

point of view this suggests a very grim outlook. However from a broader point of view there do seem to be some rays of hope because if we in the free world use our scientific and technical resources intelligently we can at least keep abreast of and possibly ahead of any competitors. In this scientific race we must strive to keep our offensive and defensive developments in step but if this cannot be done we must be sure that our offensive capabilities are at all times adequate to deter an aggressor from attacking. Should we ever lag significantly behind him in either offensive or defensive capabilities we run the risk of tempting him to embark on World War III. Therefore the peace and possibly the survival of the world depends upon the speed with which the scientists and engineers of the free world can devise and perfect successive offensive and defensive weapons systems.

I would like here to digress for a moment from the main theme of my talk to put in a word for civil defence. The announcement by the US Atomic Energy Commission two weeks ago of the fall out effects from large thermo-nuclear weapons may well have induced some people to feel that civil defence is of no value. This is far from being the case. Careful consideration of the data shows that the existence of these large weapons not only justifies the continuation of all our present civil defence measures but will make possible important new roles for civil defence. For instance it is quite obvious that a large proportion of the people who are likely to be injured by fall out can be saved from death or injury by suitable guidance and instruction after the explosion has taken place. I will not attempt to go into the details of such measures, but merely wish to assure you that from the point of view of the scientist the advent of the thermo-nuclear bomb has made civil defence more rather than less important.

Let us end our reconnaissance of the trail along which the military applications of atomic energy are leading us at this point and on this note of qualified optimism return to pursue the other and more inviting path to the peaceful applications of nuclear energy.

It is obviously impossible to enumerate the benefits to mankind that have already been and will in the future be found along this alternative pathway of peaceful discovery. You are all familiar with the advances that have been made in medical research through the use of radioactive isotopes produced almost as a by-product of military programmes. A good deal less is generally known of the growing importance of the use of radioactive isotopes in industry. However, I wanted today to emphasize particularly the importance of atomic power to our civilization.

One of the most distinctive features of our modern western civilization is the lavish use of low-cost power. The high material standard of living that we enjoy is ultimately dependent upon the supply of power. May I express here in parenthesis doubts of my own which have nothing to do with the main stream of my argument. The fundamental basis of most of our political and economic actions in the western world is the assumption that an increase in material comfort and a lightening of