nyms appear (such as "underground, subterranean, subterraneous, below-ground, subsurface . . ."). Typographical errors and misspellings are infrequent and usually unimportant. The book fills a definite need.

THOMAS E. HUGHES
Library of Congress

The United Kingdom Contribution to the International Geophysical Year, 1957–58. The Royal Society, London, 1957. 72 pp. Illus. 10s.

In this official publication a number of interesting and informative facts about the United Kingdom program for the International Geophysical Year are outlined.

Following a brief historical introduction, the participating individuals and institutions in the United Kingdom and the Colonies are listed, and their varied functions are described. The official IGY Calendar, indicating the Regular World Days and the World Meteorological Intervals during the IGY, is reproduced. A comprehensive list of the stations participating directly or indirectly is given, and the distribution of these stations is mapped.

A useful list of the membership of the principal subcommittees of the British National Committee is included.

The Effect of Exposure to the Atomic Bombs on Pregnancy Termination in Hiroshima and Nagasaki. Publication No. 461. J. V. Neel and W. J. Schull. Atomic Bomb Casualty Commission, National Academy of Sciences–National Research Council, Washington, D.C., 1956. 241 pp. Illus. $2.

A little over 12 years have passed since the atomic bombs were dropped on Hiroshima and Nagasaki, and many reports have been issued on various aspects of their effects. Some, like the present one, have attempted to elicit basic information which could help man cope with the new technology rather than help him find better ways to destroy himself. As Americans we can take some consolation from the existence of the former reports and from the knowledge that they have been supported by our Government.

In the authors' words, "The present monograph is designed as a detailed report on certain efforts made during the period 1946–1955 to provide answers to the following two questions: 1. Can there be observed, during the first year of life, any differences between the children born to parents, one or both of whom were exposed to the effects of atomic bombing of Hiroshima and Nagasaki, and the children born to suitable control parents, and 2. If differences do exist, how are these to be interpreted?"

The study was undertaken on the recommendation of an *ad hoc* genetics conference convened by the National Research Council in the summer of 1947. This conference, after recommending that the study be undertaken, made the following statement: "Although there is every reason to infer that genetic effects can be produced and have been produced in man by atomic radiation, nevertheless the conference wishes to make it clear that it cannot guarantee significant results from this or any other study on the Japanese material. In contrast to laboratory data, this material is too much influenced by extraneous variables and too little adapted to disclosing genetic effects. In spite of these facts, the conference feels that this unique possibility for demonstrating genetic effects caused by atomic radiation should not be lost."

The research was actively initiated in March 1948 and was ended in February 1954. The first children to come under the scrutiny of the program were conceived in October 1947, 2 years after the bombs were dropped.

The members of the *ad hoc* committee were not exaggerating when they emphasized the importance of extraneous variables in this population. The reader cannot help but be greatly impressed by the diligence and ingenuity of the authors and their collaborators in overcoming the many complications which confronted them. Nor can the reader fail to be impressed by the generous cooperation of the Japanese victims of the bomb—midwives, physicians, clerks, and many others in the cities of Hiroshima and Nagasaki.

The first six chapters are a detailed and lucid account of the background, the plan, a comparison of Hiroshima and Nagasaki, the criteria of radiation employed in the study, the comparability of irradiation subclasses, and the statistical methods employed in the study.

The amount of radiation received by exposed individuals was estimated as a function of the distance of the individual from the hypocenter of the bomb and of the amount of shielding the individual reported he had had. Each individual was placed in one of five classes: (i) those not exposed to the bomb; (ii), (iii), and (iv), those who were successively closer to the hypocenter of the bomb and who had progressively decreasing amounts of shielding; (v), those who showed epilation, petechiae, or oropharyngeal lesions, singly or in combination, within 3 months of the bombing, regardless of their position or amount of shielding relative to the hypocenter, provided the distance was less than 3000 meters. The estimates of the amount of radiation received by individuals in categories i through v, respectively, are as follows: essentially none; 5 to 10 roentgens equivalent physical (rep); 50 to 100 rep; 100 to 150 rep; 200 to 300 rep. The authors emphasize that these are, at best, very rough estimates.

Six indicators of genetic damage were used: the sex ratio, birth weights, measurements of bodily development, and the frequencies of stillbirths, neonatal deaths, and gross malformations. The data were sorted to obtain nonoverlapping indicators. Thus, a stillborn child with a malformation was considered only as a child with a malformation but not in the stillbirth group; similarly, a live-born child with a malformation was considered only in the malformation group but was not represented in the analysis of the frequency of stillborn versus live-born children. A chapter is devoted to a detailed presentation of the analysis of each of these indicators. These chapters are followed by others devoted to the analysis of the data concerning death during the 9-month period following delivery, the analysis of the anthropometric data, the autopsy findings, and chapters entitled "Recapitulation" and "Permissible inferences," respectively.

Despite the careful analysis of 71,280 pregnancies, the authors were unable to detect a significant effect of radiation on these pregnancies. It should be noted, however, that half of these pregnancies occurred in families in which both parents were in radiation category i, and that 67,599 of these pregnancies occurred in families in which one or both parents were in radiation categories i, ii, or iii. Only 3681 pregnancies occurred in families in which one or both parents were in categories iv or v, those that had received the most irradiation.

The authors point out that the problems posed in employing survey data in an analytical fashion are legion, and "as a consequence, it is doubtful whether, given a body of survey data, any two competent statisticians would evolve essentially the same approach." They have chosen the conservative approach of testing the null hypothesis—that there was no effect of the radiation on the outcome of the pregnancies. It has been suggested that more meaningful information might have been gleaned from the data had the authors chosen to use regression analysis, estimating the irradiation received by each individual and treating him as an individual rather than as one of a group. Fortunately, all the information collected has been coded on I.B.M. cards and will be made available to the investigator who wishes to explore other lines of analysis, provided he meets the costs of duplicating the cards and all shipping charges.

The last chapter of the monograph, "Permissible inferences," is discursive and, to me, seems the weakest portion of the report. It contains a lengthy and seemingly unnecessary and sometimes