

first had a glimpse of what lay along this path when atomic bombs were dropped on Hiroshima and Nagasaki in 1945. At that time many people felt that the atomic bombs used there were the ultimate weapon and that the very existence of such powerful means of destruction made the thought of a possible future war untenable. However, most experts who were familiar with the scale of destruction achieved by other weapons did not completely support this view. The atomic weapons used at Hiroshima and Nagasaki had a destructive force approximately equal to the explosion of 20,000 tons of TNT. They were therefore called 20 kiloton and later "nominal" atomic bombs. The one dropped at Hiroshima devastated about four square miles of solidly built up city and killed possibly as many as 80,000 people. However, a single raid with incendiary and high explosive bombs on Tokyo destroyed nearly 16 square miles and killed at least 84,000 people. There were several raids in Europe which were almost equally destructive. Therefore although the nominal atomic bomb of 1945 did make possible huge destruction in seconds instead of hours and through the use of one instead of a few hundred aircraft it did not as at first used introduce a new scale of destruction. However, it was obvious that should nominal atomic bombs become sufficiently cheap and abundant to be used in large numbers they would drastically alter the nature of any future war.

Unfortunately since 1945 the application of new scientific knowledge to weapon design has proceeded rapidly and effectively, both in the United States and in Russia, and in 1954 we learned for the first time of the existence of thermonuclear weapons which really did produce destruction on a scale hitherto undreamed of. Had this research instead led to the conclusion that natural laws limited the size of atomic weapons to those that were used in Hiroshima and Nagasaki mankind would still have been faced with a very difficult problem. However, the scientific discoveries that underlie the thermonuclear weapons demonstrated in 1954 open possibilities for the unlimited increase of the destructive power of weapons and consequently face mankind with the ultimate possibility of self destruction.

The US Atomic Energy Commission in a press release about two weeks ago gave further information concerning the effects of thermonuclear weapons. It was revealed that some of the weapons exploded in the Pacific had released energy equivalent to many millions of tons of TNT. An approximate idea of the scale of such an explosion can be grasped from the fact that a bomb of 10-megatons yield would destroy or damage beyond repair all ordinary Canadian houses and other light buildings within a radius of about 10 miles. The AEC announcement also emphasized the fact that bombs of this kind produce huge amounts of radioactive fission products which fall out over a vast area which may cover many thousands of square miles. As a specific example of the lethal effects of this fall out they state that in one of their Bikini trials the radioactivity was sufficiently intense at 160 miles downwind from the explosion to have threatened the lives of about one-half of the persons in the area who failed to take protective measures.

I will not attempt to go into the other details that were included in this AEC report. I am sure that