

OBITUARY NOTICES

CHARLES JASPER JOLY

CHARLES JASPER JOLY, son of the late Rev. J. Swift Joly, of Athlone, was born in 1864, and spent most of his school days at the Galway Grammar School under Dr. Biggs. At the age of eighteen he entered Trinity College, Dublin, where he held a scholarship and subsequently a mathematical studentship. His subsidiary subject was experimental physics, and after graduating in 1886 he went to Berlin, where he studied under König. On the death of his father in 1887 he returned to Ireland, and read for a Fellowship, which he gained in 1894. By this time Joly's mathematical powers had fully developed, and he had become familiar with the calculus of quaternions, a subject which strongly attracted him, and to which most of his published work is related.

In 1897, with singular appropriateness, Joly was appointed Royal Astronomer of Ireland, thus occupying the post once held by the great inventor of quaternions. He now undertook a new edition of Hamilton's *Elements of Quaternions*, of which the first volume appeared in 1899 and the second in 1901. The only book of his own composition is *A Manual of Quaternions*, published in 1905. No one can read this without keenly regretting the author's early death. It is sufficiently elementary, at least in the earlier part, for the beginner to learn the principles of the subject; and it contains a great deal of original work, much of which is condensed into the form of examples. Physical applications receive considerable attention: there are sections dealing with kinematics, kinetics, wave theory, and electromagnetism. One of Joly's most interesting contributions to Hamilton's theory is his way of introducing the geometrical principle of duality. In some way or other this principle ought to come into closer contact with the formulæ of quaternions than it actually does: whether Joly's method is the best way towards this desirable end is a matter into which quaternionists might well inquire.

Joly's mathematical papers are not numerous (less than a score in all); but every one of them deserves to be read. With few exceptions, they are

contained in the *Proceedings* and *Transactions of the University of Dublin*. Among the most important, perhaps, are the following:—

- “The Theory of Linear Vector Functions” (*Dubl. Trans.*, Vol. xxx., pp. 597–647).
- “Properties of the General Congruency of Curves” (*ibid.*, Vol. xxxi., pp. 363–392).
- “The Interpretation of a Quaternion as a Point Symbol” (*ibid.*, Vol. xxxii. A, pp. 1–16).
- “The Quadratic Screw-system: a Study of a Family of Quadratic Complexes” (*ibid.*, Vol. xxxii. A, pp. 155–238).
- “The Geometry of a Three-system of Screws” (*ibid.*, pp. 239–270).
- “Quaternions and Projective Geometry” (*Phil. Trans.*, Vol. 201 A, pp. 223–327).

Joly was elected a member of the London Mathematical Society in April, 1902, but did not contribute to its *Proceedings*. He was elected Fellow of the Royal Society in 1904, and at the time of his death (January, 1906) was President of the International Association for the Promotion of the Study of Quaternions and Allied Subjects.

In private life Joly was loved as well as admired by those who knew him well. He was an expert mountain-climber, a devout student of Dante, and a lover of literature in general. How much he was regretted by his intimate friends is clearly shown by the notices which appeared, shortly after his decease, in the *Guardian* newspaper and elsewhere.

G. B. M.