ARTHUR LEE DIXON

W. L. FERRAR.

Arthur Lee Dixon was born at Pickering, Yorkshire, on 27 November, 1867; he died at Folkestone on 20 February, 1955. In a long life he gained for himself many distinctions and the friendship of many people, for he had a great power of mind, wide interests, and social gifts above the ordinary.

He was the son of a Wesleyan minister and was educated at Kingswood School, Bath; from there he gained a scholarship to Worcester College, Oxford. In 1891 he was elected to a prize-fellowship at Merton and in 1898 was appointed a tutorial fellow of that college; in 1922 he became Waynflete Professor of Pure Mathematics and Professorial Fellow of Magdalen College. He was elected to the Royal Society in 1912.

He was an active member of our society some thirty years ago and was President in the year 1924-5. The work he published with the Society began with a paper " On a theorem for confocal bicircular quartics and cyclides ", which appeared in the *Proceedings* for 1893, and ended with " A proof of Schäfli's theorem about the double six ", which appeared in the *Journal* for 1936. His Presidential address " Interpolation forms in the algebra of invariants " was published in the *Journal* for 1927.

His total published work consists of some forty papers, ranging over potential theory, algebra (as Cayley would have used the word) and especially elimination, algebraic geometry, pure geometry, elliptic and hyperelliptic functions, Bessel functions and lattice-point summation formulae. The work came steadily over the period 1893-1910, most of his interests being represented by at least one paper within this period, which ends with a run of exacting and distinguished papers on the theory of eliminants. There is then nothing until 1926 when, with the increased leisure that came from his election to a professorship, he published papers on cubic surfaces, Schur quadrics, and the covariants of a plane cubic curve. He was now sixty years of age, but he still had two quite distinct research interests that were to dominate his mathematical life for the next few years; one was in geometry, the other in analysis. In geometry he collaborated with Professor V. C. Morton, friend and former pupil: their joint paper " Planes, points and surfaces associated with a cubic surface " appeared in our *Proceedings* for 1934. A little later Dixon published his proof of Schäfli's theorem and a paper " On skew polygons whose sides are alternately generators of two quadric surfaces " (*Quarterly Journal*, 1936). In analysis his major interest was in the ' order problem ' of the error when, for large N, one approximates to the number of lattice-points in a circle of radius $\sqrt{N}$ by the formula πN. In this problem the analytical theory of numbers leads to the use of formulae

involving Bessel functions; and over the period 1930-1937 Dixon, in collaboration with the present writer, worked steadily on the problems that arose in this field. A series of twelve papers, mostly in the *Quarterly Journal of Mathematics* (Oxford series) was the result. Dixon's last paper, a brief note on a measure of distance, was published in 1947; he was then in his eightieth year.

His mathematical work was not his sole interest. He had an excellent knowledge of French, Italian and German; as a young man he had developed a great liking for and knowledge of music and he was a regular attendant at concerts—but he could not bear the Gilbert and Sullivan operas as they were performed in the modern theatre, with interrupting and prolonged applause demanding the encore that was inevitable and already arranged for. His physical prowess and accuracy of eye were remarkable and he retained both for an unusually long time; at sixty he was a formidable opponent at squash and even when he had left seventy behind him he could, and did, thoroughly enjoy defeating men half his age.

From 1922 onward he had rooms in Magdalen College. There he was a member of a large common room and he enjoyed the varied social contacts as much as he enjoyed his mathematics and his games. It was one of Dixon's great assets, that he had the power to enjoy so many different things—not everything, and one of the things he did not enjoy was controversy; when faced with a direct clash of opinion that threatened to become heated he withdrew into himself. Perhaps the most striking memory one has of Dixon is of his great social gifts. He had a breadth of knowledge, a manifest enjoyment of life, and a natural courtesy of manner that made him *persona grata* in any company. His every social contact was touched by his slightly old-world courtesy and charm; these were as completely natural to him as his physical strength or his mathematical power; they endeared him to many friends and made him a welcome visitor wherever he went.

*Bibliography**.

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* Numbers in brackets refer to volumes.

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1932 (7), "On Cesàro sums" (with W. L. Ferrar).
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(Papers marked † were published jointly with W. L. Ferrar.)

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1933 (4), "Integrals for the product of two Bessel's functions" (two papers)†.
1934 (5), "Some summations over the lattice points of a circle (I), (II)"†.
1935 (6), "Infinite integrals of Bessel functions"†.
1936 (7), "On skew polygons whose sides are alternately generators of two quadric surfaces".
1936 (7), "A class of discontinuous integrals"†.
1937 (8), "On the summation formula of Voronï and Poisson"†.
1947 (18), "On a formula connecting one measure of distance with another".