

opinion of scientific men seems to be divided as to the reception of this theory ; but whatever may be thought of its truth, it has at least the merit of referring the light and heat to known causes.

The mathematical theory of magnetism was developed by the illustrious Poisson, but was made to rest on foundations in some respects too speculative. This subject has been taken up by Professor Thomson, who in a lucid and satisfactory manner has placed the theory on the basis of observed facts, so as to render it independent of any ulterior suppositions which may be adopted respecting the nature of magnetism. Two papers on this subject are published in the 'Philosophical Transactions,' and others, containing the theory of magnetic induction, are promised. More recently Professor Thomson has published a series of papers devoted to the mathematical theory of the submarine telegraph, and has been engaged in a series of experimental researches relating to voltaic electricity, which formed the subject of the Bakerian Lecture delivered in the session just concluding, and of which the detailed account will shortly be in the hands of the Fellows of the Society.

PROFESSOR THOMSON,

Accept this Medal in testimony of our admiration of your able mathematical and physical researches.

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*Obituary Notices of deceased Fellows.*

JAQUES CHARLES FRANÇOIS STURM was born at Geneva in September 1803, of a family which had quitted Strasbourg in the middle of the last century, where one of his ancestors had been President of the Republic at the period of its contests with the Emperor Charles V., and another had attained a distinguished reputation for his writings on jurisprudence and theology. After completing his school education and his classical studies at the College with remarkable success, he became in his fifteenth year a student of the University of his native city, where his rapid progress in the study of mathematics and philosophy attracted the marked attention of the well-known geometer Simon Lhuillier, who fully anticipated the eminence which he was afterwards destined to attain.

The sudden death of his father, leaving his mother and four children, of whom Charles was the eldest, without any adequate maintenance, compelled him, before the close of his seventeenth year, to resort to private tuition for the support of himself and his family; and three years afterwards he was recommended to the Duc de Broglie, as tutor to the brother of Madame de Broglie, the son of Madame de Stael. At the close of the year 1823, he accompanied his pupil to Paris, and though he shortly afterwards returned to Geneva, he found no sufficient occupation there, and he finally resolved, in company with his intimate friend and school-fellow, M. Colladon, the present distinguished Professor of Physics at Geneva, to seek his fortune in the great city, which was then, and had long been, the undisputed metropolis of European science. Sturm had already become very favourably known to mathematicians by several articles in the 'Annales de Mathématiques' of M. Gergonne, on different branches of analysis and geometry, and the strong recommendations which he and his companion bore with them from Lhuillier, and the kind offices of M. Gerono, made them known to Ampère, Fourier, Arago, and other eminent members of the Institute, who recommended them to pupils as a means of support. Sturm afterwards obtained employment upon the 'Bulletin Universel,' under Baron Férussac, and was, in fact, a subordinate in the office of that journal when he published his well-known Theorem. He and his friend speedily began to feel the influence of breathing in an atmosphere of science, and their joint labours were rewarded by a distinction of no ordinary importance, when the Academy of Sciences awarded to them the great prize of mathematics proposed for the best Essay on the Compression of Liquids.

The determination of the number of real roots of a numerical equation which are included between given limits, is a problem which had occupied the attention of the greatest analysts of the past age, of Waring, of La Grange, and more especially of Fourier, who of all other analysts had made the nearest approaches to its practical, though he had failed in its theoretical, solution: the attention of Sturm had been for some time directed to this class of researches, which he pursued with remarkable continuity and diligence, encouraged, as he himself assures us, by the instructions and advice of this eminent master. The result was the discovery of the theorem which

will be for ever associated with his name, and which conquered the difficulty which had embarrassed all his predecessors, and thus permanently extended the dominion of analysis; a rare good fortune, which though frequently denied to the most illustrious cultivators of the sciences, is always reserved to those only who are enabled, by the extent and accuracy of their knowledge and the clearness of their views, to follow out the glimmerings of light which escape the observation of ordinary eyes.

The memoir which contained this important theorem was presented to the Academy on the 25th of May, 1829, and rapidly conducted its author to fortune and public honours. The connexion of its author with the 'Bulletin Universel' enabled him to give an immediate account of his method to the world; the paper itself was not published till some years afterwards, in the "Mémoires des Savans Etrangers."

