

GEORGE NEVILLE WATSON

Honorary Member and Vice-President
President 1932-3

I

George Neville Watson was born on January 31st 1886 at Westward Ho and entered St. Paul's School as a Foundation Scholar in 1898. In December 1903 he won a Major Scholarship at Trinity College, Cambridge, and went up in October 1904.

At school he was not particularly sociable, being somewhat reserved, and while his fellows were playing games during their lunch hour Watson would be down at Addison Road station watching the trains and recording the numbers of the engines. This early interest developed later into an absorbing interest in railways.

It was while still at school, before winning his scholarship, that he published his first mathematical paper, in the December 1903 number of *The Gazette*; Note 133, "A method for determining a very rapidly converging series for the square root of any positive integer" Always of astounding memory he did not forget this first publication, and in 1953 he celebrated his mathematical jubilee with an article on "Two inequalities", which appeared in the December number of *The Gazette* of that year.

In 1904 he won a Smee Prize "for work of scientific interest", his essay being on "Properties of Curves" His early mathematical education was influenced by the great F. S. Macaulay of St. Paul's, who produced a remarkable line of scholarship successes and high Wranglers, including Professor J. E. Littlewood of Trinity, a year senior to Watson at school, in whose "Miscellany" there is reference to Macaulay, who did research in his spare time, and later became an F.R.S. Other contemporaries of Watson at school were Dr. E. V. Rieu, the Rev. P. T. B. (Tubby) Clayton and the late Sir Geoffrey Whiskard (Governor of Queensland).

At Cambridge Watson took three years over Part I of the Tripos (instead of the two which was beginning to become fashionable), and was Senior Wrangler in 1907, shortly before the practice of ordering the Wranglers was abolished, the last order being in 1909. In 1908 he took Part II, getting a I.2, but although this result was attributable to illness it undoubtedly disappointed him. However he won a Smith's Prize in 1909, following up with a Fellowship in 1910 as a result of some 20 distinct "dissertations". It may surprise the pure mathematicians that at this time he made quite a masterful job of a problem presented to him by Horace Lamb on the travel of wireless waves round the earth.

In 1914 he was appointed to a post as Assistant Lecturer in the Department of Mathematics at University College, London, and from 1915 to 1918 he held an Assistant Professorship there until he was offered the Mason Chair of Mathematics at the University of Birmingham, following Professor R. S. Heath.

At that time one lecture room at Edmund Street in the centre of Birmingham sufficed for all lectures in both pure and applied mathematics at the University, and there was no Honours School of Mathematics. Promising students took one year of post-graduate work to qualify for the degree of M.A. or M.Sc. It was Watson who brought the Honours School into being, and so widened the scope of the work that it became necessary to have two separate departments, one for Pure Mathematics and a second which developed into the Department of Mathematical Physics under Professor R. E. Peierls. All this development took place at the same time that Watson was also carrying out an enormous amount of work outside the University.

From 1919 to 1929, and again from 1936 to 1937, he was a member of the then Northern Universities Joint Matriculation Board, and was on the committee dealing with university entrance requirements. Starting as an Assistant Examiner in 1923 he was from 1925 to 1928 Chairman of the Pure Mathematics Panel, and from 1936 to 1938 Chairman of all mathematics for the Higher School Certificate Examination. He was also an Examiner and Moderator for the Oxford and Cambridge Board.

Watson will probably be best remembered for his three publications:

- (1) the Cambridge Tract on "Complex Integration and Cauchy's Theorem", 1914,
- (2) a revision of large parts of "Modern Analysis" in conjunction with the late Sir Edmund Whittaker, 1915,
- (3) "Bessel Functions", 1922.

The last two texts are still standard in their own fields and are widely used, not only by mathematicians, but also by physicists and engineers.

Apart from these works there were many papers containing, among other topics, important contributions to the theory of asymptotic expansions, general (or Watson) transforms and singular moduli. Fascinated by the results and problems stated by Ramanujan, the young Indian mathematical genius whom G. H. Hardy had taken under his wing, Watson made a longhand copy of the Indian's notebooks, which is now to be found in the Mathematical Institute at Oxford, and spent much time on his work.

