

Joseph Oscar IRWIN

b. 17 December 1898 - d. 27 July 1982

Summary. Oscar Irwin was the leading theoretician amongst British medical statisticians and contributed especially to the use of statistical methods in biological assay and other fields of laboratory medicine.

During the middle third of the 20th century, Oscar Irwin played an important role in linking theoretical statistics to applications in medicine. Amongst British statisticians he was unique in combining a deep understanding of current developments in mathematical statistics with a career commitment to medical research.

Irwin was born in London. After school, where he had specialised in classics and mathematics, Irwin was due to enter Cambridge University in 1917. His undergraduate career was delayed first by illness, and then by the remarkable opportunity to do wartime service with Karl Pearson (q.v.) working on anti-aircraft trajectories. On achieving his degree in 1921 he was offered a post with Pearson on the staff at University College London. Renewed illness led to a period of recuperation in Switzerland, initiating a life-long love of that country and, in later life, marriage to a Swiss lady and a final move to Switzerland after retirement. He died in Schaffhausen.

In 1928 Irwin joined R.A. Fisher's (q.v.) department at Rothamsted Experimental Station. He was thus one of the few statisticians to work with both Karl Pearson and Fisher, and he was able to maintain cordial relations with both of these strong but disparate personalities. Fisher encouraged Irwin to read, and if necessary interpret, the theoretical papers he (Fisher) had published in the 1920's, and Fisher's powerful ideas provided a stimulus for Irwin's work throughout his career. Fisher always expressed a high opinion of Irwin's mathematical ability.

In 1931 Irwin joined the staff of the (British) Medical Research Council (MRC) in a small unit at the London School of Hygiene and Tropical Medicine, where he was to stay for most the the next 30 years. His main responsibilities were in research, but for most of this period he taught an annual course in statistical methods for medical research workers, introducing topics such as analysis of variance that were relatively unfamiliar in this field of application. During the war years (1940-45) he worked in Cambridge, teaching statistics to mathematicians, many of whom pursued subsequent careers in statistics. Irwin returned to the MRC unit in London after the

war, and retired in 1965.

Irwin's early work reveals great mathematical fluency, which he retained throughout his career. In Irwin (1927) he derived the distribution of the sample mean from various distributions using the characteristic function. At Rothamsted he wrote on various agricultural topics, but was stimulated by his close contact with Fisher into theoretical research on topics like the analysis of variance and the theory of interval estimation. In 1931 he started a series of papers, with bibliographies, on 'Recent advances in mathematical statistics', which played an important role in spreading knowledge about theoretical statistics at a time when few relevant books existed.

His move to the MRC broadened his research interests. These included factor analysis in psychological testing, and theories of accident proneness, but otherwise his activities centered on laboratory experimentation. Most of this work was activated by collaboration with scientists whom he met on committees or who came to the unit for advice. There were papers on the estimation of bacterial populations, and most notably on biological assay and standardization (Irwin, 1937, 1950). An important contribution to statistical methodology was the 'exact' test for 2×2 tables (Irwin, 1935), published independently from a paper by F. Yates and an account in a new edition of Fisher's *Statistical Methods for Research Workers*.

After the war Irwin retained a position as the foremost adviser for the MRC on laboratory biostatistics, and he embarked on many long-term collaborative programmes, often for official committees. These included collaborative assays, nutritional studies, studies of physiological responses to hot climates, and laboratory tests for carcinogenicity of tars and mineral oils. In most of these projects he found scope for the investigation of theoretical problems; in the analysis of carcinogenicity experiments, for instance, he used actuarial methods that anticiapted some of the later work on censored survival data. Towards the end of his working career he became very interested in the Waring family of long-tailed discrete distributions, based on series of inverse factorials. Many of these topics were discussed in his Presidential Address to the Royal Statistical Society (Irwin, 1963).

Irwin participated actively in many professional societies, notably the International Statistical Institute, the Royal Statistical Society (President in 1962-64 and Editor of the *Journal, Series B* from 1949-59) and Biometric Society. In all, he published about 120 papers.

Irwin's role in medical statistics, concentrated as it was in the laboratory, tended to be overshadowed by the striking post-war developments in

epidemiology and clinical trials. For this reason, and perhaps also owing to a certain reserve in his personality, Irwin often seemed to be working behind the scenes rather than in the front of the stage. He was a fine expositor, particularly in his written work, and sought throughout his career to integrate the diverse strands of statistical theory and practice.

References

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