In the course of a few years he was chosen a member of the principal scientific societies of Europe: the Copley Medal was given to him by this Society: he was elected a member of the Academy, as the successor of Ampère, in 1836: in the same year he was made Professor of Mathematics, upon the special recommendation of Arago, at the Collège Rollin, Répétiteur at the Ecole Polytechnique in 1838, and in 1840 he was deemed worthy to succeed to the chair of Mechanics at the same school, which had been so long honoured by the occupation of Poisson, the most illustrious of the successors of La Place. It was not without some difficulty that the substantial rewards of his scientific achievement were obtained: he was a foreigner, and naturally placed at a disadvantage in a contest with native competitors. It is right to notice this, both for the honour of France and as a proof of the very high reputation which Sturm had attained.

The subsequent memoirs of Sturm, whether first presented to the Academy or not, were chiefly printed in the Journal of M. Liouville, an analyst of congenial tastes and pursuits with his own, with whom he lived on terms of the most affectionate friendship. Two of these memoirs, relating to the discussion of differential and partial differential equations, such as present themselves so commonly in the solution of the more important problems of mathematical physics, possessed a merit so extraordinary, that M. Liouville—a most compe-

tent judge, declared—at a time when he was himself a competitor with Sturm for a place in the Academy,—“that impartial posterity would place them by the side of the finest memoirs of La Grange.” The first of these two memoirs was presented in 1833 to the concours for the great prize of Mathematics, to be awarded by the Academy in 1834 for the most important discovery in that science made known within the preceding three years. The Academy conferred the prize on Sturm—not for the memoir which he had submitted to the judgment of the Commission, but for that which contained his celebrated theorem and which had been presented in 1829. Other memoirs relate to optics, mechanics, pure analysis, and analytical geometry, and embrace the most difficult questions which have been treated in those several branches of science. One of the latest of these was a communication to the Academy on the theory of vision, and is remarkable both for the geometrical and analytical elegance with which many questions subsidiary to the theory are treated in it. It confirms generally,—with one important exception relating to the asserted muscularity of the crystalline lens and the changes attributed to its action,—the views of the late Dr. Thomas Young in his well-known memoir on this subject.

Sturm visited England in 1841, and gave the mathematicians with whom he conversed a high impression, as well of the extent of his knowledge as of his inventive power.

The health of M. Sturm, which had previously been remarkably vigorous, began to decline in 1851, probably in consequence of his laborious public employments and the unremitting severity of his studies: he died on the 18th of December last, to the deep regret of a large circle of friends and pupils, to whom he appears to have been singularly endeared by the modesty, truthfulness, and simplicity of his character. “To my eyes,” said M. Liouville, in the discourse which he pronounced at his grave, “Sturm was a second Ampère: candid like him, and like him equally indifferent to fortune and the vanities of life: they both of them joined to great inventive powers, an encyclopædic range of knowledge: neglected and even despised by men of the world and the worshipers of station and power, but exercising an unmistakable impression upon the youth of our schools, where genius never fails to produce its impression: possess-

ing, in fact, without appearing either to desire it or to know it, an immense popularity.”

THE REV. WILLIAM BUCKLAND, D.D., F.R.S., F.G.S. &c., Dean of Westminster and Reader in Mineralogy and Geology in the University of Oxford, was born in the year 1784, at Axminster in Devonshire. In 1797 he was at Tiverton School; in 1798 he entered St. Mary's College, Winchester, and passed from it in 1801, to a scholarship in Corpus Christi College, Oxford.

Admitted Fellow of that College in 1808, he manifested a decided taste for the study of geology, then beginning to be heard of in Oxford in the lectures of Dr. KIDD, the respected Professor of Mineralogy, and beginning to be cultivated in London by the founders of the Geological Society. While yet a child, his attention had been caught by the 'Cornua Ammonis,' found in the rocks round his home; at Winchester he began to collect the sponges and other fossils of the Chalk; at Oxford he gathered the shells of the Oolite, and discussed points of natural history on the ascent of Shotover Hill with his frequent companion Mr. Broderip of Oriel College, who had himself drawn no small amount of knowledge of these subjects from the Rev. J. Townsend, the friend and fellow-labourer of William Smith. The fruits of his first walk with Mr. Broderip formed the nucleus of that large collection which forty years later he placed in the Oxford Museum.

In the period from 1808 to 1812, Mr. Buckland was frequently seen traversing on horseback a large part of the south-western districts of England, and collecting from these tracts, which had been the scene of Mr. Smith's earlier labours, sections of the strata and groups of their organic contents.

In 1810 and 1811 he visited with the same purpose the north of England, Scotland, Ireland, and Wales.

In 1813 he received the Professorship of Mineralogy in consequence of the resignation of Dr. Kidd; he became a Fellow of the Geological Society, and took his place among the most active and most eminent of the inquirers into the physical history of the earth. The lectures which he now delivered were not confined to mineralogy, but embraced the discoveries and doctrines of geology, and they