

# Ronald Aylmer Fisher

1890–1962



**R A Fisher** was born on 17 Feb 1890 in London, England. His parents were Katie Heath, the daughter of a solicitor, and George Fisher, of Robinson and Fisher a firm of auctioneers in King Street, St James, London. Katie and George had seven children, four boys and three girls.

In 1904 Ronald entered Harrow, but this was a difficult time for the fourteen year old boy, for his mother died in that year of acute peritonitis. Despite this, he excelled at Harrow winning the Neeld Medal in 1906 in a mathematical essay competition open to the whole school. Fisher was awarded a £80 scholarship from Caius and Gonville College, Cambridge, which was necessary to finance his studies since his father had lost his fortune. In October 1909 he matriculated at Cambridge. Although he studied mathematics and astronomy at Cambridge, he was also interested in biology. In his second year as an undergraduate he began consulting senior members of the university about the possibility of forming a Cambridge University Eugenics Society. He graduated with distinction in the mathematical tripos of 1912. Awarded a Wollaston studentship, he continued his studies at Cambridge under Stratton on the theory of errors reading Airy's manual the *Theory of Errors*. It was Fisher's interest in the theory of errors that eventually led him to investigate statistical problems.

After leaving Cambridge, Fisher had no means of financial support and worked for a few months on a farm in Canada. He returned to London, taking up a post as a statistician in the Mercantile and General Investment Company. When war broke out in 1914 he enthusiastically tried to enlist in the army, having already trained in the Officers' Training Corps while at Cambridge. His medical test showed him A1 on all aspects except his eyesight, which was rated C5, so he was rejected. He became a teacher of mathematics and physics, teaching at Rugby and other similar schools between 1915 and 1919.

Fisher gave up being a mathematics teacher in 1919 when he was offered two posts simultaneously. Karl Pearson offered him the post of chief statistician at the Galton laboratories and he was also offered the post of statistician at the Rothamsted Agricultural Experiment Station. This was the oldest agricultural research institute in the United Kingdom, established in 1837 to study the effects of nutrition and soil types on plant fertility, and it appealed to Fisher's interest in farming. He accepted the post at Rothamsted where he made many contributions both to statistics, in particular the design and analysis of experiments, and to genetics. There he studied the design of experiments by introducing the concept of randomisation and the analysis of variance, procedures now used throughout the world.

Fisher published a number of important texts; in particular *Statistical Methods for Research Workers* (1925) ran to many editions which he extended throughout his life. It was a handbook for the methods for the design and analysis of experiments which he had developed at Rothamsted. The contributions Fisher made included the

development of methods suitable for small samples, like those of Gosset, and the discovery of the precise distributions of many sample statistics. Fisher published *The design of experiments* (1935) and *Statistical tables* (1947). While at the Agricultural Experiment Station he had conducted breeding experiments with mice, snails and poultry, and the results he obtained led to theories about gene dominance and fitness which he published in *The Genetical Theory of Natural Selection* (1930).

In 1933 Karl Pearson retired as Galton Professor of eugenics at University College and Fisher was appointed to the chair as his successor. In fact the post was split in two, with Karl Pearson's son Egon Pearson also being appointed to a chair. Fisher held this post for ten years, being appointed as Arthur Balfour professor of genetics at the University of Cambridge in 1943. Before this, however, he had moved away from London when war broke out in 1939, finding temporary accommodation at Harpenden. He retired from his Cambridge chair in 1957 but continued to carry out his duties there for another two years until his successor could be appointed. He then moved to the University of Adelaide where he continued his research for the final three years of his life. He died on 29 July 1962 in Adelaide, Australia.

Fisher was elected a Fellow of the Royal Society in 1929, was awarded the Royal Medal of the Society in 1938, and was awarded the Darwin Medal of the Society in 1948. Then, in 1955, he was awarded the Copley Medal of the Royal Society. He was elected to the American Academy of Arts and Sciences in 1934, the American Philosophical Society in 1941, the International Society of Haematology in 1948, the National Academy of Sciences of the United States in 1948, and the Deutsche Akademie der Naturforscher Leopoldina in 1960. Various institutions awarded him an honorary degree including Harvard University (1936), University of Calcutta (1938), University of London (1946), University of Glasgow (1947), University of Adelaide (1959), University of Leeds (1961), and the Indian Statistical Institute (1962). He was knighted in 1952.

Fisher was a close friend and collaborator of P.C.Mahalanobis and one of the most famous visitors to Indian Statistical Institute during its early days. In January 1938, the first Indian Statistical Conference was organised in Calcutta with R.A.Fisher as the President. He delivered the 1<sup>st</sup> Convocation address at Indian Statistical Institute in the year 1962.

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