have there made rapid progress in the elementary branches of education. His academical studies were pursued in St. John's College, Cambridge, where he highly distinguished himself both by his mathematical and his classical acquirements. Under his father's tuition he applied himself with great diligence to his profession as a pupil of St. George's Hospital, to which, at a subsequent period, he was appointed one of the Physicians. He was elected a Fellow of this Society in the year 1791 : and in 1797, became a Fellow of the College of Physicians. He died on the 19th of February, 1845, aged 77.

His contributions to the Philosophical Transactions consist of two papers ; the first in 1796, on the influence of cold on the health of the inhabitants of London ; in which he shows, in opposition to the popular prejudices then prevalent, that a severe winter is attended with greatly increased mortality. The second paper is entitled "On the heat of July 1825, together with some remarks on sensible cold," in which he points out the causes which influence our sensations of temperature, and more especially the powerful effect of wind in increasing the rate of cooling, and consequently of creating the sensation of cold in the human body, independently of any actual depression in the temperature of the air.

John Frederic Daniell was born in Essex Street, Strand, 12th of March, 1790. His father, George Daniell, Esq., Bencher of the Inner Temple, provided him with a good classical education under his own roof. At an early age he showed fondness for the pursuits of science, and was placed in the sugar refining establishment of a relative, where he introduced important improvements in the manufacture. The pursuits of business, however, were uncongenial to his tastes, and he soon relinquished this occupation. In 1813 he was elected a Fellow of the Royal Society, of which body he continued till the day of his death a zealous and active member.

The services he rendered to more than one branch of science were of no ordinary description. From an early period of his life his mind was directed to the study of meteorology, at a time when it consisted of little more than a vast accumulation of facts and observations.

In the year 1823 he published the first edition of his 'Meteorological Essays,' which constituted a new epoch in the science, and still continues the standard work of reference, the third edition of which he had nearly completed at the time of his death. This was the first attempt to embrace in a general view the scattered facts of the science, and by synthetically applying the known laws which regulate the constitution of gases and vapours, the principles of their equilibrium, and the distribution of heat among them, to give a connected account of the main phenomena of the earth's atmosphere. He insisted on the paramount importance of extreme accuracy in the construction of the instruments employed for such inquiries, and gave directions by which the needful accuracy could with certainty and facility be obtained. By the invention of the hygrometer, which bears his name, he first conferred precision on the means of ascer-

taining the moisture or dryness of the atmosphere, a point of cardinal importance in all investigations of this nature; his instrument still continues that which can be best depended upon for this purpose. With these accurate instruments, he for three years kept a faithful register of the various atmospheric changes; he organized the plan adopted by the Horticultural Society in their annual meteorological reports, a plan which formed the model to the admirable and more extended series of meteorological observations now issued weekly from the Greenwich Observatory under the superintendence of the Astronomer Royal.

In the year 1824 he communicated to the Horticultural Society an essay 'On Artificial Climate,' which appeared in their Transactions for that year. In this paper among other subjects he insisted on the absolute necessity of attention to the moisture of the atmosphere, as well as of that of maintaining in our hot-houses the moisture as well as the temperature of a tropical climate, if we would produce a vegetation of tropical luxuriance. The publication of this essay caused a complete change in the methods adopted for the culture of plants in general, and particularly of those contained in greenhouses and hot-houses, which upon the new plans speedily outgrew the houses provided for their reception. The Society immediately awarded him their silver medal to mark their sense of the importance of his views, and now after an experience of more than twenty years, Dr. Lindley, Professor of Botany in University College, not a fortnight before his death, in an article in the Gardener's Chronicle, tracing the origin of the improvements in this branch of horticulture, ascribes the rapid advance in the practice of the art, mainly to the sound and original views promulgated in this essay.

For the purpose of making more minute and accurate observations upon variations in the atmospheric pressure, Mr. Daniell proposed to the Royal Society, in 1830, to construct a barometer in which water should be the fluid used instead of mercury. He was in consequence requested to superintend the construction of such an instrument. Great practical difficulties attended the undertaking, but these he happily surmounted, and the instrument now stands in the Hall of the Apartments of the Royal Society; he was engaged in re-adjusting it within a few weeks of his decease. On occasion of the late Antarctic Expedition under the command of Captain Sir James Ross, and the establishment by Government of the Magnetic and Meteorological observations, founded a few years since in different parts of the British Empire, when the Admiralty applied to the Royal Society for instructions as to the nature and extent of the observations to be made, Mr. Daniell was requested by the Committee of Physics of the Royal Society, to draw up the Meteorological portion of these directions. The paper which he then prepared furnished the basis of that part of the Report of the Committee, published in the year 1840, under the sanction of the Royal Society.

