

Now, let us turn to the present. Look at radar on the chart. You are familiar with the work originally done in the Anacostia Naval Laboratories in the twenties, when they first detected electromagnetic wave echoes. It is said at that time \$15,000 was requested to exploit this discovery and it was turned down, because there was not seen any end use for it.

Now we all know that it was Watson Watts of England and his associates who developed the radar that was used in connection with World War II to defeat the German air blitzes. For this he was knighted by his grateful government. This also shows the value of an ally particularly when it is an intelligent one. This took less than 20 years from discovery of new knowledge to exploitation.

Thus we notice the shorter time it took to reduce a pure scientific finding into an end product of vast significance. Time marches on and now let us look at transistors which are semiconductors. The scientists had no sooner proven their existence and explored the technique involved in the Bell Telephone Laboratories than within that brief period of less than 2-years, they found their way into commercial products. This illustrates the present pace of science and technology.

The same speed up of the process is true of artificial diamonds which were developed and exploited by the General Electric Company. Now we have got super-conducting magnets, the new application of cryogenics with its vast implication in so many new directions. Let us note here that almost from the time we discovered a super-conducting phenomenon we were building more powerful magnets than ever before known, and using them in laboratories in developing further the new science of high-energy physics and hydrogen fusion.

The scientist, because of his training is inclined to see events either as black or white, unlike the engineer who is dealing in a gray vista all the time and is not sure which way the light is coming from. The scientist drew these precise boundaries on the graph, which I think are like the statistician who wanted to cross the river and after looking the matter up, saw that it was 4.1 feet average depth, and so he attempted to walk across and drowned. Notice that about the point on the chart, in the 1960's, you are going to be able to apply something the minute you find out about it. That includes the time for going through research and development and merchandising and what not. If you go beyond that point on the