

war cannot be prepared, or at the least that if any nation should attempt to do so then the situation will be promptly known and reported to all other nations so that they may take whatever action is appropriate.

It has been thought by those who have studied all aspects of this problem that without undue restriction on the peaceful uses of atomic energy and without the setting up of an unduly cumbersome organization, it would be possible to provide at the least several months' warning before atomic war could be launched by any nation on any significant scale. It is thought that the certainty of having such a period of warning, during which appropriate counter measures could be taken, should give the nations confidence to undertake the establishment of such a system which, once established, could be expected to develop in reliability. This is what the United Nations Atomic Energy Commission has been set up to study and later I will have more to say about the progress of this work.

The second possibility of preserving peace, which is, I think, fully justified in the short term view by considerations of expediency and practicability, is that the United States, which is the only nation which at the moment possesses the atomic bomb in quantity, should be encouraged to continue to retain for as long as may be possible its paramount ascendancy in this field.

There can, of course, be no continuing monopoly in the facts of science; what one nation has found out, others can learn also by the application of appropriate efforts and granted sufficient time. In truth there never have been any really scientific secrets about the atomic bomb. The whole epic history of nuclear physics has been international in character, from the first detection in France of the peculiar rays given off by uranium minerals to the first recognition of atomic fission in Germany, with very substantial contributions in between from almost every other country engaged in scientific research.

While I make the point that there are no real scientific secrets yet there are most important technological advantages and engineering know-how which are the exclusive perquisite of those who have laboured and carried the burden of development. I would say that in the atomic energy project, like any other major undertaking, there is a phase where prodigious effort is required for little in the way of return; then there comes a point at which the returns increase very rapidly for a little additional effort and everything goes forward on a rising curve.

The United States is today on this rising curve with atomic energy and, if our American colleagues maintain their research and development on the scale authorized by Congress, it seems that their ascendancy will remain for a decade at least. Meanwhile no other country on earth has as yet passed out of the difficult first phase to which I have referred.

Quite frankly the only major country or association of countries about which we of the Western world might feel anxiety is the U.S.S.R.. I pose the question that having regard to the devastation of war, the primary requirements of rehabilitation, the limited resources in materials and industrial equipment and particularly in technological skills, is it likely that the U.S.S.R. could at this time be capable of diverting effort on the scale necessary to make atomic war? The United States capital equipment for atomic plants is estimated to have cost over two and a half billion dollars mostly in payment in one way or another for skills which had to be taken out of the national economy. No other