As to the somatic effects, it is the opinion of medical scientists that the most important results might be an increase in the incidence of certain malignant conditions, but these usually result from much higher radiation exposures than those which are now being considered.

With regard to the genetic effects, it has been established by experiments on certain rapidly-breeding lower forms of live, such as bacteria, plants, insects and small mammals, that genetic changes can be produced by exposure to radiation.

It is pointed out by geneticists that the characteristics transmitted from parents to offspring are determined by the structure of the genes. Certain genes produce certain characteristics, such as the colour of the eyes and so on. A particular gene may also be related to a physical or mental defect. It so happens that genes are capable of mutating or changing and that all such mutations, being permanent, are carried on in later generations.

In the exposure of experimental animals to radiation, there has been observed an increase in the rate at which these mutations occur. Usually no harmful effect shows up until, at some future time, mating takes place between two animals carrying the same mutated gene. Since a study of genetic changes in humans would inevitably take several generations, the belief that radiation might cause genetic damage in humans is based mainly on the evidence that it does so in other forms of life.

In determining genetic effects on man there are two principal difficulties. First, most mutations will remain hidden until one individual receives the same mutated gene from both parents. Secondly, naturally occurring genes for recessive defects and abnormalities are already numerous in the population. Neither of these naturally occurring mutant genes nor those that might be induced by radiation are likely to produce an effect in the children of the individuals carrying them unless the parents have received the same defect from a common ancestor.

In general, there has been much misunderstanding between the possible hazards to human health arising from weapon trials and those that would result from nuclear warfare, with the result that some of the more sensational statements made on this subject have been confusing.

Since there remain a number of unanswered questions in this field, there is a need for continuing research and investigation into the genetic problem. Increasingly-large numbers of people are being exposed to increasing amounts of radiation because of the wider use of radioactive materials in industry, research and medicine. In addition, there has been a slight, though appreciable increase in radiation all over the world as a result of the weapon tests.