



Gilbert Beebe (1912–2003)

*Statistician and Pioneering
Radiation Epidemiologist*

by Harry Rosenberg

Gilbert Beebe—noted epidemiologist, statistician, and Fellow of the American Statistical Association—is remembered by the statistics and health research community for many contributions, but especially his ability to organize and conduct large-scale cohort studies in health and radiation epidemiology, his vision of and key role in creating linked datasets, and his own extraordinary research productivity. Gil’s contributions and life were celebrated recently in a warm remembrance by his colleagues and family during a memorial at the National Institutes of Health. He passed away on March 3, 2003, after several distinguished careers over a period of 70 years.

Gil was born in Mahwah, New Jersey, in 1912. He received his bachelor’s degree in sociology from Dartmouth College and his master’s and doctoral degrees in sociology and statistics from Columbia University. Recounting Gil’s first career—he had two—Al Yankauer, former editor of the *American Journal of Public Health*, noted it began while Gil was in graduate school at Columbia University and, at the same time, working on the staff of the National Committee on Maternal Health. Gil’s dissertation, “Contraception and Fertility in the Southern Appalachians,” was regarded as such a model of research in clinical contraception that it continued to be cited for 50 years after

its publication. Yankauer stated that “Less important than its results (which showed that a systematic, public health program that promoted contraception among an economically depressed population could be effective), was the scientific rigor with which the study was carried out.”

That Gil would be a remarkably productive researcher was foretold by his six years of graduate study in which he published one book and 16 articles, including three in the *Journal of the American Medical Association*. Of another early book by Gil (published in 1942), Yankauer said, “1,000 Marriages anticipated Alfred Kinsey. As Margaret Sanger was considered the mother of Planned Parenthood, Gil could be considered the father!”

Long a proponent of cohort studies, Gil—while at the National Academy of Sciences (NAS)—saw an opportunity to conduct such studies using military and veteran records. With the collaboration of the noted heart surgeon Michael DeBakey, Gil created and was first director of the Medical Follow-up Agency of the National Research Council, which examined the after-effects of war-related injuries and diseases using 18 million Army records. Also created from this huge database was a twin registry containing 16,000 records. During the 50 years from its inception through 1999, the Medical Follow-up Agency database provided the substance

for about 500 books and papers on a variety of health conditions, including mental health, peripheral nerve damage, vascular injuries, and infectious hepatitis. Seymour Jablon called the Medical Follow-up Agency a “living testament to the worth of the idea conceived by Gil Beebe and Michael DeBakey. He further described it as “his [Gil’s] monument.”

While at the NAS, Gil and Jablon reorganized the Atomic Bomb Casualty Commission (ABCC) to study the late health effects of radiation among the 284,000 atomic bomb survivors in Hiroshima and Nagasaki. Bob Miller of the National Cancer Institute (NCI) noted that Gil and Jablon got involved in ABCC in 1955 when an investigation found that the organization had become dysfunctional; protocols and methods were not standardized and interpersonal relationships among the staff had grown acrimonious. Under Gil’s leadership as the Chief of Epidemiology and Statistics, the research program was unified, methodologies were standardized, and the effort was given coherence and long-term goals. ABCC became, according to Miller, an international leader in biostatistics. The resulting studies are the basis for much of our understanding of the carcinogenic effects of ionizing radiation.

To facilitate his interaction with both scientists and subjects, Gil studied Japanese and encouraged his four children to do the same. Several major cohort studies resulted, including the Life Span Study for mortality follow-up, the Adult Health Study for clinical examination, and the Pathology Study. In 1975, the ABCC was reorganized into the Radiation Effects Research Foundation (RERF), a cooperative effort between Japan and the United States. Dale Preston, who worked at RERF, noted that all those who worked with Gil were inspired and encouraged by his actions, support, and example.

At 65, Gil began another long and productive career at the NCI as head of the unit examining the health consequences of the 1986 Chernobyl nuclear power accident. Joe Fraumeni of NCI said he was introduced to Gil as the “Olympic champion of cohort studies.” Gil devised the overall strategy and protocol for the Chernobyl Studies, which were established through an agreement between President Reagan and former Soviet President Mikhail Gorbachev and which focused on thyroid cancer in 73,000 children exposed to radioiodine in Belarus and Ukraine and leukemia in 88,000 clean-up workers and nearby residents exposed to whole-body gamma radiation. Gil also continued to evaluate the atomic bomb survivor data using quantitative analysis, statistical modeling, and differential sensitivity of tissues to carcinogenic effects. In

conducting this complex multidisciplinary study, he pulled together teams of scientists from Belarus, Ukraine, and the United States and studied Russian to become a more effective investigator and collaborator.

Many statisticians in government depended on Gil’s guidance and, sometimes, his interces-



Young Japanese woman operating the IBM verifier. Courtesy Atomic Bomb Casualty Commission Collections

sion. In the 1970s, through Gil’s assistance, the National Center for Health Statistics (NCHS)—in collaboration with the NCI, the U.S. Department of Labor, and the National Institute for Occupational Safety and Health—established a multistate, multi-year mortality database for the study of occupational mortality using occupation and industry information routinely reported on death certificates. The data were the basis for hypothesis generation on the association between occupation and a number of chronic diseases. A number of the relationships were examined further in follow-up studies, many of which focused on cancer and environmental exposures. Harry Rosenberg of the NCHS remarked, “Gil played an important behind-the-scenes role in these and many other studies where he saw epidemiological potential. He encouraged proponents of such studies and, without fanfare, assisted in securing resources.”

Fraumeni recalled that less well-known was Gil’s role in identifying and promoting the epidemiologic use of datasets collected by federal agencies for other purposes. “Gil overcame barriers to record linkage systems that greatly increased opportunities for medical and public health research.” Notable among these was the establishment of the National



Death Index (NDI) program of the NCHS. The NDI can be used to link deaths, as an endpoint, in cohort studies. Death record information in the NDI for each of the approximately 2 million deaths occurring annually in the United States from 1979 onwards can be matched against the information on cohort subjects; for matches between the two files, actual death certificates—with additional demographic and medical information—can be secured from the 50 states and the District of Columbia. Praising Gil’s vision and efforts, Ed Sondik, director of NCHS, said that in the late 1970s, Gil participated on the committee to develop the NDI and continued to serve as one of the 12 advisers to the program from 1981 to 2000. Sondik remembered that Gil personally reviewed more than 1,200 applications to use the NDI.

Many of his former colleagues and collaborators attested to Gil’s high level of commitment and productivity. Jablon quipped that their secretary agreed the secret to Gil’s productivity was that he wrote with both hands!

Three awards were established recently as

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a living memorial to honor Gil: the Gilbert W. Beebe Fellowship in Radiation Sciences, sponsored by the Department of Energy, NAS, NCI, and RERF for recipients to work on collaborative research at the Radiation Epidemiology Branch (REB) of NCI and the Radiation Effects Research Foundation; the Gilbert W. Beebe Annual Symposium on Topics Related to Radiation and Radiation Effects Research; and a memorial fund sponsored by REB for travel awards to young investigators.

Beyond his careers in the Army and at the National Committee on Maternal Health, NAS, ABCC, RERF, and NCI, Gil worked for the Milbank Memorial Fund and the Hoover Commission. He participated as editor, author, or coauthor of five books and more than 130 journal articles and book chapters. ■