# PEN PORTRAIT OF
# SIR GILBERT WALKER, CSI, MA, ScD, FRS

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**This pen portrait was published in the Royal Meteorological Society's monthly magazine *Weather* in 1997 (Volume 52, No.7, pages 217-220)**

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The choice of Gilbert Walker as Special Assistant to Sir John Eliot was surprising. Sir John was the Meteorological Reporter to the Government of India and Director-General of Indian Observatories. Walker was not a meteorologist. Hitherto, he had pursued an academic career as a mathematician at the University of Cambridge, where he had interested himself mainly in electromagnetism but had also taken an interest in the dynamics of spinning tops and projectiles. He was especially interested in boomerangs and had published an original and imaginative paper on them in 1897 (*Phil. Trans Roy. Soc., A*, **190**, pp.23-42). His interest in this missile had begun in the late 1880s, during a visit to Australia, and his prowess in throwing boomerangs on the Cambridge Backs in his undergraduate days was such that his friends called him `Boomerang Walker'. In India, as Sir George Simpson recalled (*Weather*, 1959, **14**, pp.67-68), Walker used to throw his boomerangs on Annandale, the only level piece of ground in Simla, "much to the interest of the Viceroy and his numerous military friends". Whilst at Cambridge, Walker came to be recognised as an expert on mathematical aspects of sport and games and by invitation wrote "Spiel und Sport", a scholarly article on billiards, ball games (particularly golf), boomerangs and bicycles which was published in the *Enzyklopädie der mathematischen Wissenschaften* (1900, **4**, 9, pp.127-152).

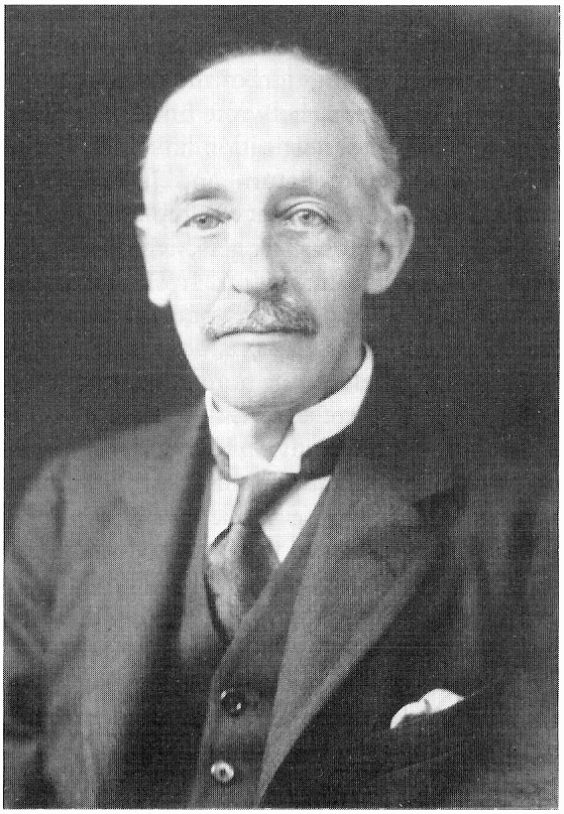
The eldest son and fourth child of a family of eight, Gilbert Thomas Walker was born at Rochdale, Lancashire, on 14 June 1868. Soon afterwards, the family removed to Croydon, where his father, a civil engineer, became the Borough's Chief Engineer. Gilbert was admitted to Whitgift School on 11 September 1876 and won a scholarship to St Paul's School in 1881. He excelled in pure and applied mathematics and at the age of 17 was awarded a prize for a gyroscope he had made. He passed the London matriculation in 1884 but did not read for a London degree. Instead, he proceeded from St Paul's School to Trinity College, Cambridge, where he gained a scholarship in mathematics in December 1885 and matriculated in the Michaelmas Term of 1886. He was Barnes Scholar in 1887, Sheepshanks Scholar in 1888, Senior Wrangler in Part I of the Mathematical Tripos in 1889, headed the list in Part II the following year, and received his MA in 1893. He was elected a Fellow of Trinity in 1891 and appointed a lecturer in mathematics in 1895, resigning both in the summer of 1903, when he removed to India to assist Sir John Eliot.

In 1890, as a consequence of the hard work necessary to attain his academic successes, Walker's health broke down and he had to spend the following three winters in Switzerland, where he became an expert ice-skater and developed a passion for mountaineering. For some years he published nothing, but when his health was restored he wrote a short paper containing "Some formulae for transforming the origin of reference of Bessel's functions" (*The Messenger of Mathematics*, 1896, **25**, pp.76-80[1]). In 1899, for his essay entitled "Aberration and some other

[1] The editor of this journal at the time was Dr J.W.L.Glaisher, son of the eminent meteorologist and astronomer James Glaisher (see Pedgley, 1995).

problems connected with the electromagnetic field", he shared Cambridge University's prestigious Adams Prize with Joseph Larmor, who became, in 1903, Lucasian Professor of Mathematics. Walker was elected a Fellow of the Royal Society in 1904 and received the degree of ScD from Cambridge University the same year.