But it was not alone to meteorology, and its practical applications, that his labours were confined; his researches upon various chemical subjects were not less numerous or important. More than forty

original papers, including thirteen on meteorology, were communicated by him to various scientific publications; among others he published several memoirs on Crystallization, and its attendant phenomena. Between the years 1830 and 1844, the Transactions of this Society were enriched by twelve papers on important subjects from his pen. He invented a process for making gas from resin for the purposes of illumination, by which the streets of New York are lighted at the present time. For this improvement he received no other acknowledgment than a vote of a few pounds' worth of books. In the year 1830, he described in the Philosophical Transactions, a new instrument for measuring high degrees of heat, such as the temperature of furnaces, and the melting-points of metals. By means of this, his pyrometer, he ascertained numerous facts of great interest both in a scientific and in a practical point of view. For the invention of this instrument, which is still the best for the objects intended, the Royal Society awarded him the Rumford Medal.

After his appointment as Professor of Chemistry in King's College, his researches were turned principally to the phenomena presented by Voltaic Electricity, and they led to the invention of his constant battery; for this the Royal Society conferred upon him the highest honour in their gift, the Copley Medal for the year 1836. The possibility of maintaining powerful and equable currents of electricity for any required period, was established by this invention. The impulse thus given to the progress of electrical research cannot be too highly estimated, and to it must be traced the numerous applications of electricity, to the blasting of rocks, the working of mines, and to submarine operations, and to the arts of electro-plating, gilding, zincing, &c., which have recently acquired such magnitude. His subsequent researches in the same field are contained in the Philosophical Transactions, and were honoured by the Society in the year 1842 by one of the Royal Medals. In 1839 Professor Daniell was placed on the Commission appointed by the Admiralty to inquire into the best method of defending the ships in the Royal Navy from lightning, and the same year the Royal Society honoured him with the office of Foreign Secretary to their body. His "Introduction to Chemical Philosophy," published during the course of this year, contributed still further to increase his reputation, and in 1842 he received from the University of Oxford the honorary degree of D.C.L. In consequence of the rapid corrosion of the copper sheathing of the vessels employed upon the African stations, the Admiralty requested him to examine the damaged sheets of metal and the waters taken up from the localities where the corrosion was the greatest; he detected the cause of this decay, showing that sulphuretted hydrogen was abundantly generated in the ocean at these spots, and succeeded in extracting from the metal plates the sulphur which had occasioned their corrosion. It is a remarkable proof of the variety and extent of Mr. Daniell's acquirements, that he received at different times all the medals in the gift of the Royal Society.

The circumstances which attended the sudden and lamented termination of his valuable life, are known to most of the Fellows of

this Society. On the 13th of March 1845, after delivering his usual lecture at King's College, apparently in perfect health, he attended the Council Meeting of this Society, and shortly after making some observation upon the business of the meeting, was seized with symptoms indicating an attack of apoplexy. Several medical men who were present hastened to his relief, and he was immediately bled; not the slightest benefit, however, attended this measure, and in five minutes he was a corpse. The shock occasioned by this melancholy event, may be easier imagined than described, and cast a wide-spread gloom over the extensive circle of his friends and acquaintance. As a mark of respect to his memory, the Noble President postponed the ordinary meeting of the Society, which was to have been held that evening. His remains were interred at Norwood, Surrey, where during the last ten years of his life he had resided.

Mr. Daniell survived his wife eleven years, and left a family of two sons and five daughters to deplore his loss. High as were his scientific attainments, he possessed others of a still loftier and more enduring character; to the sterling qualities of a vigorous understanding, and a kind and benevolent heart, he united the humble and unobtrusive piety of a sincere christian.

Mr. George Bassevi, an architect of distinguished reputation.

Jaques Dominique Cassini, Compte du Thury, was elected a Foreign Member of this Society in 1789, and at the time of his death had attained the extraordinary age of 97 years: he was the fourth in direct descent of a family which, during a period of nearly two centuries, has been singularly illustrious in the history of the sciences, and more particularly of astronomy. His great grandfather, Jaques Dominique Cassini, one of the greatest astronomers of his age, was born in 1625, and was invited by Louis XIV. from Italy to France, to preside over the magnificent Observatory of Paris, which was built under his directions: his first successor in the direction of this establishment was his son Jean Jaques, an astronomer not less eminent than himself; the second his grandson, more commonly designated as Cassini de Thury, so well known by his great Geodetical Survey and Map of France; and the third his great grandson, the subject of the present notice, who was displaced from it by the troubles of the Revolution, which involved him, at least for a time, in the common proscription of the aristocracy of France. The shock of these sad events seems to have diverted his mind from scientific pursuits, for we find his name connected with no research in astronomy or geodesy during the last half-century.

The Comte de Cassini completed the celebrated map of France which had been begun by his father. He published an account of voyages which he made in 1768 and 1769, for the trial of the marine chronometers of Le Roy, and a memoir "Sur l'influence de l'équinoxe du printemps et du solstice d'été sur les déclinaisons et les variations de l'aiguille aimantée:" he superintended and published an account of the observations which were made in 1789, by a commission appointed for that purpose, for the junction of the Observatories of Paris and Greenwich, with a special reference to