

From the Times of 1882? , reviewing the 1882 book:-

The Life of James Clerk Maxwell, with a selection from his correspondence and Occasional Writings and a Sketch of his Contributions to Science.

By Prof. Lewis Campbell, M.A., LL. D., and Prof. William Garnett, M.A.

London: Macmillan and Co., 1882.

To those who knew him, especially to those who had the rare privilege of counting him friend, the mention of the name of Clerk Maxwell will induce a strange mixture of feeling - tenderness at the memory of a love of rare unselfishness and a devout faith whose serenity no science could ruffle; admiration for an intellect of each scope and elasticity that it could with equal ease throw off a song of grotesque humour or give mathematical expression to the most complicated physical problem; reverence for a genius that seemed actually to see the ultra-microscopic workings of the ultimate molecules of matter.

The method adopted by Maxwell's biographers is probably as satisfactory as any that could have been devised. In the first part of the work we have a general sketch of the course of Maxwell's life and of the lines in which his multifarious activity found exercise with copious extracts from his letters; the second part consists of a summary of his contributions to science; while the third contains his poems. The biography, as a whole, gives as fair an idea of the man as can be conveyed to those who were not intimate with him in the flesh.

The outward events of Maxwell's life are soon told. He was a scion of two very old Scotch families, the Clerks of Penicuik, near Edinburgh, and the Maxwells of Middlebie, in Dumfriesshire, both of which produced several remarkable men and women, some of them with an individuality almost eccentric. James Clerk Maxwell was born in Edinburgh in June, 1831, the only child of his parents. Till the age of ten years, he lived at Glenlair (the home in Dumfriesshire) with his parents and in 1841 was sent to the Edinburgh Academy which he attended till he was 16 years of age, coming away with the medal in mathematics, the first prize in English, and running the classical medalist very close. Three sessions were spent at Edinburgh University, where Maxwell took an eager interest in all his classes, logic and moral philosophy almost as much as mathematics, natural philosophy, and chemistry. In 1850 he entered at Peterhouse, Cambridge, but soon transferred himself to Trinity; and at the age of 22 came out second wrangler with Routh as first with whom he was bracketed as First Smith's Prizeman. Two years later, 1855, he got his Fellowship at Trinity, and next year, marked by the death of his father, he was appointed to the Chair of Natural Philosophy in Marischal College, Aberdeen.

In 1858 he married the daughter of Principal Dewar, of Aberdeen, and on the suppression of his Chair by the fusion of Marischal and King's Colleges, he accepted that of Natural Philosophy in King's College, London. Resigning this post in 1865, he passed the following years till 1870 mainly at Glenlair, with frequent visits to Cambridge and London. In 1871 he accepted the Chair of Experimental Physics at Cambridge, to which was attached the physical laboratory, founded and equipped by the munificence of the Duke of Devonshire. Here Maxwell was at last in his element, with sympathetic students and assistants and every facility for carrying out the most exquisite researches in physical science. But just as the laboratory was beginning to get into perfect working order and Maxwell was laying his plans for future research, the cruel malady which carried off his mother, and which had been eating away his energy and life for at least two years, became so pronounced that his doctor told him he had not a month to live. On November 5, 1879, he died, aged only 48 years,

Maxwell's boyhood was spent in atmosphere of lavish love and old-fashioned piety, among Scottish gentlefolks of the quaint type now passed away. He inherited the best of the ancestral characteristics, including a natural taste for drawing, but also a certain speculative ideal element which seems to have been peculiar to himself.

He was allowed to roam about as much as he pleased, making friends with every living thing. From the first, Maxwell showed an inquisitive disposition which is the mother of all science; throughout childhood his constant question was, "*What is the go o' that? What does it do?*" and to a vague reply he would reiterate "*But what's the particular go of it?*". From the bells in his father's house he went on through life trying to find the "*particular go*" of many things, from ovals and meloids to light, electricity, and the ultimate molecules without which there would be no "*go*" in the universe at all. Maxwell's intense sympathy with nature, perhaps, gave him a realistic insight into nature's working which could not have come from his phenomenal scientific acumen alone. Maxwell's eccentricity early showed itself; it led to his receiving the nickname "*Dafty*" at the Academy, where, though essentially social, he took little part in the usual games. Throughout life he never took kindly to conventionality; he hated starch of all sorts; preferred to travel third-class, "*because he liked a hard seat*"; all along lived in the simple style of his parents, leaving those who did not know him to charge him with penuriousness foreign to his nature. Professor Campbell tells us that "*the leading note of Maxwell's character is a grand simplicity*". The force of "*grand*" we fail to see. He carried with him throughout life the absolute and unconscious simplicity and gentleness of his childhood; up to the very last the boyish love of a "*ploy*" would assert itself, and even on his deathbed his grotesque humour would bubble up. No one could pass more naturally "*from grave to gay, from lively to severe*". His wide range of mood is well seen in his letters, and the contrast between its two extremes, if indeed they are extremes, of the deepest pathos and the lightest and most fanciful humour is well seen in his poetry. He did possess some share of the "*vision and faculty divine*", even in its technical sense: his skill in the mechanics of versification is rare, even among professional poets. The same almost capricious variety of mood is seen in his letters. Whether writing to his old Aunt Jane, or to some friend as deeply interested in science as himself (why have we none of the rare letters to Tait referred to?), he would plunge at once from personal gossip or playful banter into hints of some abstruse problem in which he was engaged or the details of some new piece of mechanism he was contriving. In several of the philosophical papers published in this volume, some feature of rapid transition from one stage to another is apparent, as if Maxwell were rather thinking aloud than expounding a position to his fellows; though, as many of his scientific papers and published works show, he could be absolutely clear.

