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## Radiation and Public Knowledge

The simultaneous release of the summary reports of the U.S. National Academy of Sciences study on the *Biological Effects of Radiation* [*Science* **123**, 1157 (29 June 1956) *et seq.*] and the report of the Medical Research Council of Great Britain on *Hazards to Man of Nuclear and Allied Radiations* (*see* p. 112) is a welcome event. It is encouraging to note that the major recommendations of both committees, which, so we understand, worked quite independently, are notably similar.

Both studies were especially concerned with possible genetic damage during the reproductive period of the first 30 years of life, and both calculated the accumulated radiation to the gonads during this time. The estimates of such radiation in roentgen units follow in the order American, British: average background (or natural) radiation—4.3, 3; medical and dental x-rays—3, more than 0.67; fallout radiation on the assumption that the present rate of weapons testing continues—0.02–0.50, 0.26. The only considerable difference is in the estimated absorption of x-radiation, which probably reflects differences in practice in the two countries.

Both committees raised the question of how much of an increase in radiation it would take to bring about a doubling of the mutation rate in man. The American estimates ranged from outer limits of 5 to 150 roentgens over a 30-year span, with the best estimates of several experienced geneticists lying in the range from 30 to 80 roentgens. The British estimates were closely similar, with the outer limits ranging from 15 to 150 roentgens and the best estimate precisely the same as that of the Americans: 30 to 80 roentgens. This agreement is perhaps not as astonishing as it might seem at first glance to be, for both groups had to base their judgments on the same rather limited body of data on mutation rates.

The reports are parallel in other ways: both emphasize the need for more research, both are directed to the public, and both stress the tentative nature of the conclusions and recommendations. The reports differ slightly in their attitude toward genetic damage. The American study takes a somewhat graver view of the long-term effects of increased radiation. In relation to fallout, for example, the Americans, although stating that the dose is ". . . a small one as compared with the background radiation, or as compared with the average exposure . . . to medical x-rays," emphasize the point that all radiation is damaging, while the British take the view that the present hazards from fallout are "negligible."

These reports are, it seems to us, also remarkable documents in that the committees in both countries have made a valiant and, we think, successful effort to make the fundamental scientific bases for understanding their recommendations clear to the educated public. Both reports put an emphasis on the weighing of values that should govern future decisions about the control of radiation. The inevitable adverse influence of increased radiation on health and on the genetic endowment of man must be balanced against the needs for defense and for additional sources of power.

In democracies, an informed public opinion should influence ultimate decisions on weapons testing, atomic power, radiological diagnoses, and other biological hazards of an atomic age. These notable studies have made an informed public opinion possible.—G. DuS.