The many contributions to mathematics brought rewards in the form of election to the Royal Society in 1919, with the award of their Sylvester Medal in 1946. The Royal Danish Academy had already presented their Gold Medal in 1912, and in 1947 followed the De

Morgan Medal of the London Mathematical Society, on whose Council Watson had served for over a quarter of a century; he was Secretary from 1919 to 1933 and President during the period 1933 to 1935. Edinburgh conferred the Honorary Degree of LL.D., and made him an Honorary Fellow of their Royal Society, and an Honorary Degree of Sc.D. came from Dublin. He also held the Degrees of Sc.D., Cambridge, and D.Sc., London.

The Mathematical Association has every reason to feel proud that a mathematician so distinguished as Watson should associate himself closely with its activities. He was elected President for the two years 1932 and 1933, being the last to hold office for more than one year, and was noted in committee for his mastery of detail and precise pertinent comments on items on the agenda. His first Presidential Address was called "The Marquis and the Land Agent, a tale of the 18th century". It concerned Fagnano and Landen and elliptic arcs; but the title beguiled an unwary journalist into attending; he left early! The second address on "Scraps from some mathematical notebooks" was on Gauss and the entries in his day-book. Watson was a great believer in going to the original works of the great mathematicians, rather than to their interpreters, and he also had the great gift of clarifying the sometimes obscure material of others. As a Vice-President of the Association he was a regular attendee at Council meetings almost to the end of his life.

In manner and appearance (he always wore a wing collar) he recalled the professors of an earlier generation, and he was always very proud of his Fellowship at Trinity and delighted to entertain colleagues with remarks and tales from the High Table, around which, he was wont to say, one could always hear profound conversation on any subject under the sun. Yet the appearance belied the man, for, while he was somewhat difficult to get to know, when one did achieve this he was a very real friend, and there are many who will remember both his kindnesses and his assistance with their problems; he and his wife were most charming hosts to those whom they entertained at their house.

It is inevitable that tales should gather round such a man. He used to travel by train, and then tram, to the University. On the tram he would examine the number on the ticket, first to see whether it were prime, then, if not, to find its prime factors, and he was always on the look out for 691, a number in which he took great delight. Of his lectures, which were always beautifully clear, delivered without a note yet with the appearance of having been most carefully thought out, a tale comes down that on one occasion a student, having just suffered at the hands of a dentist, fainted during the lecture, and was assisted quietly from the room by some of his fellows. Watson continued working at the board without pause, and at the end of the lecture the students, who had quietly returned,

went up to apologize for the disturbance, only to realize that Watson had apparently been completely unconscious of anything untoward.

He did not like telephones and regarded them as "an invention of the devil". There was no Departmental Secretary during his time at Birmingham, and he carefully typed all examination papers from members of his staff himself, filling in the formulae most carefully with old-fashioned pen and nib. He preferred to discuss matters face to face with colleagues rather than write a letter and send it by internal post, and it may be that his long journeys on foot from one part of the University to another compensated for lack of other exercise, for he never seemed to suffer from ill-health.

Apart from his University work, and his research, most of which was done at his home, his chief interests were in railways, and particularly railway engines, on whose history and numbers he was an expert, and in postage stamps, of which he had a very large collection of particularly unusual issues. He was an assiduous reader of the Times, and never missed items referring to the activities of his contemporaries. He took little exercise, apart from his walk to and from the station at Leamington and across Birmingham to catch the tram. Incidentally his pace of walking was such as to stretch his younger colleagues considerably, and pedestrians and traffic in the city appeared to split before his progress rather as the bow wave of a ship. At one time he drove a car, but he was never too happy with this, and forsook this method of transport when four-wheel brakes came into fashion.

After he retired in 1951 he started to write a completely revised version of *Modern Analysis*, intended to comprise some two dozen chapters, and the earlier portions of the previous edition were to be considerably expanded. Unfortunately the work will never be completed, and mathematics will be the poorer for its loss. It was a fitting tribute to his memory that the University of Birmingham named the new mathematics building after him. He was somewhat reluctant that this should be done, but when the ceremony took place it was clear that it had given him great pleasure.

But he will be remembered most of all for his mathematical originality and his capability for simplifying and clarifying mathematical work, a goal not always reached by those who produce original papers.

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II

I first met Professor Watson when I became one of his students at Birmingham University. How well I remember his shy and sensitive