Into Maxwell's scientific work we shall not enter here, as we may have an opportunity of doing so on the publication of his scientific papers, which are announced as forthcoming. While still a boy, he was attracted to the phenomena of light, and the eminent services he rendered to the science of optics are very clearly set forth by Mr. Garnett in the volume before us. His skill in the contrivance of machinery for his experiments was rare; from his boyhood he was a mechanic, and with the simplest materials could produce the most delicate apparatus. His colour top and colour box are famous. In the departments of pure geometry, mechanics, and elastic solids he did original work enough to give a man a permanent place in science. His investigation into the nature of Saturn's Rings, for which he got the Adams Prize, was characterized by Sir G. B. Airy as "*one of the most remarkable applications of mathematics to physics that I have ever seen*". His contributions to the advancement of electrical science were of the highest order and importance, and his translation of Faraday's lines of force into mathematical expression furnished the triumphant proof of his own power, as well as of the penetrative character of Faraday's instinctive genius. His treatise on heat is a scientific classic. But, perhaps, his services to molecular physics are more intimately associated with his name than any other work he did. The realistic clearness with which he saw and represented the myriad of molecules dancing about in even the most solid bodies, had all the merit of an original discovery of the highest order, and has led to a revolution in our conception of the nature of matter. His positive contributions to science have admittedly placed him among the highest ranks of original researchers; but the contagious influence of his spirit has acted like an inspiration, leading young men to take up his work with the enthusiasm of apostles, and introducing a character of precision and accuracy into scientific research productive of the most wholesome results.

But the physical science was not the only groove in which Maxwell's many sided mind worked. There was nothing that did not interest him. His knowledge of English literature was wide and deep enough to qualify him for a professor of the subject; in philosophical, and especially psychological questions he had the keenest interest; in his own way he was an athlete; he had all the facility for scriptural exposition and extemporaneous prayer that marks the minister of the Scottish Kirk. As to his religious position much could be written. He was one of those scientific men who are able to retain the simple faith of their childhood in the face of the most far-reaching discoveries of science. Maxwell seems never even to have passed through the usual period of incipient scepticism; his religion all along was of the type native to Scotland, though there was no trace in it of the asperities of Calvinism. His creed, though simple, was well-defined and clear but without a trace of dogmatism; at least if he was dogmatic, it was only for himself; for the creed, or no creed, of every other earnest man he had absolute tolerance. His position was happily stated by himself when declining to join the Victoria Institute, "*I think,*" he wrote, "*that the results which each man arrives at in his attempts to harmonize his science with his Christianity ought not to be regarded as having any significance, except to the man himself, and to him only for a time, and should not receive the stamp of a society*". One of his clerical friends accounts for Maxwell's position by stating that he was "*too deep a thinker to be sceptical*"; but these are mere words, and ludicrously inapplicable to patent facts, though we need not recall prominent instances to the reader. The fact is that an emotional religion, such as is supplied by some of the leading features of "*our common Christianity*" (no substitute has yet been found), is as absolutely essential to the comfort and satisfaction of a nature like Maxwell's as was his irrepressible tendency to attempt to find out the "*go*" of things. As he wrote himself, "*it is a universal condition of the enjoyable that the mind must believe in the existence of a law, and yet have a mystery to move in*". This is a truth which has many applications. The subject is a tempting one but cannot be followed out here.

Those who desire to make the acquaintance of one of the rarest and most original spirits of our time will read this biography. There are very fine steel portraits of Maxwell and his father, and of the mother and her baby-boy, with numerous reproductions of the humorous sketches of Maxwell's cousin, Mrs. Blackburn.