Eliot retired on the last day of 1903 and Walker took charge of the India Meteorological Department the following day. Like Eliot before him, he pressed for the appointment of scientific assistants. He was successful and well rewarded, for the men he chose, J.H.Field, J.Patterson and G.C.Simpson, proved to be first-class meteorologists and all subsequently became directors of meteorological services (in India, Canada and the United Kingdom, respectively). The work of organizing the Indian observatories and weather service appears to have taken up a lot of Walker's time and energy, for he published nothing substantial for several years. From the outset, however, he turned his mind to monsoon problems, as shown by, for example, the documents held by the Library of Congress entitled *Copies of memoranda on the monsoon submitted to government in April, May, June, August and September 1905, and a comparison of the forecasts with the actual rainfall* (India Meteorological Department, Simla, 1906). The first of his many meteorological papers appeared in 1909. Entitled "Correlation in seasonal variation of climate", it was published in the *Indian Meteorological Memoirs* (**20**, Part VI, No.6, pp.117-124). The lectures he gave at the University of Calcutta in 1908 were published by Cambridge University Press in 1910 in a volume entitled *Outlines of the theory of electromagnetism*. His interest in electro-magnetism then appears to have waned.



Having recognised that he could not tackle monsoon forecasting by means of mathematical analysis based upon established premises, Walker chose instead to use empirical techniques. Developing the work of H.F.Blanford, Sir Norman Lockyer, H.H.Hildebrandsson, Sir John Eliot and others, he calculated statistical lag correlations between antecedent meteorological events within and outside India and the subsequent behaviour of the Indian monsoon itself, calling the art involved in using the relationships he found `seasonal foreshadowing', rather than forecasting, saying that foreshadowing indicated "a vaguer prediction" than forecasting. Though his work was largely statistical, Walker also gave thought to the meteorology of the associations he identified. His work on the Nile flood provides a case in point. "Inasmuch as the Nile flood is determined by the monsoon rainfall of Abyssinia", he wrote, "and as the moist winds which provide this rainfall travel in the earlier portion of their movement side by side with those which ultimately reach the north of the Arabian Sea, there is a tolerably close correspondence between the abundance of the Nile flood and that of the monsoon rains of northwest India" (Walker, 1910). He was well aware of the limitations of empirical statistical methods and indeed, as Sheppard (1959) put it, "sought by the most exacting methods to test the significance of his results".

Walker retired from India in December 1924 and succeeded Sir Napier Shaw as Professor of Meteorology at the Imperial College of Science and Technology, London. Here, he not only continued his studies of world weather but also showed himself to be a competent experimental physicist, turning his attention to laboratory studies of convection in unstable fluids, with particular reference to the formation of clouds. This work may have been stimulated by his

interest in the soaring and gliding flight of birds, a fascination which developed whilst he was in India, where he observed vultures and kites exploiting up-currents to rise effortlessly to heights of 2000 feet or more. He published a number of papers on the flight of birds, among them "Meteorology and the non-flapping flight of tropical birds" (*Proc. Cambridge Phil. Soc.*, 1923, **21**, pp.363-375) and a two-part article entitled "The flapping flight of birds", which appeared in the *Journal of the Royal Aeronautical Society* (1925, **29**, pp.590-594 and 1927, **31**, pp.337-342). He also wrote the article on "Natural flight" which was published in 1929 in the 14th edition of *Encyclopædia Britannica*.

He retired from Imperial College in 1934 and moved to Cambridge, where he lived until 1950. Thereafter, he did not settle in any one place but lived mostly in Surrey and Sussex. In retirement, he remained active. He served as Editor of the *Quarterly Journal of the Royal Meteorological Society* from 1935 to 1941 and after 1934 published several papers in this journal, the last in 1947. He found much enjoyment in music, too. He was an acknowledged expert on the theory and evolution of the flute and played the instrument well. He also loved sketching and painting and when in India showed watercolours of landscapes at the Simla Art Exhibition. When he retired, he was keen to become a glider pilot, but his age was against him. At 66, his reactions were too slow!

Walker was elected a Fellow of the Royal Meteorological Society on 18 January 1905 and served as President of the Society in 1926 and 1927. The first of his two Presidential Addresses, on "The Atlantic Ocean", was inspired by the German scientific voyages of the 1920s and was published in the April 1927 issue of the *Quarterly Journal* (**53**, 222, pp.97-113). The other, entitled "World Weather", was published in the April 1928 issue of the same journal (**54**, 226, pp.79-87). He also served as a Vice-President in 1923, 1924 and 1928 and as an Ordinary Member of Council in 1925 and from 1935 to 1939. He was awarded the Society's Symons Gold Medal in 1934.

Whilst in India, Walker served as President of the Asiatic Society of Bengal (in 1918) and as President of the Indian Science Congress (also in 1918). His Presidential Addresses were published in the *Journal and Proceedings of the Asiatic Society of Bengal* (1918, **14**, 8, pp.85-98) and the *Proceedings of the 5th Indian Science Congress* (First Circuit, Lahore, 1918, pp.1-24). He was appointed a Companion of the Order of the Star of India (CSI) in 1911 and knighted upon the occasion of the King's birthday in 1924. An Honorary Fellow of Imperial College and a Fellow of the Royal Astronomical Society, he was a corresponding member of most of the meteorological societies of Europe.

He married May Constance Carter in 1908 and they had a son and a daughter. May died in 1955. Sir Gilbert died at Coulsdon, Surrey, on 4 November 1958.

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