States.

"In the meantime the westerly winds had swept the air mass from Bikini to this country....

"If the activity liberated at Bikini were multiplied by a factor of one hundred thousand or a million, and if it were to be released off our Pacific coast, the whole of the United States would be in danger."

Now ~~B~~bombs of the Nagasaki ~~[illegible]~~ type act by the blast which they ~~cause.~~ produce.

One single bomb of this type destroys many of the buildings of a city.

Bombs of this type produced in sufficient quantities could very well destroy all of the buildings of all of our major ~~large~~ cities.

But clearly if ~~the~~ giant bombs ~~of which McCloy and Teller speak~~ could be made and used against us, they would not be used to destroy the buildings of our cities.

They would be dropped off the Pacific coast and be permitted to ~~allowed to~~ disperse radioactive materials into the air.

The prevailing winds would then carry these materials clear across the continent.

If such bombs were used against us, the cities would remain undamaged, but the men and women inside the cities would not remain alive.

From the vantage point of the physicists, the outlines of such a war are gradually becoming visible, and as they do so, they take on more and more the shape of a catastrophe for which there is no precedent in the history of mankind.

The ~~legitimate~~ traditional aim of foreign policy is to prolong the peace, that is, to lengthen the interval between two wars.

But we physicists find it very difficult to get enthusiastic about such an objective.

*

If such an agreement were in effect we could be fairly certain that secret violations would be promptly detected and ~~became~~ would be visible ~~to all~~ ~~[illegible]~~ for all the world to see. According to the Baruch plan all mining refining and manufacturing of dangerous materials would be put in charge of an international agency called Atomic Development authority

If we accepted the thought that it will be impossible to reach ~~the~~ a ~~haven~~ state of permanent peace without first going through another world war, most of us would pray for an early rather than a late war.

~~Clearly~~ The problem which faces the world today cannot be solved at the level of foreign policy.

It will have to be solved one floor above the level of foreign policy.

Moving on the level of foreign policy, we may hope ~~that it will be possible to~~ to arrive at an agreement providing for general disarmament, and ~~within that general framework to provide~~ providing also for the ~~international~~ control of atomic energy along the lines of the ~~Lilienthal Report~~ Baruch Plan.

B

If this could be achieved, we would have averted the outbreak of a world war ~~at an early date~~ in the near future, but ~~in this way we achieved~~ if we do not go further and go further very fast, we would not have done more than ~~making the interval between wars~~ deferred the war (which will be all the more ~~possible~~ feasible the later it comes).

Russia and the United States have emerged from the last war as military powers far outranking all other nations.

There will be no ~~police organization or armed force~~ International armed force under the U.N. in the foreseeable future that would be strong enough to ~~impose~~ enforce, short of war, the observance of ~~international~~ obligations either against the United States or against Russia.

Moreover, there has arisen a rather peculiar relationship between the governments of these two countries.

Since war between them is a potential possibility, these two governments consider it their duty to put their own nation in the position ~~to win~~ winning that war, if there should be a war.

~~Clearly,~~ The problem so formulated is obviously not capable of a solution which is satisfactory to both parties, and if the pursuit of such a non-existent solution will remain the sole purpose of the foreign policies of Russia and the United States, they will not be able to escape from the vicious circle in which they are caught at present.

A general agreement providing for disarmament and the ~~international~~ control of atomic energy along the lines of the ~~Lilienthal Report~~ B. Plan would ease the present tension in the world.

~~It would also mean the setting up of an Atomic Development Authority~~ would also ~~in charge of mining and manufacturing of fissionable materials~~

~~everywhere.~~

~~But if this Authority lives up to its obligations, ten or fifteen years from now a number of atomic power plants will be in operation all over the world, many of them in the territory of Russia.~~

~~Should~~ these power plants be distributed between various nations according to economic needs? Or should they be distributed on the basis of military considerations?

Is it possible to safeguard plants which are located on the territory of one of the major nations against seizure by the government of that nation?

And if this cannot be done effectively, shall the United States exert her influence to keep at least the absolute number of these plants as low as possible, ~~while the relative number of these plants may be fixed by some sort of quota agreement?~~

I believe the longer you think about the problems which would arise from such a situation, the more difficulties you will discover. As long as you have to go on the assumption that the considerations of maximum relative military strength will remain the sole or the predominant considerations, it will not be possible to resolve these difficulties.

Maybe we can avoid war in the near future by agreeing to disarmament and control of atomic energy.

But we will not reach a state of permanent peace unless we follow up this first step as far as we can by creating an organized world community in which, ~~Russia and some other powerful nations will~~ the incentives will be overwhelmingly in favor of continued cooperation rather than in favor of abrogation of existing arrangements.

Only within the framework of an organized world community can this requirement be satisfied.

Only if the United States takes the lead in this direction can a world community become a reality fast enough to enable us to reach safely a permanent solution of the problem of peace.

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If such an agreement were in effect we could be fairly certain that secret violations would be promptly detected and would become visible for all the world to see.

According to the Baruch plan all mining, refining and manufacturing of dangerous materials would be put in charge of an international agency called the Atomic Development Authority.

But if this authority lives up to its obligations to promote the peace-time applications of atomic energy, 10 or 15 years from now a number of atomic power plants should be in operation all over the world, many of them on the territory of Russia.

~~This will be possible~~ But only if the problem is put squarely before the American people and if the American people understand their own position in the world. Can the Government of the United States assert leadership in this direction before long

As I see it, the American people will be faced with a crucial decision.

This decision is not so much what amount of ~~sovereignty~~ national we are willing to give up.

Undoubtedly more and more sovereignty will have to be given up as time goes on.

But the main issue is not the issue of sovereignty.

The main issue is whether we are willing to base our national policy on those higher loyalties which exist in the hearts and minds of the individuals who form the population of this country, but which do not as yet find full expression in our national policy.

~~If we merely wish to delay the next war, we may conclude agreements providing for general disarmament and international control of atomic energy.~~

The main issue is whether we are willing ~~But if we wish to remain permanently at peace, we have~~ to assume our share of responsibility for the creation of a organized world community ~~a world society and have to begin before long~~ and to mobilize for this purpose our moral and material resources ~~our material and human resources~~ on an adequate scale.

What are our chances that the vicious circle in which Russia and the United States find themselves caught may be broken?

And if it is broken, what are our chances of creating a world community fast enough to enable us to reach the ultimate solution of the problem of ~~the ultimate permanent~~ peace before we are overtaken by a catastrophe?

Most of us physicists believe that nothing short of a miracle will bring about such a peaceful solution.

But a miracle was once defined by Enrico Fermi as an event which has a probability of less than ten per cent of occurring. This is just Fermi's way of saying that we tend to underestimate the likelihood of improbable events.

And if there is one chance in ten of finding the right road and moving along it fast enough to escape the approaching catastrophe, then I say let us focus our attention on this narrow margin of hope, for another choice we do not have. Obviously, the odds are heavily against us. But we may have one chance in ten of reaching safely the haven of [redacted] peace. And maybe God will work a miracle if He gets a little help from all of us.