JOHN EDWARD CAMPBELL.

The death of JOHN EDWARD CAMPBELL last October after an illness of only an hour was a great shock to his many friends. He was born in 1862, educated at the Methodist College and University College, Belfast, and later at Hertford College, Oxford. He was made a Fellow of Hertford College in 1887, and remained there as tutor, bursar, or vice-principal for the rest of his life. Of his work as tutor it is difficult for one to write adequately who owes him such a deep debt of gratitude. In the first term under his care an undergraduate learnt more than in the whole of his previous work. No time or effort was ever grudged that could possibly help a pupil, and his unselfish industry and kindly interest in his students were a wonderful example and inspiration.

His mathematical researches were published almost entirely in the *Proceedings* of the London Mathematical Society and in the *Messenger of Mathematics*. They date from 1891 till the time of his death, with the exception of the period 1914 to 1920.* The loss of a son early in the war was a terrible blow, and this, combined with anxiety on behalf of two other sons on service, seemed to destroy entirely for some years all his interest in Mathematics, though characteristically he diverted his energies into toil for others in connexion with philanthropic "war work" and administrative duties as bursar at Hertford College. His election as president of the London Mathematical Society was the means of restoring his interest in mathematical work, and helped him to recover from his trouble. The methodical and tactful way in which he filled the office will be fresh in the memory of the members of the Council.

His earlier papers were on miscellaneous topics, including one on the theory of Higher Plane Curves, a subject for which he retained his fondness for many years, and on which he lectured at times, though he did not publish further work thereon. By 1897 he was writing on matters

* His published work will be found in *Messenger of Mathematics*, 21 (1892), 78, 158; 23 (1894), 130, 144; 28 (1899), 97. *Proc. London Math. Soc.* (1): 24 (1892), 67; 28 (1896), 381; 29 (1897), 14, 249; 31 (1899), 235; 33 (1900), 285. (2): 1 (1903), xxx; 5 (1907), 6; 6 (1908), 178; 8 (1910), 383; 9 (1911), 410; 10 (1912), 406; 13 (1914), 372; 20 (1922), 1; 21 (1923), 317; 22 (1924), 92. *Bull. Amer. Math. Soc.* (2), 4 (1898), 407. *Trans. Amer. Math Soc.*, 1 (1900), 243. *Introductory Treatise on Lie's Theory of Finite Continuous Transformation Groups*, Clarendon Press (1903), v + 416.

connected with Lie's transformation groups, which were his main theme for several years, culminating in his "Lie's Theory of Finite Continuous Transformation Groups," published by the Clarendon Press in 1903. The geometrical applications of Lie's contact transformations gradually led him to direct his thoughts to the differential geometry of surfaces, and papers on Bäcklund's transformation, the application of quaternions to the deformation of a surface, cyclic congruencies, etc., were written by him during the next ten years. When his mathematical enthusiasm revived after the war, it was the tensor calculus and the applications of differential geometry to Einstein's work that appealed to him. The appeal was from the geometrical side. Neither mathematical physics nor experimental science ever seemed really to interest him. His presidential address in 1920 was on this subject, and a treatise on the tensor calculus was in its final stage at the time of his sudden death. It is to be hoped that it may prove possible to publish it, even though the author is no longer here to put the final touches to the task.

His method of work was intensive. He preferred to take some really first-rate book and know it by heart rather than to skim through a large amount of material perfunctorily. The treatises of Engel on continuous groups, of Darboux and Bianchi on surfaces, and of Weyl on the tensor calculus were his favourites. These books he absorbed and reproduced with their contents marked with an originality all his own. Unfortunately, his argument was not always easy to follow. Even in his lectures the middle and end of an example would appear before the beginning, and hearers unused to his methods must have found him at times a little puzzling. Nevertheless, his lectures were some of the best given in Oxford; and similarly in his papers the reader was always well repaid for the trouble which perusal involved.

He was a Fellow of the Royal Society, and held an honorary D.Sc. of the Queen's University of Belfast. Perhaps, if he had pushed his own claims more, he might have attained to other distinctions. But such assertion was entirely alien to his character, and his whole life was spent in the service of others and forgetfulness of self.

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